Chapter 8

The impact of credit on business performance, labour and well-being

Introduction

In the previous chapter, we discussed the impact of credit on income as the *direct* means to reduce the incidence poverty. However, credit can affect the level of household well-being through a number of *wider* routes beyond the income variable. These wider impacts can emerge after joining the microfinance organisation, if programme participants are able to increase their stock of physical capital, by improving, for example, the housing conditions or purchasing household assets such electrical appliances and vehicles.

Impacts could also be observed at the business level if the enterprising household is able to purchase tools, machinery, and equipment that increase the levels of productivity. Furthermore, wider impacts can take the form of human capital enhancements that are captured by children's schooling and improvements in the health status. In the labour market, wider impacts could emerge in the form of increasing levels of labour intensity and job security, and when enterprising households hire poor workers, an *indirect* effect could be observed on labourer's welfare. In this chapter, we examine these wider impacts in more detail.

We begin the discussion by analysing in section 8.1 the econometric procedure employed to estimate the impacts of credit on business performance. We look in particular at the level of profitability, business asset, business creation, and financial stability. In section 8.2 we examine the effects of programme participation on physical capital, focusing on housing improvements and household assets. In section 8.3 we discuss the effects of programme participation on human capital, looking at children's schooling and health status before moving onto section 8.4 where we analyse the effect of credit on labour markets, paying particular attention to the impacts on labour intensity and labour hiring.

8.1 The impact of credit at the business level

Taking into consideration that the vast majority of programme participants are engaged in income-generating activities and microenterprise ventures, it is reasonable to assume that an important source of household income comes from the

level of business profitability. We begin this section by considering the hypothetical case of an enterprising household i producing a specific level of output, Q, with n combinations of units of labour and capital in an x period of time. Profit maximisation will be achieved as the result of the difference between the revenue and cost functions. We define the revenue function as the outcome of n actions and decisions $TR(a_1, \ldots, a_n)$ that can take the form of labour hiring, borrowing capital, product diversification, market segmentation, etc., whereas the cost function is defined as the consequences of taking such n actions and decisions $TC(a_1, \ldots, a_n)$.

These actions and decisions operate at different levels and affect the business profitability in different magnitudes according to technological and market constraints. Following the conventional economic theory (see e.g. Samuelson 1947; Varian 1984), we assume that the enterprising household will face the problem of finding an optimal set of actions, $\mathrm{a}^* = (a_1^*, \ldots, a_n^*)$ which allows profit maximisation as follows:

$$\pi = \max\left[TR(a_1, \ldots, a_n) - TC(a_1, \ldots, a_n)\right] \tag{8.1}$$

The condition for profit maximisation, therefore, will be achieved at the point where the difference between total revenue and total cost is largest. Our primary interest here however, is not deriving the optimal set of actions, a^* that yields the profit maximising output, but assessing the effects of one particular action, *borrowing capital*, on the outcome of interest, profits.

Since our quasi-experiment collected information on the amount of total revenues TR_i and total costs TC_i that enterprising households incurred at the time when the survey took place, we were able to estimate the level of profits per individual household at one point in time. We computed this continuous variable in logarithmic form, $\pi = \sum_{i=1}^{N}\left[(TR_i - TC_i)\right]$, and was coded as LGPROFITSPM[1].

[1] It is important to note here that we did not observe negative values for $TR - TC < 0$.

Similarly, we identified the action of borrowing by the continuous variable, C_i, derived previously in equation (7.16), which measures the maximum amount of credit borrowed during the last credit cycle. As discussed earlier in chapter 7, C_i is *exogenously* determined by the lender *L*, who set up this maximum threshold according to the level of participation in the microcredit programme. Thus $C_i = \max(0, C_i^*)$, i.e. C_i takes a maximum value and a lower threshold zero in the form of a censored Tobit model (Tobin 1958)[2] with a $C_i > 0$ for treatment groups and $C_i = 0$ for control groups[3]. The function for the outcome of interest, π_i, i.e. the level of business profitability conditional upon the level of programme participation C_i takes the form

$$\pi_i = \alpha_\pi + X_i\beta_\pi + L_i\theta_\pi + C_i\delta + u_i^\pi \tag{8.2}$$

where X_i and L_i are the same vectors of household and financial market characteristics, respectively, previously derived in section 7.2.1, whereas α_π, β_π, θ_π and δ are the intercept and the unknown parameters respectively. u_i^π is the error term reflecting unmeasured determinants of π_i that vary from household to household. Notice that as both the level of profits and the amount of capital borrowed per credit cycle, are in logarithmic form, the parameter δ in equation (8.2) captures the *elasticity* of business profitability with respect to credit. Alternatively, we have estimated equation (8.2) but substituting C_i for a dichotomous variable I_i as follows:

$$\pi_i = \alpha_\pi + X_i\beta_\pi + L_i\theta_\pi + I_i\delta + u_i^\pi \tag{8.3}$$

where I_i takes the value $I = 1$ if household i is a programme participant, $I = 0$

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2 Notice that the use of OLS for the sub-sample for which $C_i > 0$ will produce inconsistent estimators, since we are using only the data on uncensored observations (Wooldridge 2002), causing a downward bias result (Greene 2003).

3 Since we have a data-censoring case demanding the variable C_i^* to follow a homoskedastic normal distribution, we use a logarithmic transformation in our estimation strategy to make this assumption more reasonable.

otherwise. In this sense, the antilog of the parameter estimate δ now measures the *percentage change* of profits of treatment households relative to the control group. Since we are trying to capture the effects of credit on the level of profitability, we decided to replace the variable WWORKER in X_i that measures the number of household members with waged jobs, and which was used to estimate the poverty impacts in chapter 7, by a continuous variable that measures the number of household members engaged in self-employment activities *plus* the number of employees hired by the enterprising household. By computing this variable, coded as LABOUR, we were able to capture the effect of labour, as a factor of production, on the impact equation.

Table 8. 1 The use of labour by enterprising households
Figures in number of workers including household members

	Sample	Mean	Maximum	Minimum	Zero values
FINCOMUN	55	1.96	6	0	1
CAME	46	1.78	5	0	6
PROMUJER	47	1.32	4	0	3
Pooled sample	148	1.70	6	0	10

Our survey collected information on the level of profitability in each productive activity undertaken by households' participants; however, at the time the survey was conducted some households reported no recent engagement in enterprising ventures. Although the level of data censoring was not significant (see table 8.1), we decided to estimate equation (8.2) using a Tobit regression equation due to the fact that using OLS for the sub-sample for which $\pi_i > 0$ would produce inconsistent estimators of β_π, θ_π and δ, since we are using only the data on uncensored observations, causing a downward bias result (Greene 2003). Nevertheless, given that the number of censored observations was small, we expect the coefficient δ obtained from the Tobit and OLS estimations to be similar[4]. For comparative purposes, we estimated (8.2) and (8.3) using the two analytical frameworks. The results of the econometric estimation are presented in table 8.2.

[4] Goldberger (1972) and Greene (1981) have proved that the ratio of the OLS estimates to the maximum likelihood estimates gets close to the proportion of data uncensored.

Table 8. 2 The impact on credit on the level of profitability

Dependent variable: logarithm of average profits per month (LGPROFITSPM)	FINCOMUN		CAME		PROMUJER		Pooled sample	
	Ci as explanatory variable a/	Ii as Explanatory variable b/	Ci as Explanatory variable a/	Ii as Explanatory variable b/	Ci as explanatory variable a/	Ii as explanatory variable b/	Ci as explanatory variable a/	Ii as explanatory variable b/
Tobit	0.171	1.591	0.018	0.272	0.166	1.291	0.064	0.609
	(4.76)***	(4.63)***	(0.21)	(0.35)	(2.03)*	(1.94)*	(1.67)*	(1.70)*
OLS	0.170	1.586	0.011	0.191	0.156	1.211	0.064	0.605
	(4.64)***	(4.60)***	(0.18)	(0.34)	(2.24)**	(2.17)**	(1.68)*	(1.73)*

Absolute value of t statistics in parentheses. * significant at 10%; ** significant at 5%; *** significant at 1%..
a / Ci: logarithm of the maximum amount of credit borrowed (LGMAXCREDIT); b/ Ii: LGMAXCREDIT is transformed into a dummy variable = 1 for treatment households. For more details see table A8.1 in the Appendix to Chapter 8

Table 8. 3 The impact of credit on the accumulation of business assets

Dependent variable: Dummy variable = 1 if household i purchased business assets (BUSASSETS)	FINCOMUN		CAME		PROMUJER		Pooled sample	
	Ci as explanatory variable a/	Ii as Explanatory variable b/	Ci as Explanatory variable a/	Ii as Explanatory variable b/	Ci as explanatory variable a/	Ii as explanatory variable b/	Ci as explanatory variable a/	Ii as explanatory variable b/
Probit (coefficient)	0.231	2.062	0.275	2.275	0.474	3.781	0.157	1.451
	(2.60)***	(2.55)**	(2.42)**	(2.33)**	(5.22)***	(5.22)***	(5.39)***	(5.65)***
$\frac{\partial \Phi}{\partial X}$	0.040	0.503	0.089	0.718	0.103	0.838	0.053	0.492
Probit	(2.60)***	(2.55)**	(2.42)**	(2.33)**	(5.22)***	(5.22)***	(5.39)***	(5.65)***

Absolute value of t statistics in parentheses. * significant at 10%; ** significant at 5%; *** significant at 1%..
a / Ci: logarithm of the maximum amount of credit borrowed (LGMAXCREDIT); b/ Ii: LGMAXCREDIT is transformed into a dummy variable = 1 for treatment households. For more details see table A8.2 in the Appendix to Chapter 8

8.1.1 The impact of credit on the level of profitability

The slope coefficient of the impact variable, C_i, reported as expected a *positive* sign for each of the three microfinance organisations; however, the coefficients were only statistically significant different from zero in the case of Fincomun and Promujer. More precisely, the econometric results suggest that if the maximum amount of capital borrowed by treatment households had gone up by x%, the level of profitability had increased in the order of 0.171x% and 0.166x%, respectively, relative to the control group, *ceteris paribus*. Alternatively, when we computed the antilog of the parameter estimate δ in equation (8.3), we found as expected, a positive sign in the three case-study organisations; however, statistical significance was only reported in the case of programme participants at Fincomun and Promujer. The empirical evidence reveals that the impact of credit on the level of profitability, which is captured by the slope coefficient of C_i, although small, is apparently greater than the impact on income.

In order words, it would seem that the benefit from programme participation does not immediately materialise in a rise in income, i.e. it could be possible that on the average, households choose to invest part of the profits in capital building, through the accumulation of e.g. business and household assets. At the time the survey was conducted, we tried to collect data on monetary values of business and household assets; however, we faced a fundamental problem during the piloting process: programme participants who were interviewed often did not know the market value of such assets although they knew the sources of investment.

Since any attempt to assess the impact of credit based on imprecise values of business assets would have produced incorrect parameter estimates and measurement errors, we decided to concentrate on the qualitative response variable of whether or not programme participants had been able to buy business assets over the last year. Given the characteristics of the data, we focused on the estimation of the probability of increasing the stock of business assets as a consequence of programme participation. Therefore, we estimated a probit model (Goldberger 1964) based on an underlying response variable y_i^* that was defined by the regression equation:

$$y_i^* = X_i\beta + u_i \tag{8.4}$$

where we could only observe a dummy variable y that takes the values

$y=1$ if $y_i^* > 0$ (if household i purchased business assets over the last year) (8.5)

$y=0$ otherwise

From the relationship between (8.4) and (8.5) we get

$$\text{Prob}(y_i = 1|X_i) = \int_{-\infty}^{X_i\beta} \phi(t)dt = \Phi(X_i\beta) \tag{8.6}$$

where $\phi(\cdot)$ and $\Phi(\cdot)$ are the density of the distribution function and the cumulative distribution function of the standard normal. Notice that the observed values captured in y follow a binomial distribution with probabilities depending on X_i. In other words, we assume that at least a group of independent variables contained in X_i explain the accumulation of business assets, $(y=1)$. In order to derive the marginal effects of the model[5], we estimated the effect of one unit change in the explanatory variables on the probability of accumulating business assets as follows:

$$ME = \frac{\partial P(y_i=1)}{\partial X_i} = \frac{\partial \Phi(X_i\beta)}{\partial X_i} \tag{8.7}$$

where the rates of change are computed in STATA at the means of the independent variables (Long and Freese 2003). We have also included in (8.4) the vector of financial markets characteristics, L_i, and the variable of interest C_i, as follows:

$$y_i = \alpha_y + X_i\beta_y + L_i\theta_y + C_i\delta + u_i^y \tag{8.8}$$

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[5] For a discussion of the derivation of the marginal effects for a probit equation see Greene (2003), Johnson and DiNardo (1997), Maddala (1999) or Wooldridge (2002).

where the parameter estimate δ measures the impact of *a relative change in the units of capital borrowed* on the probability of increasing the stock of business assets. For comparative purposes, we have also estimated equation (8.8) with I_i in substitution of C_i where δ will now measure the effect of *programme participation* on the probability of accumulating business assets. The results from the probit regressions are presented above in table 8.3. Before we begin the discussion of our findings, we exploit the properties of the ML estimators of the probit model in order to compute the Likelihood ratio test (LR) that takes the form

$$LR = -2\left[\ln \hat{L}_R - \ln \hat{L}_U\right] \tag{8.9}$$

where $\hat{L}_R$ and $\hat{L}_R$ are the log-likelihood functions that evaluate the restricted and unrestricted estimates, respectively. The restricted log-likelihood is

$$\ln L_0 = n\left[P \ln P + (1-P)\ln(1-P)\right] \tag{8.10}$$

where P is the proportion of observations with $y=0$ (Greene 2003). The LR test was conducted by computing the log-likelihood functions from the full model in equation 8.8, and the restricted model (equation 8.8 without the variable of interest C_i). Under the null hypothesis $Ho: \delta = 0$, i.e. the impact of credit on the probability of increasing the stock of business assets is *zero*.

The resulting LR test indicated that the effect of credit was significant at the 0.01 level for each of the case-study organisation: LR $\chi^2(1)=11.61$, $p<0.01$ in the case of Fincomun; LR $\chi^2(1)=7.54$, $p<0.01$ in the case of CAME; LR $\chi^2(1)=20.56$, $p<0.01$ in the case of Promujer, and LR $\chi^2(1)=31.06$, $p<0.01$ in the case of the pooled sample. We also found significant effects when we repeated the same procedure including I_i in substitution of C_i. In this sense, the robustness of the impact variable allowed us to concentrate, in section 8.1.2, on the results from the probit equation.

8.1.2 The impact of credit on the accumulation of business assets

As we were expecting, the slope coefficient of C_i reported positive signs and statistical significance when equation (8.8) was estimated for each of the case-study organisations; however, the effect was rather small. Other things held constant, the impact of a *relative change* of x% in the level of credit by programme participants at Fincomun was an increase in the probability of purchasing business assets of about 0.040x%, and the magnitude of this impact was slightly greater when the same equation was estimated for CAME (0.089x%) and Promujer (0.103x%). To illustrate the results, consider the case of a programme participant who applies for a credit 30% larger than the loan received in the previous credit cycle.

Based on the results from the regression equation, we can predict that, *ceteris paribus*, a percentage increase of 30% in the loan size will give a rise in the probability of purchasing business assets in the order of 1.2%, 2.7% and 3.1% in the cases of Fincomun, CAME and Promujer, respectively. In other words, the effect of a *relative change in the amount of capital borrowed* on the probability of increasing the stock of business assets was rather marginal. Since we have estimated equation (8.8) with I_i as explanatory variable, we were able to capture the impact of credit at the mean of the level of programme participation.

The econometric result suggest that treatment households borrowing from Fincomun had, on the *average*, a 50% higher chance to purchase business assets than the correspondent control group, and this percentage increased up to 72% and 84% for treatment households borrowing from CAME and Promujer, respectively. In order to investigate the effects over time, we consider an extension of equation (8.8) with the continuous explanatory variable, M_i (coded as MEMBERSHIP) which measures the number of years of programme participation. This equation takes the form

$$y_i = \alpha_y + X_i\beta_y + L_i\theta_y + M_i\delta + u_i^y \tag{8.11}$$

where the variables contained in X_i and L_i are the same as in (8.8), and M_i takes a value $M_i > 0$ for treatment households and $M_i = 0$ for control groups. Notice that

MEMBERSHIP is one of the instrumental variables employed in the Tobit selection equation, derived in section 7.4.1, which is correlated with LGMAXCREDIT that captures the upper limits of progressive lending, largely employed by credit programmes as an incentive device. In order to avoid collinearity problems, we have estimated (8.11) with M_i in substitution of C_i where M_i now measures the impact *of one additional year of programme participation*. The results from the probit equation are presented in table 8.4.

Table 8. 4: Probit estimation: the determinants of business assets accumulation
Dependent variable: Dummy variable = 1 if household i has purchased business assets (BUSASSETS)

	FINCOMUN		CAME		PROMUJER		Pooled sample	
	Coef	$\frac{\partial\Phi}{\partial X}$	Coef	$\frac{\partial\Phi}{\partial X}$	Coef	$\frac{\partial\Phi}{\partial X}$	Coef	$\frac{\partial\Phi}{\partial X}$
AVEDU	-0.033	-0.007	-0.169	-0.061	-0.298	-0.071	-0.076	-0.026
	(0.63)	(0.63)	(1.91)*	(1.91)*	(2.35)**	(2.35)**	(2.07)**	(2.07)**
HOWNER	-0.120	-0.024	1.192	0.423	-2.434	-0.463	0.161	0.057
	(0.19)	(0.19)	(1.59)	(1.59)	(2.50)**	(2.50)**	(0.60)	(0.60)
HESTATE	-0.412	-0.077	-1.595	-0.334	0.215	0.054	-0.195	-0.066
	(0.95)	(0.95)	(1.44)	(1.44)	(0.31)	(0.31)	(0.68)	(0.68)
TIMEBUS	0.072	0.015	-0.041	-0.015	-0.117	-0.028	-0.003	-0.001
	(1.48)	(1.48)	(0.70)	(0.70)	(2.04)**	(2.04)**	(0.14)	(0.14)
WWORKER	-0.543	-0.112	-0.984	-0.352	-0.298	-0.071	-0.336	-0.117
	(2.60)***	(2.60)***	(2.21)**	(2.21)**	(0.60)	(0.60)	(1.82)*	(1.82)*
DEPENDRATIO	2.920	0.600	2.178	0.780	10.584	2.535	1.392	0.486
	(2.78)***	(2.78)***	(1.80)*	(1.80)*	(2.70)***	(2.70)***	(2.42)**	(2.42)**
AGE	-0.054	-0.011	-0.099	-0.035	-0.073	-0.017	-0.034	-0.012
	(2.15)**	(2.15)**	(2.11)**	(2.11)**	(1.98)**	(1.98)**	(2.56)**	(2.56)**
WOMAN	-0.260	-0.054	-1.381	-0.390			-0.365	-0.121
	(0.46)	(0.46)	(1.90)*	(1.90)*			(1.39)	(1.39)
MARITAL	-0.197	-0.038	-1.033	-0.289	1.813	0.543	-0.482	-0.155
	(0.23)	(0.23)	(1.36)	(1.36)	(2.58)***	(2.58)***	(1.73)*	(1.73)*
ROSCAS	1.367	0.304	1.356	0.421	1.535	0.331	0.763	0.257
	(2.27)**	(2.27)**	(2.07)**	(2.07)**	(2.00)**	(2.00)**	(3.02)***	(3.02)***
FORMALCREDIT	0.417	0.068	-1.300	-0.483	-2.639	-0.809	-0.399	-0.149
	(0.40)	(0.40)	(1.09)	(1.09)	(1.97)**	(1.97)**	(0.95)	(0.95)
MONEYLENDER	-0.997	-0.300	-1.571	-0.563	-1.466	-0.478	-0.913	-0.348
	(1.14)	(1.14)	(2.24)**	(2.24)**	(1.85)*	(1.85)*	(2.23)**	(2.23)**
MEMBERSHIP	0.445	0.091	0.043	0.015	2.085	0.499	0.200	0.070
	(1.99)**	(1.99)**	(0.35)	(0.35)	(4.56)***	(4.56)***	(2.43)**	(2.43)**
CONSTANT	1.207		7.911		0.025		2.105	
	(0.95)		(2.52)**		(0.01)		(2.46)**	
Observations	55	55	46	46	47	47	148	148
LR Chi-squared	24.24	24.24	11.70	11.70	39.20	39.20	31.82	31.82
Pseudo R-squared	0.43	0.43	0.29	0.29	0.67	0.67	0.22	0.22
Log likelihood	-17.85	-17.85	-22.00	-22.00	-10.47	-10.47	-74.70	-74.70

Robust z statistics in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%

As we expected, the parameter estimate of the impact variable, M_i, that measures the length of programme participation, reported positive signs for each of the case-study organisations, however, it was only statistically different from zero in the

cases of Fincomun and Promujer. Other things held constant, the marginal effect of x additional years of programme participation on the probability of increasing the stock of business assets was in the order of 0.091x% and 0.499x% for programme participants at Fincomun and Promujer, respectively, whereas using the pooled sample, the impact was reported to be in the order of 0.070x%. An interesting structural property of equation (8.11) is that allows us to estimate the predicted probabilities of y_i for an *absolute change* in programme participation, i.e. for every additional year of membership. To illustrate this, consider the case of the predicted probabilities for four different groups of borrowers:

- Group 1 is formed of women borrowing only from the microfinance organisation to finance their enterprise activities, i.e. having the qualitative response variables FORMALCREDIT, MONEYLENDER and ROSCAS equal to zero.

- Group 2 is formed of women borrowing from the microfinance organisation and participating in rotating credit and savings associations as another source of financing, i.e. with the independent variables FORMALCREDIT and MONEYLENDER with zero values, and the variable ROSCAS equal to 1.

- Group 3 is formed of women borrowing from the microfinance organisation and other lenders such as savings and credit co-operatives and moneylenders, but *not* using voluntary savings mechanisms as a source of financing i.e. with the independent variables FORMALCREDIT and MONEYLENDER equal to 1, and ROSCAS equal to zero.

- Finally, Group 4 is formed of women borrowing from the microfinance organisation, other lenders (institutional and informal), as well as participating in rotating savings and credit associations, i.e. with the independent variables FORMALCREDIT, MONEYLENDER and ROSCAS equal to 1.

Notice that control groups for the first category of borrowers (group 1) is formed of women who are likely to finance their businesses with savings largely kept at home, or with occasional loans from relatives, friends or suppliers. Women who intensively use rotating savings and credit associations as the main source of

financing form the control group in the second category. They could also keep some savings at home or get occasional loans from relatives, friends or suppliers.

Table 8. 5: Sources of funding of income-generating activities by group of female borrowers

	Control group	Treatment group
Group 1	Savings at home, and occasional loans from relatives, friends or suppliers, i.e. $MEMBERSHIP = 0$, $ROSCAS_i = 0$, $FORMALCREDIT_i = 0$ and $MONEYLENDER_i = 0$	Only loans from MFI i.e. $MEMBERSHIP_i > 0$, $ROSCAS_i = 0$, $FORMALCREDIT_i = 0$ and $MONEYLENDER_i = 0$
Group 2	Savings in rotating savings and credit associations and occasional loans from relatives, friends and suppliers $MEMBERSHIP = 0$, $ROSCAS_i = 1$, $FORMALCREDIT_i = 0$ and $MONEYLENDER_i = 0$	Loans from the MFI and savings in rotating savings and credit associations, i.e. $MEMBERSHIP_i > 0$, $ROSCAS_i = 1$ $FORMALCREDIT_i = 0$ and $MONEYLENDER_i = 0$
Group 3	Loans from institutional lenders and moneylenders. Probably savings at home, i.e. $MEMBERSHIP = 0$, $ROSCAS_i = 0$, $FORMALCREDIT_i = 1$ and $MONEYLENDER_i = 1$	Loans from the MFI, and institutional lenders and moneylenders, i.e. $MEMBERSHIP_i > 0$, $ROSCAS_i = 0$, $FORMALCREDIT_i = 1$ and $MONEYLENDER_i = 1$
Group 4	Loans from institutional lenders and moneylenders and saving in rotating savings and credit associations, i.e. $MEMBERSHIP = 0$, $ROSCAS_i = 1$, $FORMALCREDIT_i = 1$ and $MONEYLENDER_i = 1$	Loans from the MFI, and institutional lenders and moneylenders, and savings in rotating savings and credit associations, i.e. $MEMBERSHIP_i > 0$, $ROSCAS_i = 1$ $FORMALCREDIT_i = 1$ and $MONEYLENDER_i = 1$

On the contrary, women in the control group of the third category of borrowers are not using voluntary savings mechanisms as a source of funding but instead; they borrow from moneylenders and institutional lenders. Finally, the control group of the last category of borrowers are likely to be extensively using savings mechanisms as well as borrowing from moneylenders and institutional lenders to finance their business. They may also keep savings at home and get occasional loans from relatives and friends (see table 8.5).

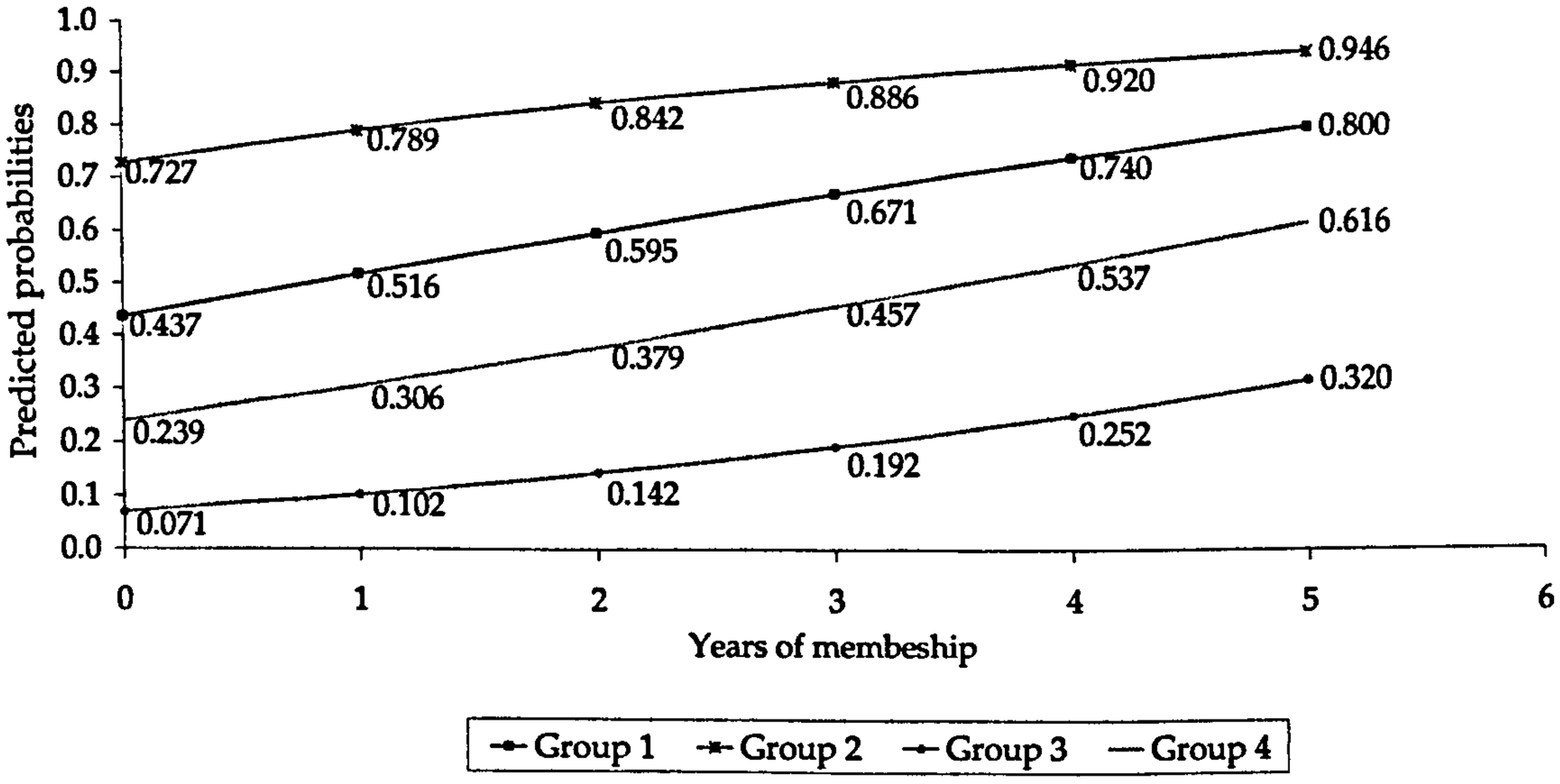
8.1.3 The impact of *programme participation* over time

We have set the predicted probabilities using the pooled sample, and holding the rest of the variables at the mean. The results are shown in figure 8.1. As we expected, the slope coefficient of M_i for each group of borrowers showed an

upward sloping curve towards the unity, reflecting an increasing predicted probability of having impacts on business assets as the length of programme participation increased; however, the magnitude of the impact was substantially different between the groups.

For example, women with one year of programme participation and borrowing *only* from the microfinance organisation (group 1) reported a probability of increasing the stock of business assets in the order of 52%, $\Pr(y_i = 0.52 | M_i = 1)$, relative to $\Pr(y_i = 0.44 | M_i = 0)$ of the control group, whereas women in the same category but with 5 years of membership reported a much larger figure, $\Pr(y_i = 0.80 | M_i = 5)$.

Figure 8. 1 Predicted probabilities of increasing the stock of business assets per length of programme participation



In this sense, programme participants that used mainly credit from the microfinance organisation as the source of financing enterprising ventures were able to double the chances of accumulating business assets after five years of programme participation, *ceteris paribus*. Interestingly, women borrowing from the credit programme and participating in ROSCAS (group 2) reported the largest predicted probability between the four groups.

Notice that the distance between the predicted probabilities of control households having a frequent use of voluntary savings as a source of financing and that of the control households with no source of funding was in the order of 30%. In fact, the

results from the probit equation (presented in table 8.4) revealed a large and statistically significant effect of the individual choice of participating in rotating savings and credit associations as another source of financing. Other things held constant, the increased probability of purchasing business assets was in the order of 30%, 42% and 33% for programme participants at Fincomun, CAME and Promujer, respectively. These results clearly show the fundamental role of voluntary savings as a means of broadening the portfolio of possibilities for the poor.

On the contrary, women borrowing from the microfinance organisation *and* other lenders (group 3) reported, not surprisingly, the lowest slope coefficients of the impact variable. For example, borrowers with one year of programme participation and borrowing from moneylenders reported a predicted probability of purchasing business assets in the order of $\Pr(y_i = 0.10 \mid M_i = 1)$, and this figure increased by only 20% after 5 years of membership. It would seem that high levels of indebtedness, coming from various sources of financing, reduce the probability of having impacts on business assets.

The results from the probit equation actually showed a large and negative effect, and statistically significant levels of the individual choice of borrowing from moneylenders, in particular when equation (8.11) was estimated for CAME (-0.563) and Promujer (-0.478) (see table 8.4). Qualitative information collected from interviews revealed that the decision of borrowing from moneylenders emerged mainly from three sources: the first was related to the problems of micro-rationing that often pushed households to borrow from these indigenous mechanisms. Take the following cases:

Case study 8.1

Mrs I is a single mother who has been living, with her daughter, in the Chalco Valley. She started the business of selling shoes at street markets with 5000 pesos that she borrowed from a local moneylender. That agent charged an interest rate of 7% per month, which was based on the outstanding loan balance. When we asked her the reasons of borrowing from the moneylender she answer: *"I borrowed from this person because I did not have anyone who could help me to start my business, and I did not know about CAME at the time. Thanks God after two months I managed to pay back the credit…"* Interview: Int1-03082004, minute: 12:19.

Case study 8.2

Mrs. G and her husband are engaged in the business of buying and selling second hand clothes at street markets. They work on average 10 hours per day, 4 times per week. Although she had been member of CAME for almost 6 years, she was often forced to borrow from a local moneylender to fulfil her financial needs. She said: *"When I need extra money for my business, I borrowed from the moneylender. In three days I get the money. He* (the moneylender) *knows very well that I payback the loan as soon as I get the credit from CAME. He actually does not charge me interests over interests…"* Interview: Int2-03102004, minute: 31:59.

Other interviewees (e.g. Int3-03102004; int2-02242004; int5-10042004; Int2-13042004) also reported micro-rationing. The second reason to borrow from moneylenders was related to a poor financial education that often caused loan mismanagement and ultimately high debts. Take the following case:

Case study 8.3

Mrs F, 41 year of age, is married with 7 children. She and her husband are engaged in the businesses of selling wood products and other building materials as well as having a small grocery shop in a premise attached to their house in the Chalco Valley. She reported, however, a reduction in capital investment and revenues due to over-indebtedness. She said: *"Everything started because I borrowed 15,000 pesos from CAME to buy raw material for my business. The problem was that my business has not been doing well and I only managed to save 10,000 pesos. That's why I went to see the moneylender. I borrowed 5000 pesos from her* (the moneylender) *to repay the full amount to CAME. In the next cycle, I borrowed again 15,000 pesos from CAME but now I had to payback 5000 plus interests* (15% per month) *to the moneylender. You see, I had less than 10,000 to invest in my business. After four months I just saved 8,000 and I had to go back to moneylender to borrow 7,000. Now I owe the moneylender 45,000, my business is empty and I don't know what to do…"* Interview: Int2-03172004, minute: 15:45.

The third reason of borrowing from moneylenders was related to unexpected events, external shocks that hit the poor in the urban context. These shocks took the form of idiosyncratic events such as accidents, ill health or death of a family member, or were related to street violence and crime. For example, take the case studies 8.4 and 8.5 presented below:

Case study 8.4

Mrs MR, 53 years of age, lives with her husband and 3 children in a neighbourhood located to the Eastern periphery of Tula City, in the state of Hidalgo. A few years ago, she was forced to borrow from a moneylender in order to cope with an external shock. She narrated that event as follows: *"One of my children had an accident in one of his eyes and I needed 10,000 pesos to send him to the doctor. I had no one to help me. I was desperate. Everybody knows me very well over here you know, so I went to see my neighbour who lends money and she told me that I could get the money if I gave her, in guarantee, the title deeds of a piece of land that I had next to my house. She said 'who is going to pay me back if you go back to Zacatecas* (a town in the North of the country*). At that time I had some problems to repay the loan, and in the end I lost my land. I think this is what she (the moneylender) actually wanted because she sold later on the land for a price 10 times the credit I got from her..."* Interview: Int1-10042004, minute: 16:48.

Case study 8.5

Mrs M lives with her husband in San Miguel Teotongo, in the Iztapalapa District to the Eastern periphery of Mexico City. During an interview she reported the following: *"A few months ago, when I was on the 'micro'* (bus) *on my way to 'la Central de Abastos'* (the largest wholesale market in Mexico City), *I was assaulted by a gang of bus robbers who took the money I had to buy supplies for my business. I am 'tianguista'* (street vendor), *you know. They left me with no money even to payback the weekly instalment to Fincomun. I went to see the moneylender to borrow 5000 pesos. He actually wanted the title deeds of my house. Can you believe it? He charged me 20% every month. I will never do it again. My husband helped me to payback the loan. I took money from here and from there, I stopped buying meat and with only beans* (as main meal) *we finally paid back the loan to the moneylender and Fincomun. The problem is that now they* (credit officers) *have frozen my credit line* (in Fincomun) *for having delayed the repayments for two months. I have no capital for my business and it looks very empty…".* Interview: Int1-01092004, minute 08:15.

Thus, borrowing from moneylenders was seen as a coping mechanism that helped households to deal with these shocks in the short run; however, given the insecure income of the poor and the interest rate charged by these agents[6], it was not surprising to see a decreasing probability of building business assets as a result of borrowing from moneylenders. In fact, in some cases, (e.g. Int3-29012004, Int1-10042004, Int1-15042004, int2-15042004) households were forced to sell some of their assets in order to pay back the loans. This situation seriously exacerbated the vulnerability of the poor.

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[6] The average interest rate charged by moneylenders was reported to be in the order of 145% on annum basis.

8.1.4 The impact of *programme participation* on business creation and financial stability

So far, we have focused on the impacts of microfinance at the business level, looking in particular at the level of profitability and asset building; however our data has also reported effects of programme participation on business creation. A statistically significant association in a cross-tabulation between treatment and control groups at CAME and Promujer was found in relation to the initial sources of funding to start an income-generating activity (see table 8.6). The empirical evidence reveals that around 30% of enterprising households at CAME and 42% of women participating at Promujer began their businesses with seed capital borrowed from the microfinance organisation. The small percentage and insignificant levels in the cross-tabulation for participants at Fincomun can be explained by the lending restrictions that the organisation has imposed on applicants with no income-generating activities or with less than one year of business experience. We also find, in the particular case of Promujer, a large percentage (92%) and a significant association at the 0.1 level in the cross-tabulation that measured the qualitative response of *"having my own business"* as the main motive of engaging in income generating activities.

The impact on *business creation* can be particularly important in the context of urban poverty, where income sources from primary economic activities such as agriculture, cattle breeding or poultry farming are practically non existent, and where the low levels of formal instruction amongst the poor[7] usually leave these households out of the market for skilled labour, which is usually better paid, and where the opportunities of training and progressive wages over time exist. Furthermore, despite the recent institutional efforts to reduce gender-wage gaps and increase the number of women entering the labour market, structural gender inequalities still exist. In a recent study (World Bank 2006) it was found that women continue to earn about 90% of men's wage, and the labour force participation of women reached only 43% in comparison to 83% of men.

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[7] The average formal instruction amongst programme participants at Fincomun was 7 years, whereas at CAME and Promujer, it just reached 6.6 years, respectively.

Table 8. 6 The association between programme participation and business creation

	FINCOMUN		CAME		PROMUJER		Pooled sample	
Reasons for being in business	Control	Treated	Control	Treated	Control	Treated	Control	Treated
• Improving income	57.89	44.44	33.33	53.57	23.81	61.54++	32.76	56.67++
• Having own business	47.37	66.67	72.22	25++	71.43	92++++	63.79	61.11
• Lost previous job	10.53	5.56	22.21	7.14	0	3.85	10.34	5.56
Sources of initial capital								
• Inheritance	5.26	8.33	27.78	7.14++++	14.29	23.08	15.52	12.22
• Credit	10.53	30.56++++	44.44	42.86	19.05	53.85+++	24.14	41.11+++
• Savings	84.21	80.56	72.22	32.14	61.90	50	72.41	56.67++++
• Assets sold	5.26	8.33	5.56	0	0	0	3.45	3.33
• Remittances	0	5.56	5.53	7.14	9.52	3.85	5.17	5.56
If savings, in								
• Formal institutions	0	0	11.10	0++++	9.51	3.85	6.90	1.11
• MFI	0	0	0	3.57	0	0	0	1.10
• ROSCAS	84.21	80.56	66.67	32.14+++	52.38	46.17	67.24	55.56
If credit, from								
• Institutional lenders	5.26	2.78	5.57	3.57	0	0	3.45	2.22
• MFI	0	5.56	5.58	28.57++++	4.76	42.31++	3.48	23.33+
• Informal lenders (moneylender)	5.24	22.22	38.89	14.29++++	14.29	15.38	18.97	17.78

The statistically significant association in the cross-tabulations are indicated by the Chi-square values for the cell as a whole at 0.001 (+); 0.01 (++); 0.05 (+++); and 0.1 (++++) levels of significance.

To some extent this may explain why programme participants, in particular women, perceived entrepreneurial activities as a fundamental means of improving household income. For example, 45% of female members at Fincomun stated to have engaged in income generating activities in order to improve their income, and this percentage increase up to 54% and 62% amongst borrowers at CAME and Promujer, respectively.

Although the cross-tabulations give us important insights into the reasons of programme participation, it does not provide further information regarding the role that participation in a credit programme plays in the relationship between income-generating activities and financial stability. Our quasi-experiment collected a discrete response variable that captured information about households' perceptions towards their financial situation after being engaged in income-generating activities. This variable (coded as STABILITY) was computed with three qualitative responses that were ordered in nature. Since the use of the probit equation (8.8) would fail to account for the ordinal values of STABILITY, we decided to estimate an ordered probit (McKelvey and Zavoina 1975) built as an extension of the latent regression equation (8.4) that takes the form

$$y_i^* = X_i\beta + \varepsilon_i \tag{8.12}$$

where it is only observed a discrete variable y that takes the values

$$\begin{aligned} &y=0 \quad \text{if } y_i^* \le 0 \text{ (if financial situation is worse)} \\ &y=1 \quad \text{if } 0 < y_i^* \le \mu_1 \text{ (if financial situation is unchanged)} \\ &y=2 \quad \text{if } \mu_1 < y_i^* \le \mu_2 \text{ (if financial situation is better)} \end{aligned} \tag{8.13}$$

and where the μs and β are the unknown parameters. The continuous latent variable can be thought as the *propensity* of households to perceive a better financial situation as a consequence of being engaged in income-generating activities. Greene (2003:784) shows the estimated probabilities for (8.13) as follows:

$$\begin{aligned}
\text{Prob}(y=0|X_i) &= 1-\Phi(X_i\beta) \\
\text{Prob}(y=1|X_i) &= \Phi(\mu-X_i\beta)-\Phi(-X_i\beta) \\
\text{Prob}(y=2|X_i) &= 1-\Phi(\mu-X_i\beta)
\end{aligned} \tag{8.14}$$

where the corresponding marginal effects are

$$\begin{aligned}
\frac{\partial\ \text{Prob}(y=0|X_i)}{\partial\ X_i} &= -\phi(X_i\beta)\beta \\
\frac{\partial\ \text{Prob}(y=1|X_i)}{\partial\ X_i} &= [-\phi(X_i\beta)-\phi(\mu-X_i\beta)]\beta \\
\frac{\partial\ \text{Prob}(y=2|X_i)}{\partial\ X_i} &= -\phi(\mu-X_i\beta)\beta
\end{aligned} \tag{8.15}$$

Notice that $\phi(\cdot)$ and $\Phi(\cdot)$ are the density of the distribution function and the cumulative distribution function of the standard normal previously defined in equation (8.6). We have included in (8.13) X_i and L_i as the same vectors of household and credit market characteristics, respectively, and C_i as the impact variable of interest:

$$y_i = \alpha_y + X_i\beta_y + L_i\theta_y + C_i\delta + \varepsilon_i^y \tag{8.16}$$

Equation (8.16) has been also estimated with I_i, in substitution of C_i, for comparative purposes. Before we began the discussion on the findings, we proceed to compute a LR test by comparing, as in (8.9), the log-likelihood function from the unrestricted model with that of the restricted model. Under the null, $Ho: \delta = 0$, i.e. the impact of credit on the propensity of having a *better* financial situation after being engaged in income-generating activities is *zero*.

The resulting LR test indicated that the effect of credit was significantly different from zero in each of the case-study organisation: LR $\chi^2(1)=7.18$, $p<0.01$ in the case of Fincomun; LR $\chi^2(1)=11.56$, $p<0.01$ in the case of CAME; LR $\chi^2(1)=4.50$, $p<0.05$ in the case of Promujer, and LR $\chi^2(1)=11.63$, $p<0.01$ in the case of the pooled sample. We also found significant effects when the same procedure was

repeated including I_i in substitution of C_i as the explanatory variable: LR $\chi^2(1)=6.36,\ p<0.05$ in the case of Fincomun; LR $\chi^2(1)=9.03,\ p<0.01$ in the case of CAME; LR $\chi^2(1)=4.54,\ p<0.05$ in the case of Promujer, and LR $\chi^2(1)=11.75,\ p<0.01$ in the case of the pooled sample. The robustness of the impact variable allowed us to concentrate on the results from the ordered probit regression.

As Long and Freese (2003:178) have pointed out, it is important to note that although the slope of the marginal effects indicates the impact of a *relative change* in C_i, it does not *necessarily* correspond to the amount of change in the probability for a change of one unit in C_i. However, since we assume that equation (8.16) follows a linear probability curve, the marginal effects can be used to measure the impact of a *one percentage point change* in the maximum amount of capital borrowed in the last credit cycle on the probability of changing households perceptions towards a better financial situation.

Alternatively, when (8.16) was estimated with I_i as the impact variable, the marginal effects captured the impact of a change in I_i from the starting value zero to the ending value 1, i.e., capture the impact when I_i changed from no participation to participation, on the predicted probabilities of an outcome m, $[\Delta \Pr(y=m|I_i)]/\Delta I_i$, where m takes the value zero when households reported a worse financial situation; 1 when households perceived a unchanged financial situation, and 2 when households reported a better financial situation. All other continuous variables were held constant at their means. The results from the ordered probit are presented in table 8.7.

As we expected, the slope coefficient of C_i reported statistical significance in the predicted probabilities of households perceptions towards a better financial situation when the ordered probit model was estimated for each microfinance organisation under examination.

Table 8. 7 The impact of credit on financial stability

Dependent variable: Categorical variable about financial situation (STABILITY)	FINCOMUN		CAME		PROMUJER		Pooled sample	
	Ci as explanatory variable a/	Ii as Explanatory variable b/	Ci as explanatory variable a/	Ii as explanatory variable b/	Ci as explanatory variable a/	Ii as explanatory variable b/	Ci as explanatory variable a/	Ii as explanatory variable b/
Ordered probit $\frac{\partial \text{ Prob}(y=2\|X_i)}{\partial X_i}$ = Better	0.046 (2.82)***	0.402 (2.82)***	0.091 (2.96)***	0.616 (3.70)***	0.050 (2.44)**	0.413 (2.65)***	0.032 (3.31)***	0.287 (3.49)***
Ordered probit $\frac{\partial \text{ Prob}(y=1\|X_i)}{\partial X_i}$ = Unchanged	-0.033 (2.17)**	-0.244 (2.37)**	-0.060 (2.03)**	-0.290 (2.39)**	-0.049 (2.42)**	-0.403 (2.67)***	-0.019 (2.70)***	-0.162 (3.00)***
Ordered probit $\frac{\partial \text{ Prob}(y=0\|X_i)}{\partial X_i}$ = Worse	-0.012 (2.23)**	-0.159 (2.08)**	-0.031 (2.16)**	-0.326 (2.25)**	-0.0005 (0.56)	-0.009 (0.65)	-0.012 (3.32)***	-0.125 (3.12)***

Absolute value of t statistics in parentheses. * significant at 10%; ** significant at 5%; *** significant at 1%..
a / Ci: logarithm of the maximum amount of credit borrowed (LGMAXCREDIT); b/ Ii: LGMAXCREDIT is transformed into a dummy variable = 1 for treatment households.

Other things held constant, the impact of a relative change in x% in the upper limits of credit from Fincomun was an *increasing* probability of having a *better* financial situation in the order of 0.046x%, and the magnitude of the impact was relatively greater when the same equation was estimated for programme participants at CAME (0.091x%) and Promujer (0.050x%). The ordered probit also reported statistical significance and a *decreasing* probability in households' perceptions of having an *unchanged* or *worse* financial situation after being engaged in income generating activities.

In the case of borrowers at Fincomun, the decreasing probability was in the order of (-0.033x%) for a similar financial situation and (–0.012x%) for a worse financial situation, whereas at CAME, and Promujer these predicted probabilities were in the order of -0.060x% (for unchanged situation) and -0.031x% (for worse situation), and -0.049x% (for unchanged situation) and -0.0005x% (for worse situation), respectively. Since we also estimated equation (8.16) with I_i as explanatory variable, we were able to capture the impact of credit at the *mean* of the level of programme participation.

The results suggest that treatment households borrowing from Fincomun had, on the *average*, a 40% higher probability to have a better financial situation than the correspondent control group, whereas in the case of treatment households at CAME and Promujer, this probability was in the order of 62% and 41%, respectively. In order to estimate the impacts of credit in the long run, we followed the same procedure as in section 8.1.2 and estimated equation (8.16) with the continuous variable M_i, in substitution of C_i, as follows:

$$y_i = \alpha_y + X_i\beta_y + L_i\theta_y + M_i\delta + \varepsilon_i^y \tag{8.17}$$

where M_i captures the number of years of programme participation, taking a value $M_i > 0$ for treatment households and $M_i = 0$ for control groups. Notice that the parameter estimate δ will now measure the impact of *one additional year of programme participation* on the predicted probability of the perceived financial situation.

Table 8. 8 Ordered probit: Predicted probabilities of the perceived financial situation per length of programme participation
Dependent variable: Category of households perceptions about financial situation = 2 if better; =1 if unchanged; = 0 if worse (STABILITY)

	FINCOMUN			CAME			PROMUJER			Pooled sample		
	$\partial \text{Prob}(y=m\|X_i)/\partial X_i$			$\partial \text{Prob}(y=m\|X_i)/\partial X_i$			$\partial \text{Prob}(y=m\|X_i)/\partial X_i$			$\partial \text{Prob}(y=m\|X_i)/\partial X_i$		
	$m=2$	$m=1$	$m=0$	$m=2$	$m=1$	$m=0$	$m=2$	$m=1$	$m=0$	$m=2$	$m=1$	$m=0$
AVEDU	-0.008	.005	.003	.035	-.021	-.013	-0.057	0.056	0.001	-0.009	0.005	0.004
	(0.41)	(0.41)	(0.39)	(1.12)	(0.96)	(1.24)	(2.58)***	(2.55)***	(0.56).	(0.66).	(0.65).	(0.65).
HOWNER	-.035	.025	.010	-.309	.204	.105	0.312	-0.306	-0.006	0.063	-0.037	-0.027
	(0.16)	(0.16)	(0.17)	(1.52)	(1.38)	(1.37)	(1.77)*	(1.76)*	(0.63).	(0.66).	(0.67).	(0.63).
HESTATE	.332	-.200	-.132	-.623	.511	.112	-0.369	0.365	0.004	-0.050	0.030	0.019
	(2.16)**	(2.53)**	(1.34)	(5.58)***	(4.83)***	(1.96)**	(3.78)***	(3.75)***	(0.63).	(0.49).	(0.47).	(0.52).
TIMEBUS	.030	-.021	-.009	-.010	.006	.004	-0.023	0.023	0.000	0.002	-0.001	-0.001
	(1.69)*	(1.48)	(1.74)*	(0.69)	(0.68)	(0.66)	(2.92)***	(2.86)***	(0.58).	(0.26).	(0.26).	(0.27).
WWORKER	-.001	.001	.000	.046	-.028	-.018	-0.345	0.341	0.003	0.009	-0.006	-0.004
	(0.03)	(0.03)	(0.03)	(0.30)	(0.29)	(0.30)	(2.74)***	(2.72)***	(0.56).	(0.14).	(0.14).	(0.14).
DEPENDRATIO	.146	-.102	-.043	1.058	-.646	-.411	1.25	-1.240	-0.013	0.202	-0.120	-0.082
	(0.46)	(0.46)	(0.44)	(2.27)**	(1.83)*	(1.77)*	(2.25)**	(2.21)**	(0.59).	(0.97).	(0.97).	(0.94).
AGE	-.023	.016	.007	-.003	.002	.001	-0.024	0.024	0.000	-0.016	0.009	0.006
	(2.87)***	(2.34)**	(2.23)**	(0.36)	(0.37)	(0.34)	(3.28)***	(3.20)***	(0.59).	(3.39)***	(2.93)***	(3.08)***
WOMAN	.057	-.040	-.017	-.524	.379	.145				-0.082	0.050	0.032
	(0.34)	(0.35)	(0.33)	(3.23)***	(2.47)**	(2.31)**				(0.81).	(0.78).	(0.85).
MARITAL	.206	-.133	-.073	-.355	.261	.094	0.187	-0.185	-0.003	-0.064	0.039	0.025
	(1.10)	(1.16)	(0.92)	(2.21)**	(1.98)**	(1.68)*	(0.99).	(0.99).	(0.49).	(0.73).	(0.72).	(0.75).
ROSCAS	.056	-.039	-.017	-.021	.013	.008	0.146	-0.145	-0.001	0.022	-0.013	-0.009
	(0.41)	(0.41)	(0.40)	(0.14)	(0.14)	(0.14)	(1.14).	(1.13).	(0.57).	(0.27).	(0.27).	(0.27).
FORMALCREDIT	-.614	.042	.572	-.199	.088	.111	0.231	-0.231	-0.001	-0.159	0.079	0.080
	(5.76)***	(0.25)	(2.36)**	(0.58)	(1.11)	(0.40)	(2.71)***	(2.71)***	(0.51).	(0.73).	(0.95).	(0.59).
MONEYLENDER	-.412	.179	.233	-.299	.097	.203	-0.777	0.642	0.135	-0.303	0.122	0.182
	(1.43)	(2.73)***	(0.78)	(1.53)	(1.20)	(0.88)	(5.67)***	(4.79)***	(1.03).	(2.1)**	(3.75)***	(1.40).
MEMBERSHIP	.098	-.069	-.029	.120	-.073	-.047	0.240	-0.238	-0.002	0.053	-0.032	-0.022
	(2.42)**	(2.11)**	(1.91)*	(2.79)***	(1.95)*	(2.20)**	(2.67)***	(2.66)***	(0.55).	(2.31)**	(2.13)**	(2.23)**
Observations		54			40			47			141	
Wald Chi-squared		38.27			24.42			34.23			24.08	
Prob > Chi-squared		0.0003			0.0275			0.0006			0.0304	
Pseudo R-squared		0.2534			0.2149			0.471			0.0867	
Log likelihood		-36.9228			-31.7313			-20.4329			-119.6012	

Robust z statistics in parentheses. * significant at 10%; ** significant at 5%; *** significant at 1%

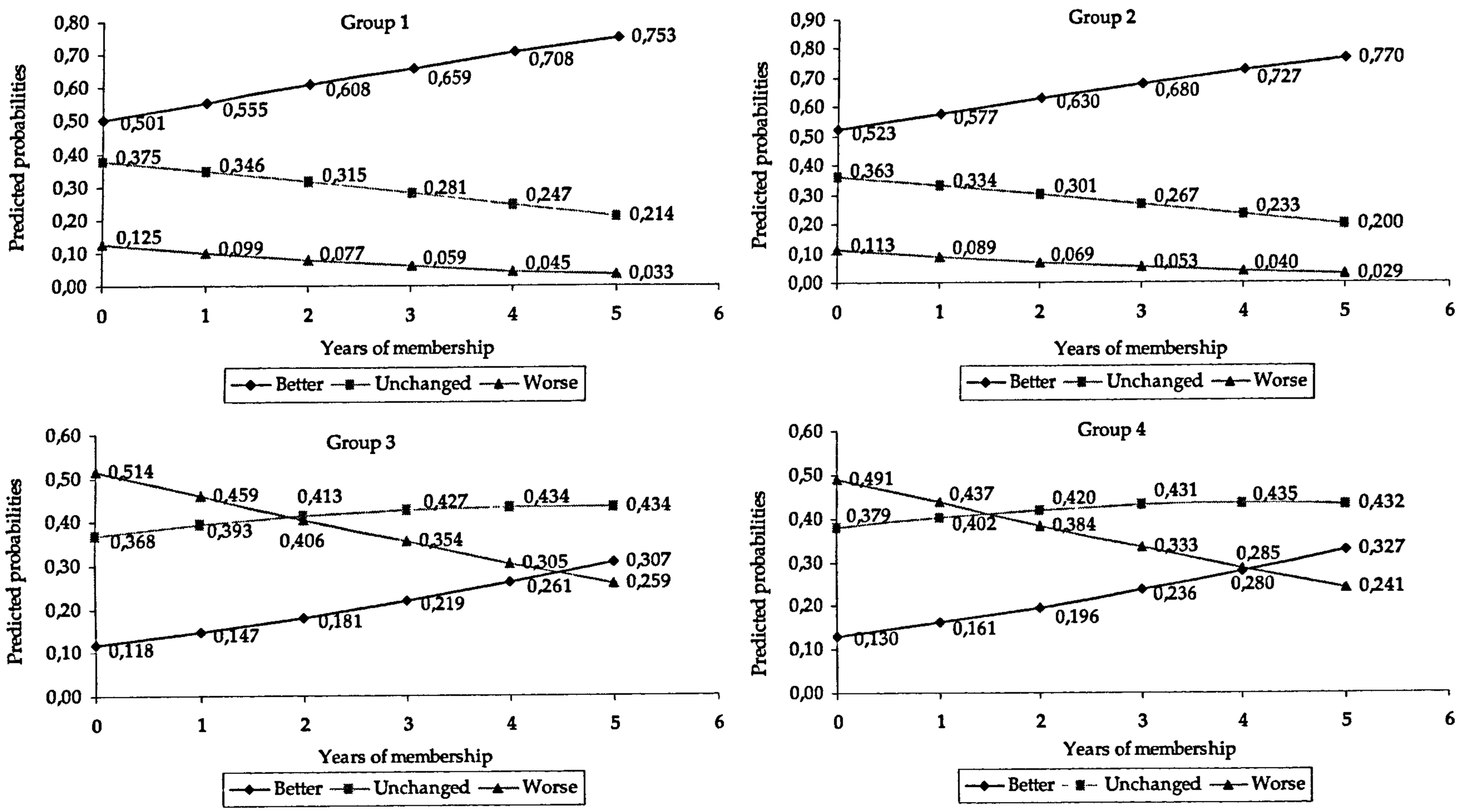
The results from the ordered probit equation are presented in table 8.8. As expected, the parameter estimate of the impact variable M_i denoted by MEMBERSHIP, reported a positive sign and statistical significance different from zero in each of the three case-study organisations under analysis. In the case of Fincomun, for example, the effect of one additional year of programme participation on the predicted probabilities of perceiving a better financial situation was in the order of 9.8% and the magnitude of this effect was relatively higher when the same estimation was conducted amongst programme participants at CAME (12%) and Promujer (24%). Similarly, we observed a decreasing predicted probability of having a worse financial situation as a consequence of participating in the three microfinance programmes: -3% at Fincomun, -4.7% at CAME and –0.2% at Promujer.

Notice that equation (8.17) shares the same structural properties as equation (8.11), which enables us to estimate the effect of programme participation for every additional year of membership. We have followed the estimation procedure of section 8.1.2, by computing the predicted probabilities of four different groups of female borrowers as described in table 8.4. We have used the pooled sample for the estimation, holding the rest of the variables at the mean. The results are presented in figure 8.2.

To begin with, we observed an upward sloping predicted probability curve from female borrowers taking loans *only* from the microfinance organisation, i.e. with no loans from institutional lenders, moneylenders or rotating savings and credit associations (Group 1), suggesting that *ceteris paribus*, the effect of credit on the overall financial situation was likely to be greater in the long run.

On the average, 50% of women in that group were likely to report having a better financial situation after one year of membership, and the trend increased over time up to the level of 75% after 5 years of membership. On the contrary, those women in the same group whose perceptions about their financial situation was negative (or worse) reported a decreasing probability over time, from 9% in the first year down to 3% when they reached the fifth year of membership. This evidence supports the assumption of positive impacts of programme participation over time.

Figure 8. 2 Predicted probabilities of households perceptions about financial situation per length of programme participation



A similar pattern, but with larger coefficients, was reported amongst women borrowing from the microfinance organisation *and* using extensively rotating savings and credit associations as another source of financing (Group 2). The probability of perceiving a better financial situation after one year of membership was in the order of 57% and this proportion increased up to 77% after 5 years of participation. Similar to Group 1, the percentage of women reporting a worse financial situation was small and decreasing vis-à-vis the length of membership.

It is interesting to observe that women who largely depended on credit, i.e. those borrowing from the microfinance organisation, institutional lenders and moneylenders (Group 3), reported the lowest probability of improving their financial situation.

For example, borrowers with one year of programme participation and borrowing from moneylenders and savings and credit co-operatives reported a predicted probability of having a better financial situation in the order of 15%, and even after 5 years of membership, this likelihood increased by only 15%. It is not surprising; therefore, that almost half of poor women borrowing from several sources reported a probability of having a worse financial situation after the first year of programme participation. When we estimated the ordered probit we found that, other things held constant, the effect of credit from moneylenders was negative and statistically different from zero using the pooled sample in the estimation (see table 8.8). In other words, borrowing from moneylenders was likely to increase households' vulnerability that worsened the financial situation.

These findings are in line with the empirical evidence found in section 8.1.3 regarding the negative impact of credit from informal agents on the accumulation of business assets. Thus, although moneylenders may represent a mechanism to cope with external shocks in the short run, in the end this remedy is likely to be more costly than the disease! In this sense, any attempt to develop financial innovations such as savings products and insurance could effectively protect the poor against unexpected events and substantially reduce the level of vulnerability.

So far, we have discussed the effects of programme participation at the business level; however, we are interested in looking at other factors that affect households'

well-being. In the following sections, we focus on the impacts of credit on physical capital, in particular on housing improvements and households assets.

8.2 The impact of credit on physical capital

The concept of physical capital here goes beyond the traditional conceptualisation of physical infrastructure that the classic growth theory developed during the 1940s (Rosenstein-Rodan 1943). Physical capital includes not only the availability of roads, telephone lines, electricity or railways that can certainly improve poor people's well-being, but also it incorporates those assets that households can use to cope with external shocks (Deaton 1989; Moser 1998). In the following sections we look in particular at the effects of credit on housing improvements and household assets as means of improving households' wellbeing.

8.2.1 The impacts on housing improvements

We begin this section by discussing the econometric procedure to estimate the effects of microfinance on the probability of improving the housing conditions as a means of improving households' welfare. The relevance of looking at this issue comes from the precarious infrastructure and poor housing conditions that portrait the deprived localities under study. For example, although a large percentage of inhabitants of San Miguel Teotongo in Iztapalapa, and the Chalco Valley have access to piped water and electricity (see table 8.9), these services are rather deficient: piped water is not safe and power cuts are frequent.

Table 8. 9 Coverage of public services amongst programme participants
Figures in percentages

	Electricity	Water piped	Drainage	Rubbish collection	Telephone Lines
San Miguel Teotongo	97.37	98.61	100.00	97.37	67.98
The Chalco Valley	100.00	98.21	98.21	100.00	52.98
Tula, Hidalgo	100.00	97.62	80.86	98.08	36.81

Source: Author's sample survey 2004

Furthermore, a large percentage of households living in those areas gradually build their houses with occasional capital inflows coming from *directed* or *undirected*

sources[8]. A *directed* source of capital, on the one hand, could take the form of remittances coming from family members working abroad whose money transfers are purposely sent to improve housing conditions. Another directed source of capital could emerge from loans from the microfinance organisation, which are intentionally taken by the household in order to invest in housing improvements. We actually found a significant statistical association in a cross-tabulation between treatment and control groups in the three case-study organisations in relation to the *directed* use of credit to improve the housing conditions (see table 8.10), despite the fact that none of the microfinance organisations lend for that purpose. Although this action could be interpreted as a fungibility problem, it would be rather simplistic to argue that the effect of this action gives zero returns.

As an illustrative example, take the case of household *i* that borrows from the microfinance organisation 5,000 pesos (around 450 US dollars) in the fifth credit cycle. Let us assume that this household has good expectations about the level of business profitability and takes the decision of investing the 5,000 pesos in housing improvements, say cementing the floor. If this action reduces the probability of having ill-health and thus, the expenditure on medications, then social returns on investment could be substantial[9]. An *undirected* source of capital, on the other hand, could emerge from e.g. voluntary savings that are progressively accumulated with profits coming from income generating activities or by selling assets such as land. Voluntary savings mechanisms, especially rotating savings and credit associations were in fact extensively used by treatment households as well as by control groups as an *undirected* source of investment in housing improvements (see table 8.10).

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[8] More than 70% of treatment households living in San Miguel Teotongo, and borrowing from Fincomun, reported to live in a house under construction, whereas this percentage increased up to 74% and 93% in the cases of programme participants at Promujer and CAME, respectively.

[9] The problem of capturing social returns to investment in physical capital, in particular infrastructure, has been extensively discussed in the literature of cost-benefit analysis. See for example Little and Mirrlees (1974) and Dreze and Stern (1987).

Table 8. 10 The impact of programme participation on housing improvements

	FINCOMUN		CAME		PROMUJER		Pooled sample	
Dependent variable: Dummy = 1 if household invested in housing improvements (IMPROVESTATE)	C_i as explanatory variable a/	I_i as explanatory variable b/	C_i as explanatory variable a/	I_i as explanatory variable b/	C_i as explanatory variable a/	I_i as explanatory variable b/	C_i as explanatory variable a/	I_i as explanatory variable b/
Probit (coefficient)	0.051	0.448	2.86	2.726	0.018	0.104	0.076	0.599
	(1.00)	(0.91)	(3.98)***	(3.87)***	(0.25)	(0.18)	(2.82)***	(2.47)**
Probit $\frac{\partial \Phi}{\partial X}$	0.019	0.159	0.114	0.803	0.006	0.033	0.028	0.216
	(1.00)	(0.91)	(3.98)***	(3.87)***	(0.25)	(0.18)	(2.82)***	(2.47)**
Sources of capital	Control	Treated	Control	Treated	Control	Treated	Control	Treated
• Credit	0	19.44+++	0	32.14++	0	19.23+++	0	23.33+
• Savings	21.05	27.78	16	42.86++++	28.57	26.92	22.41	32.22
• Assets sold	5.26	0	0	0	0	0	1.72	0
• Remittances	0	5.57	5.56	0	9.52	0	5.17	2.22
If savings, in								
• Formal institutions	0	0	11.11	0++++	0	0	3.45	0++++
• MFI	0	0	0	10.71	0	0	0	3.33
• Informal mechanisms (ROSCAS)	21.05	27.78	16.67	39.29	28.57	26.92	22.41	31.11
If credit, from								
• Institutional lenders	0	2.78	0	0	0	0	0	1.12
• MFI	0	16.67++++	0	32.14++	0	15.38++++	0	21.11+
• Informal lenders (moneylender)	0	0	0	0	0	3.85	0	11.10

Absolute value of t statistics in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%
The statistically significant association in the cross-tabulations are indicated by the Chi-square values for the cell as a whole at 0.001 (+); 0.01 (++); 0.05 (+++); and 0.1 (++++) levels of significance.
a / C_i: logarithm of the maximum amount of credit borrowed (LGMAXCREDIT)
b/ I_i: LGMAXCREDIT is transformed into a dummy variable = 1 for treatment households. For more details about regression results, contact me at: m.nino@sheffield.ac.uk

We are particularly interested in investigating the probability of improving housing conditions as an *undirected* effect of the individual choice of participating in a credit programme. Since the quasi-experiment collected a qualitative response variable that captured information on whether or not programme participants had been able to invest capital in housing improvements, we were able to estimate a probit model based on the regression equation (8.4), but observing now as dependent variable, a dummy variable (coded as IMPROVESTATE) with the values $y=1$ if household i has invested in housing improvements; $y=0$, otherwise. The marginal effects have been estimated as in (8.7), by deriving the effect of one unit change in the explanatory variables, including the variable of interest C_i, on the probability of improving the housing conditions.

The parameter estimate δ in (8.8) measures now the effect *of a proportional change in credit* on the probability of investing in housing improvements. For comparative purposes, equation (8.8) has been estimated with I_i in substitution of C_i where δ will now capture the effect of *programme participation* on the probability of investing in housing improvements.

The results from the Likelihood ratio test indicate that the null of zero effect of credit on the propensity of housing improvements can be only rejected in the case of CAME: LR $\chi^2(1)=9.93$, $p<0.01$ (including C_i as the explanatory variable) and LR $\chi^2(1)=9.82$, $p<0.01$ (including I_i as the explanatory variable), and the pooled sample: LR $\chi^2(1)=7.87$, $p<0.01$, (including C_i as the explanatory variable), and LR $\chi^2(1)=5.99$, $p<0.05$ (including I_i as the explanatory variable). In other words, only the results for CAME and the pooled sample reported a positive and statistically significant impact of credit on housing improvements.

Other things held constant, the impact of a relative change of x% in the upper limits of credit by programme participants at CAME was an increase in the propensity of improving the housing conditions of about 0.114x%, and this propensity went down to 0.028x% when the pooled sample was considered in the estimation. Similarly, when equation (8.8) was computed with I_i as the explanatory variable, treatment households borrowing from CAME reported, on the average, an 80%

higher probability of investing in housing improvements than the correspondent control group.

The statistical insignificance reported from programme participants at Fincomun (LR $\chi^2(1)=1, p = 0.32$ with C_i as explanatory variable and LR $\chi^2(1)= 0.84, p = 0.36$ with I_i as explanatory variable), and at Promujer (LR $\chi^2(1)=0.07, p = 0.80$, and LR $\chi^2(1)=0.03, p = 0.85$, with C_i and I_i as the explanatory variables, respectively) explain the small slope coefficients and insignificant levels of the parameter δ in the probit regression equation (see table 8.10).

We believe that this statistical insignificance is related to the age of settlements such as San Miguel Teotongo and Tula Hidalgo, where Fincomun and Promujer respectively operate. We remind the reader that San Miguel Teotongo and Tula, Hidalgo were established earlier than the Chalco Valley (e.g. San Miguel Teotongo was settled in 1972 whereas the Chalco Valley, in the early 1980s[10]), and taking into consideration that poor households usually build their houses over time, it is reasonably to assume that borrowers living in San Miguel Teotongo or in Tula Hidalgo have had more time to improve their houses than those living in the Chalco Valley, and therefore, get a higher utility function by investing the credit in business or household assets rather than in housing improvements (see table 8.11).

Table 8. 11. Length of residence in the neighbourhood
Figures in years

	Sample	Mean	Median	Max	Min
San Miguel Teotongo	55	18.84	20.50	31.00	2.00
Chalco Valley	46	15.85	14.50	30.00	1.50
Tula, Hidalgo	47	18.48	20.00	34.50	1.50
Pooled sample	148	17.72	18.33	31.83	1.67

Source: Author's Sample survey 2004

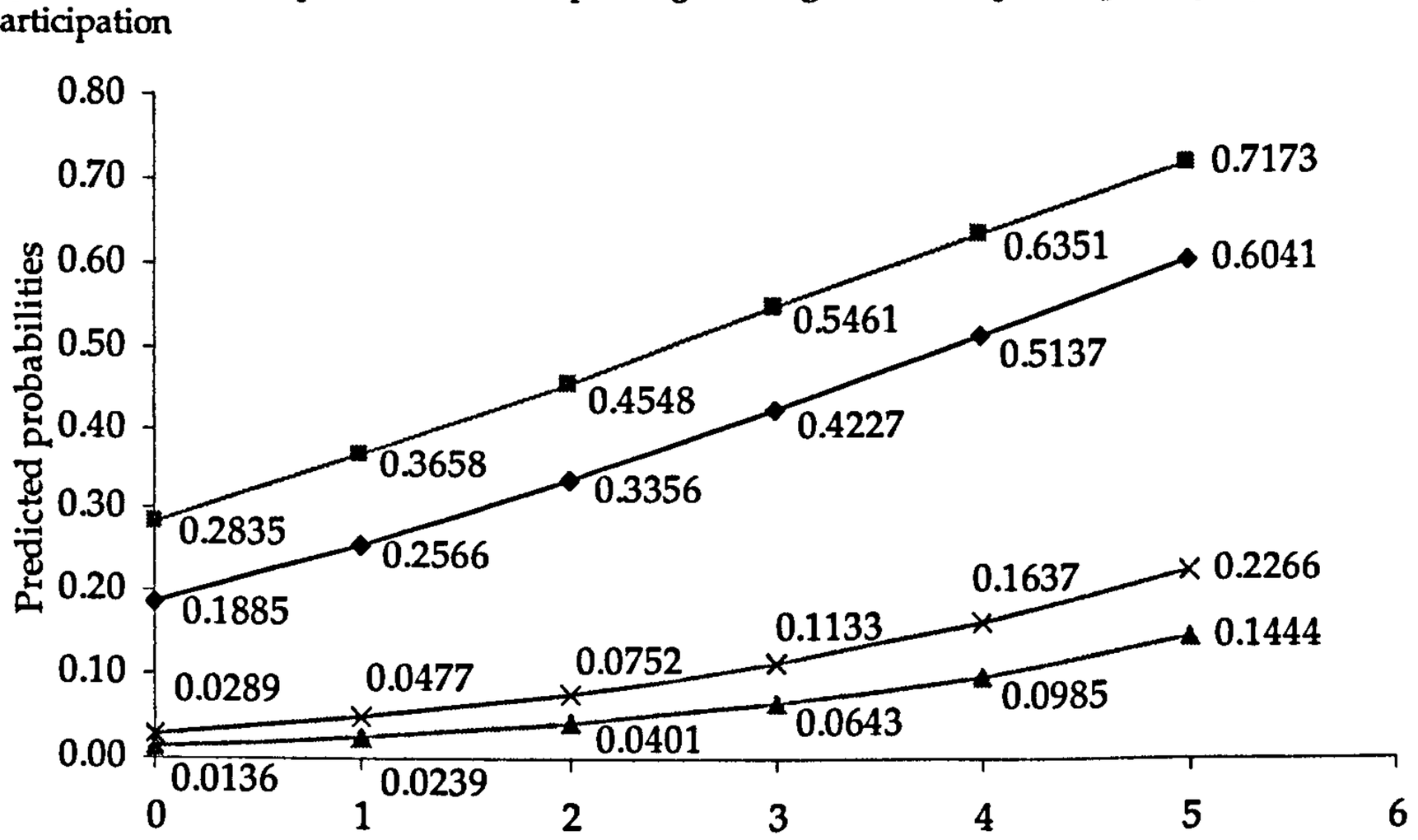
We have already discussed in section 8.1.2 the statistical significance of the impact of credit on business assets from the three case-study organisations. In section 8.3 we compute a probit model to estimate the effects of credit on households assets, in particular vehicle purchases and electrical appliances. However, before examining those results, we proceed to examine the predicted probabilities of improving the housing conditions for an *absolute change* in the level programme participation using

[10] For further details on the characteristics of the areas under study, see Chapter 6.

the pooled sample and the four groups of borrowers defined in section 8.1.2, holding the rest of the variables at the mean. In order to compute the predicted probabilities, we have estimated equation (8.11) with the number of years of programme participation, M_i, in substitution of C_i where M_i takes a value $M_i > 0$ for treatment households and $M_i = 0$ for control groups. In this sense, the parameter δ will capture the impact of one additional year of programme participation on the propensity to invest in housing improvements. The results from the probit regression are presented in table A8.3 in the Appendix to Chapter 8.

The slope coefficient of M_i for each group of borrowers showed, as expected, an upward sloping curve reflecting that, *ceteris paribus*, the predicted probability of improving the housing conditions increased with every additional year of membership (see figure 8.3); however, the magnitude of this effect was largely different between the groups of borrowers. Take the case of female borrowers taking loans only from the microfinance organisation (group 1).

Figure 8. 3 Predicted probabilities of improving housing conditions per length of programme participation



After one year of membership, they reported a probability of improving housing conditions in the order of 26%, $\Pr(y_i = 0.26 | M_i = 1)$ relative to $\Pr(y_i = 0.19 | M_i = 0)$ of the control group, whilst women in the same group but with 5 years of

membership reported a much higher probability: $\Pr(y_i = 0.60 | M_i = 5)$. In this sense, women that borrowed *only* from the microfinance organisation were able to triple their chances of improving their houses in the fifth year of membership.

Similarly, our estimations found the highest probability of improving the housing conditions amongst women borrowing from the microfinance organisations and participating in rotating savings and credit associations (group 2). These results support our findings in relation to the importance of voluntary savings mechanisms such as ROSCAS to widen the portfolio of possibilities of the poor. On the contrary, women borrowing from several sources, including moneylenders, reported the lowest probability of being able to invest in their houses. In fact, when the probit equation was estimated using the pooled sample, the parameter estimate of the variable capturing the individual choice of borrowing from moneylenders reported a negative sign and statistical significance at the 0.1 level, showing that, other things held constant, the effect of credit from these informal agents reduce poor people's chances to have better living conditions (see also table A8.4 in the Appendix to Chapter 8). In the following section we discuss the effects of programme participation on households assets, looking in particular at the impacts on vehicle purchases and electrical appliances.

8.2.2 The impacts on household assets

The relationship between household assets and well-being has been largely analysed in the literature of poverty and vulnerability (e.g. see Deaton 1989 and Moser 1998). Household assets not only improve the living conditions of the poor, but when external shocks hit the household, they can effectively be used to cope with such events. Therefore, asset accumulation could be seen from two different angles: a) as a means of improving living standards of the poor, and b) as a *preventive* strategy to protect the poor against unexpected events, and which is normally achieved by the action of selling such assets[11]. We are interested in examining the propensity of increasing the stock of household assets as an *indirect*

[11] We assume here that the markets for used assets are incomplete. As a result, their prices are fixed under the optimal level. Therefore, household decisions of selling assets as a coping strategy against external shocks should be seen in the context of endowments rather than

effect of credit that could potentially have *positive* effects on well-being and a reduction of vulnerability.

8.2.2.1 The impacts on vehicle purchases

Since our quasi-experiment collected a qualitative response variable (coded as VEHICLE) that captured information on whether or not individual households had purchased a vehicle after joining the microfinance organisation, we were able to compute the propensity of purchasing such assets by the estimation of a probit model based on the regression equation (8.4) where the dependent variable y takes the values $y=1$ if household i had purchased a vehicle, $y=0$; otherwise. The marginal effects of the variable of interest C_i were estimated using equation (8.7), where the parameter estimate δ captured the effect of *a proportional change in credit* on the probability of purchasing a vehicle. As before, we are also reporting equation (8.8) with I_i in substitution of C_i where δ capture the effect of *programme participation* on the probability of purchasing a vehicle.

The results from the Likelihood ratio test indicate that the null of zero effect of credit on the propensity of housing improvements can be only rejected in the case of CAME: LR $\chi^2(1)=7.87$, $p<0.01$ (including C_i as the explanatory variable) and LR $\chi^2(1)=6.92$, $p<0.01$ (including I_i as the explanatory variable), and the pooled sample including only C_i as the explanatory variable: LR $\chi^2(1)=2.85$, $p<0.1$. In other words, only in the case of CAME the probit model reported a positive and statistically significant impact of credit on vehicle purchases. Other things held constant, the impact of a relative change of x% in the upper limits of credit by programme participants at CAME was an increase in the propensity of purchasing a vehicle of about 0.059x%.

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profit maximisation. For a detailed discussion on this particular issue see e.g. Collier 1983 and Bardhan 1973.

Table 8. 12 The impact of programme participation on vehicle purchases

Dependent variable: Dummy = 1 if household has purchased vehicles (VEHICLE)	FINCOMUN		CAME		PROMUJER		Pooled sample	
	C_i as explanatory variable a/	I_i as explanatory variable b/	C_i as explanatory variable a/	I_i as explanatory variable b/	C_i as explanatory variable a/	I_i as explanatory variable b/	C_i as explanatory variable a/	I_i as explanatory variable b/
Probit (coefficient)	0.096	0.868	0.225	1.956	0.047	0.339	0.047	0.384
	(1.55)	(1.48)	(2.90)***	(3.05)***	(0.63)	(0.56)	(1.72)*	(1.54)
Probit $\frac{\partial \Phi}{\partial X}$	0.025	0.201	0.059	0.429	0.011	0.078	0.014	0.117
	(1.55)	(1.48)	(2.90)***	(3.05)***	(0.63)	(0.56)	(1.72)*	(1.54)
Sources of investment	Control	Treated	Control	Treated	Control	Treated	Control	Treated
• Credit	5.26	11.12	22.21	21.43	4.76	0	10.34	11.11
• Savings	10.53	27.78	11.10	3.57	4.78	19.23	8.62	17.78
• Remittances	5.24	0	0	0	14.29	0+++	6.90	0+++
• Assets sold	0	0	0	3.57	0	0	0	1.12
If savings, in								
• Formal institutions	0	0	0	0	4.78	0	1.72	0
• MFI	0	0	0	3.57	0	0	0	1.13
• ROSCAS	10.53	13.89	11.13	0++++	0	7.69	6.90	7.78
If credit, from								
• Institutional lenders	0	2.78	0	0	4.76	0	1.72	1.14
• MFI	0	5.58	0	21.43+++	0	0	0	8.89+++
• Informal lenders	5.25	0	22.23	0++	4.77	0	10.34	0++

Absolute value of t statistics in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%
The statistically significant association in the cross-tabulations are indicated by the Chi-square values for the cell as a whole at 0.001 (+); 0.01 (++); 0.05 (+++); and 0.1 (++++) levels of significance.
a / C_i: logarithm of the maximum amount of credit borrowed (LGMAXCREDIT)
b/ I_i: LGMAXCREDIT is transformed into a dummy variable = 1 for treatment households
For more details about the probit results, contact me at m.nino@sheffield.ac.uk

Similarly, when equation (8.8) was computed with I_i as the explanatory variable, treatment households borrowing from CAME reported, on the average, a 43% higher probability of purchasing a vehicle than the correspondent control group (see table 8.12).

The statistical insignificance reported from programme participants at Fincomun (LR $\chi^2(1)=2.31$, $p = 0.13$ with C_i as explanatory variable and LR $\chi^2(1)=1.99$, $p = 0.16$ with I_i as explanatory variable), and at Promujer (LR $\chi^2(1)=0.43$, $p = 0.51$, and LR $\chi^2(1)=0.33$, $p = 0.56$, with C_i and I_i as the explanatory variables, respectively) explain the small slope coefficients and insignificant levels of the parameter δ in the probit regression estimated for each organisation (see table 8.9). The statistical significance reported from programme participants at CAME can be explained by a particular characteristic of the Chalco Valley, which is not found neither in San Miguel Teotongo nor in Tula, Hidalgo: In recent years the local authority in that municipality authorised the use of a sort of rickshaw pulled by a bicycle (called by the locals as *bicitaxi*) as another form of public transport.

Despite the fact that this policy was controversial amongst policy makers, it gave poor households the opportunity to get involved in another income generating activity that required a relatively low investment. Actually, one fifth of borrowers at CAME reported to have invested part of the credit from the organisation in those vehicles.

Interestingly, control households living in the Chalco Valley also reported a large percentage (22%), and statistical association at the 0.01 level, in relation to the use of loans but from moneylenders as a direct source of capital to invest in *bicitaxis* (see table 8.12). The particular case of households living in the Chalco Valley illustrates how the poor take advantage of business opportunities when sources of funding are available.

8.2.2.2 The impacts on electrical appliances

We focus now on the estimation of the impact of credit on the propensity to accumulate assets such as electrical appliances and electronics. In order to do so, we

follow the same estimation procedure employed in section 8.2.2 by exploiting a qualitative response variable that captures the individual decision of whether or not to purchase electrical appliances after joining the microfinance programme. This variable has been coded as ELECTRICAL and takes the values $y=1$ if household i had purchased electrical appliances since joining the microfinance organisation; $y=0$; otherwise. We have estimated the marginal effects of C_i as before, using equation (8.7) where parameter estimate δ capture the effect of a *relative change* in credit on the probability of purchasing an electrical appliance. Similarly, we report the marginal effects of I_i, in substitution of C_i where δ capture the effect of *programme participation* on the probability of purchasing such assets.

The Likelihood ratio test indicate that the null of zero impact of programme participation on the propensity of purchasing household assets could be rejected in the case of CAME (LR $\chi^2(1)=8.47$, $p<0.01$ and LR $\chi^2(1)=7.57$, $p<0.01$ with C_i and I_i as the explanatory variables, respectively); Promujer (LR $\chi^2(1)=3.61$, $p<0.1$ and LR $\chi^2(1)=3.04$, $p<0.1$ with C_i and I_i as the explanatory variables, respectively), and using the pooled sample (LR $\chi^2(1)=7.88$, $p<0.01$ and LR $\chi^2(1)=7.29$, $p<0.01$ with C_i and I_i as the explanatory variables, respectively). In other words, the marginal effects of the parameter estimate δ reported a positive slope and statistical significance when the probit equation was computed for programme participants at CAME, Promujer, and using the pooled sample.

Other things held constant, the impact of a relative change of x% in the upper limits of credit borrowed by programme participants at CAME and Promujer was an increase in the propensity of purchasing households assets such as electrical appliances of about 0.065x% and 0.041x%, respectively. Alternatively, when the probit was computed with I_i as the variable of interest, treatment households at CAME reported, on the average, a 48% higher probability of purchasing household assets than the correspondent control group, whereas this probability was in the order of 30% when the probit was computed in the case of Promujer (see table 8.13).

Table 8. 13 The impact of programme participation on household assets

	FINCOMUN		CAME		PROMUJER		Pooled sample	
Dependent variable: Dummy = 1 if household has bought assets (ELECTRICAL)	C_i as Explanatory variable a/	I_i as explanatory variable b/	C_i as explanatory variable a/	I_i as explanatory variable b/	C_i as explanatory variable a/	I_i as explanatory variable b/	C_i as explanatory variable a/	I_i as explanatory variable b/
Probit (coefficient)	0.094 (1.26)	0.782 (1.15)	0.260 (3.50)***	2.256 (3.23)***	0.173 (2.08)**	1.288 (1.95)*	0.084 (2.84)***	0.739 (2.82)***
Probit $\frac{\partial \Phi}{\partial X}$	0.012 (1.26)	0.089 (1.15)	0.065 (3.50)***	0.477 (3.23)***	0.041 (2.08)**	0.295 (1.95)*	0.024 (2.84)***	0.197 (2.82)***
Sources of investment	Control	Treated	Control	Treated	Control	Treated	Control	Treated
• Credit	5.26	11.12	0	35.71++	14.29	15.28	6.90	20+++
• Savings	0	16.67++++	16.69	17.86	4.76	23.08++++	6.85	18.89+++
• Remittances	0	0	0	0	4.80	0	1.72	0

Absolute value of t statistics in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%
The statistically significant association in the cross-tabulations are indicated by the Chi-square values for the cell as a whole at 0.001 (+); 0.01 (++); 0.05 (+++); and 0.1 (++++) levels of significance.
a / C_i: logarithm of the maximum amount of credit borrowed (LGMAXCREDIT)
b/ I_i: LGMAXCREDIT is transformed into a dummy variable = 1 for treatment households
For further details about the probit results, contact me at m.nino@sheffield.ac.uk

In order to examine the predicted probabilities in the long run, we have employed four groups of borrowers defined earlier in section 8.1.2, and estimated equation (8.11) with the number of years of programme participation, M_i, in substitution of C_i. The results are shown in figure 8.4 and in table A8.4 in the Appendix to Chapter 8. Notice that the parameter δ captures the impact of an *absolute change* in the level programme participation on the probability of purchasing household assets, i.e., the effect of one additional year of programme participation on the propensity of asset accumulation.

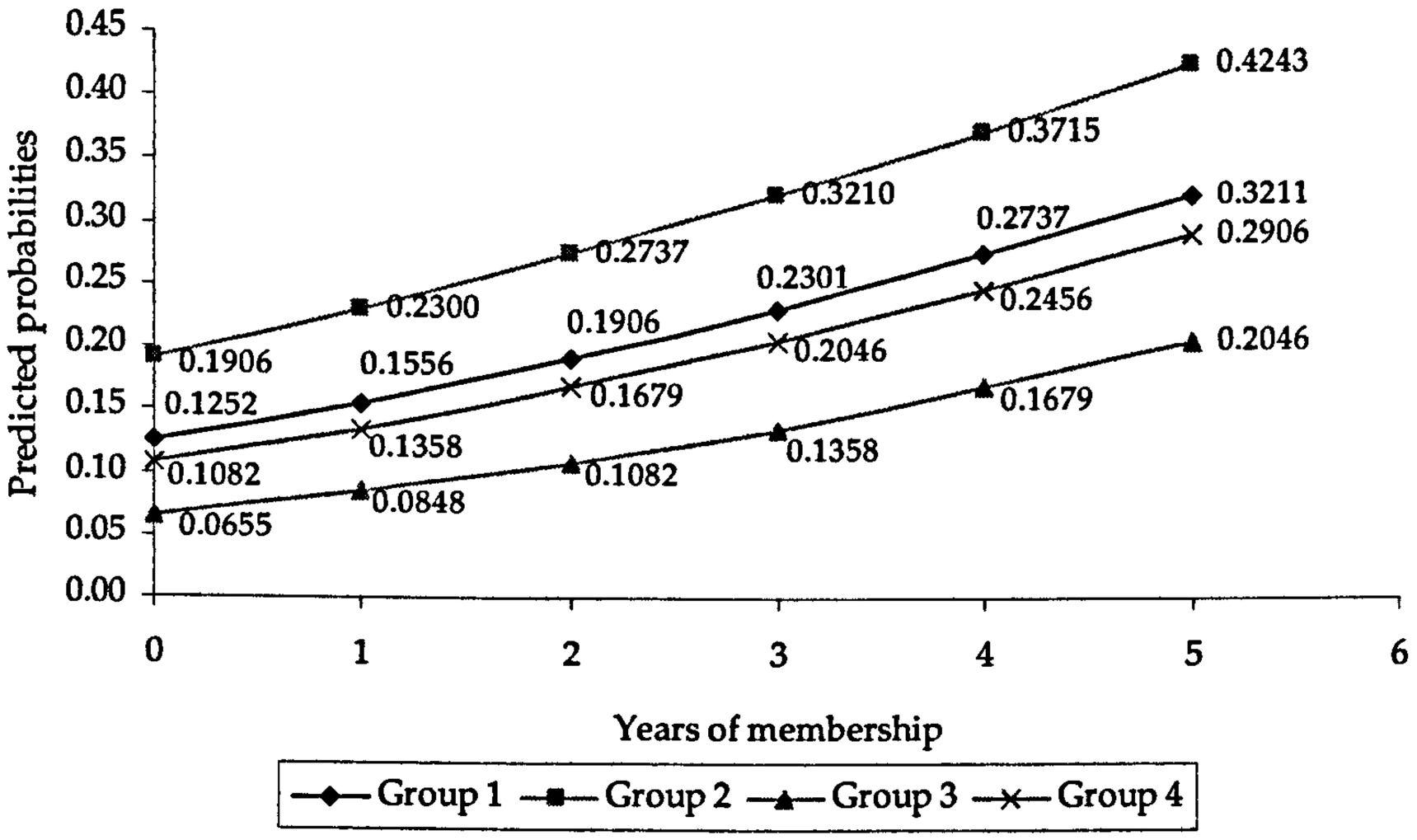
As expected, the slope coefficient of M_i for each group of borrowers reported an upward sloping curve towards unity, reflecting an increasing predicted probability of having positive impacts on household assets as the length of programme participation increased; however, the magnitude of the impact was different between the groups. For example, female participants borrowing only from the microfinance organisation (group 1) reported a predicted probability in the order of $\Pr(y_i = 0.16 | M_i = 1)$, relative to $\Pr(y_i = 0.13 | M_i = 0)$ of the control group, whereas women in the same group but with 5 years of experience in the microfinance organisation had a better chance to purchase household assets $\Pr(y_i = 0.32 | M_i = 5)$ *ceteris paribus*.

Women borrowing from the microfinance organisation *and* participating in ROSCAS (group 2) reported the highest predicted probability between the four groups of participants. It appears that the use of voluntary savings mechanisms such as rotating savings and credit associations may play an important role in increasing the likelihood of asset accumulation, although the magnitude of its effect in this case was moderate. In fact, the results from the probit equation revealed a small and positive although statistically insignificant effect of the individual choice of participating in rotating savings and credit associations on the propensity of accumulating household assets.

On the contrary, women with multiple sources of funding (group 3) reported as we expected, the lowest probability of asset accumulation amongst the four groups of borrowers, suggesting that, other things held constant, the action of borrowing from several lenders reduce the likelihood of improving the living conditions and with it,

the level of households' vulnerability might increase (see figure 8.4).

Figure 8. 4 Predicted probabilities of purchasing household assets per length of programme participation



We actually found a statistical significance at the 0.05 level in a cross-tabulation between households that had experienced external shocks by the time the survey was conducted and the use of households assets as a coping mechanism to deal with such events [$\chi^2(1)=4.32,\ p<0.05$], and the level of statistical association substantially increased [$\chi^2(1)=13.57,\ p<0.01$] when other assets such as vehicles and land were included in the estimation. In the previous section, we discussed the effect of credit on the stock of physical capital, particularly looking at the accumulation of household assets that contribute to improve poor people's well-being and help them to cope with external shocks in a better position. In the following section we discuss our findings with regards the impacts of credit on human capital, focusing in particular on children's schooling and health status.

8.3 The impacts of credit on human capital

The reason for examining the possible *indirect* impacts of credit on human capital comes from the strong relationship between human capital and well-being. There is a general consensus on the relationship between health and education, and the individual's capabilities to generate more output and increase the level of labour productivity and with this, the individual's future income and well-being (e.g. see

Becker 1993 and Schultz 1988). In fact, educated and healthier individuals are not only in a better position to adapt more easily as economic circumstances change, using physical capital more effectively, accessing to financial markets more easily and exploiting social arrangements and income opportunities more quickly (Schultz 1975), but they are actually able to *lead the lives they have reason to value and to enhance the real choices they have* (Sen 2000:293); what Sen has referred to as *human capabilities*. An illiterate and poor woman living in the Chalco Valley, for example, is well aware of the fact that by sending her children to school, she is not only improving their future opportunities to increase their income and get out of poverty, but she is also giving them the chance to enjoy knowledge and information that will help them to make informed decisions on important matters, and to be treated with respect by others in a social context.

The relationship between household income and human capital is central in our analysis; however, given the limitations of the available data, we concentrate, in section 8.3.1, on one of the components of the *reverse causation* of the income-human capital relationship, i.e. education in the form of children's schooling as a means to increase those children's future earnings. Our approach relies on the evidence that shows a strong and positive relationship between children's schooling and future earnings of those children, particularly in developing countries where income inequality is substantially greater, and this relationship is explained by the role of education in increasing *future* levels of labour productivity (see e.g. Schultz 1888 and Spence 1973).

Despite the fact that formal instruction at the basic level in Mexico is by constitutional mandate compulsory and free of tuition fees, important costs still remain in the system[12]. For example, households directly absorb expenditures on stationery, compulsory uniforms, food and transportation. Therefore, it is not surprising that when a poor family experiences a sudden shortfall of income or an unexpected event, they often face the dilemma of weather or not to stop sending their children to school. If an increasing supply of loanable funds in say, San Miguel Teotongo reduces the existing credit rationing in that market, and thus improve not only households' expectations on returns to investments but also the portfolio of

[12] Basic instruction includes 6 years of primary school *plus* 3 years of secondary school. At the primary level, textbooks are given to every child at no extra cost.

possibilities to manage risks and external shocks, then an *indirect* and positive effect of programme participation might be observed on children's schooling, with long run effects on *future* levels of productivity and income, and on the poverty trap[13]. Unfortunately, the available data does not allow us to investigate the long-term effects of programme participation (we would had needed a panel data in that case), but just the effects on the school enrolment status.

8.3.1 The impacts on children's schooling

The particular characteristics of the education system in Mexico, where primary and secondary education are free of tuition fees, have complicated the use of household expenditure on formal instruction as a variable to fully capture the level of households' investment in human capital. In fact, if we had used that variable, we would have captured information on just a few aspects of the choice of schooling, e.g. seasonal expenditure on uniforms, shoes and stationery. For that reason, we decided to concentrate on a qualitative response variable (coded as SCHOOLING) that captured the individual choice of whether or not a household *i* was forced to stop sending their children to school.

We considered children aged 5 to 17 from the sampled households at the time the survey was conducted. The nature of this variable allows us to predict the *propensity* of children's dropouts by the estimation of a probit model based on equation (8.4), where the dependent variable y took the values $y=1$ if household *i* had stopped sending their children to school, $y=0$; otherwise. The marginal effects of the variable of interest C_i that captures the maximum amount of credit borrowed during the last period were estimated using equation (8.7). The parameter estimate δ measures the effect of a relative change in the maximum amount of credit on the propensity of dropping out school. Notice that a *negative* sign should be expected in the slope coefficient δ. We have followed the estimation procedure used in previous sections, and reported equation (8.8) with I_i in substitution of C_i where

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[13] A poverty trap emerges under situations where, on the one hand, wealthy households can afford to invest in human capital, e.g. in education, health and nutrition, and this enables them to increase their future productivity and wealth. On the other hand, poor households cannot afford to invest in human capital and as a consequence, earn low income and remain in poverty. The relationship between imperfect credit markets and the poverty trap has been analysed by Ljungqvist (1993).

δ now captures the effect of *participation in a credit programme* on the school enrolment status.

Although the parameter estimate δ reported, as expected, a downward sloping curve for each of the three case-study organisations, the results from the Likelihood ratio test indicated that the null of zero effect of credit on the propensity of children's dropouts could be rejected only when the pooled sample was employed in the estimation: LR $\chi^2(1)=7.67$, $p<0.01$ (including C_i as the impact variable) and LR $\chi^2(1)=9.21$, $p<0.01$ (including I_i as the impact variable). In other words, only when the probit model was estimated using the pooled sample, the slope coefficient δ reported a *negative* and statistical significance.

Other things held constant, a 1 percent increase in the upper limits of credit borrowed from a microfinance organisation was predicted to decrease the probability of children's dropouts by 0.023 percentage points, at the mean. Similarly, when equation (8.8) was computed with I_i as the impact variable, treatment households reported, on the average, a 25% lower probability to be forced to withdraw their children from school relative to the predicted probability of the correspondent control group (see table 8.14). The relative small effect of programme participation on children's dropouts may reflect two phenomena:

The first is related to the presence of a short-run opportunity cost of school enrolment that increases once children get older and are able to generate income. The level of economic activity could also affect the choice of school enrolment. If by borrowing from microfinance organisations households manage to increase the level of output and thus the intensity of labour, then they may prefer to increase labour inputs from family members before considering hiring workers.

The second is related to the probable substitution effect that has been reported by Pitt and Khandker (1998) in the context of Bangladesh. This substitution effect could emerge between parents' and children's time in self-employment activities and group meetings.

Table 8. 14 The impact of programme participation on human capital

Dependent variable: Dummy = 1 if household *i* has stopped sending children to school (SCHOOLING)	FINCOMUN			CAME			PROMUJER			Pooled sample		
	C_i as explanatory variable a/	I_i as explanatory variable b/	M_i as explanatory variable c/	C_i as explanatory variable a/	I_i as explanatory variable b/	M_i as explanatory variable c/	C_i as explanatory variable a/	I_i as explanatory variable b/	M_i as explanatory variable c/	C_i as explanatory variable a/	I_i as explanatory variable b/	M_i as explanatory variable c/
Probit (coefficient)	-0.024 (0.33)	-0.113 (0.16)	-0.324 (1.65)*	-0.033 (0.45)	-0.019 (0.03)	-0.101 (0.95)	-0.087 (1.26)	-0.759 (1.36)	-0.505 (1.60)	-0.082 (2.74)***	-0.824 (3.05)***	-0.135 (1.88)*
Probit $\frac{\partial \Phi}{\partial X}$	-0.002 (0.33)	-0.008 (0.16)	-0.013 (1.65)*	-0.011 (0.45)	-0.006 (0.03)	-0.035 (0.95)	-0.024 (1.26)	-0.218 (1.36)	-0.143 (1.60)	-0.023 (2.74)***	-0.251 (3.05)***	-0.040 (1.88)*

Absolute value of t statistics in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%
a / C_i: logarithm of the maximum amount of credit borrowed (LGMAXCREDIT); b/ I_i: LGMAXCREDIT is transformed into a dummy variable = 1 for treatment households;
c/ M_i : number of years of programme participation (MEMBERSHIP)
For more details, see tables A8.5 in the Appendix to Chapter 8.

For example, if women borrowing from CAME spend several hours in periodical group meetings, then the oldest children's time may be used to substitute the time women's withdraw from childcare or productive activities. We believe that this substitution effect may be particularly large when institutional childcare is not available (or affordable) to the poor. Consequently, institutional efforts aimed to reduce the time-intensity of group lending technology could have important impacts on human capital in the long-run.

8.3.2 The impacts on children's schooling by length of membership

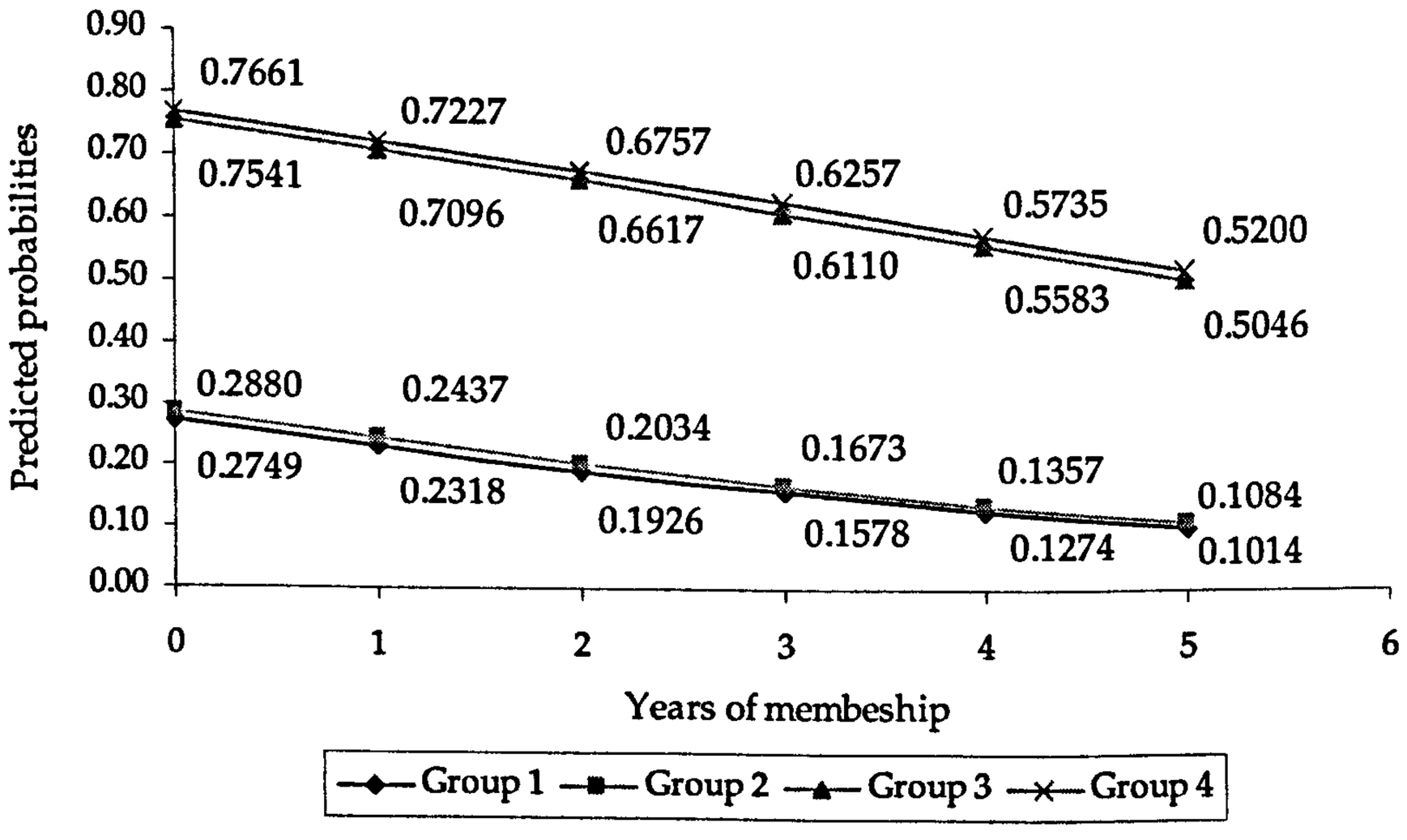
In order to examine the impact of credit on children's dropouts by length of membership, we proceed to estimate equation (8.11) including now the number of years of programme participation, M_i, in substitution of C_i. As mentioned above, the impact variable (coded as MEMBERSHIP) takes a value $M_i > 0$ for treatment households and $M_i = 0$ for control groups, where the slope coefficient δ captures the impact *of one additional year of programme participation on the propensity of children's dropouts*. We report the results in tables 8.14.

As we expected, the parameter estimate of the impact variable reported a *negative* sign for each of the case-study organisations; however, it was only statistically different from zero in the cases of Fincomun and the pooled sample. Other things held constant at the mean, the marginal effect of one additional year of programme participation at Fincomun was predicted to decrease the probability of children's dropouts by 0.013 percentage points, and this percentage went down to 0.40 points when the pooled sample was employed in the estimation. Although the slope coefficients reported from programme participants at CAME and Promujer showed a negative relationship between the choice of borrowing and children's dropouts, this relationship was not statistical significant. The statistical insignificance may be related to the magnitude of the substitution effect previously discussed in section 8.4.1, and which could emerge from the time-intensity and rigidity of monitoring devices such as periodical group meetings.

Other factors could be also affecting the choice of children's enrolment to school. For example, consider the case when a household participating in a credit

programme experience a sudden destabilising event and chooses to borrow additional capital from the local moneylender. Although the moneylender may prevent the parents to withdraw their children from school in the short-run, borrowing *expensive capital* may actually increase the probability of children's dropouts later on, when the parents face higher levels of indebtedness. We are interested, therefore, in examining the following hypothetical scenario: High levels of indebtedness, coming from several sources of funding, increase the probability of children's dropouts. In order to test our hypothesis, we exploit the structural properties of equation (8.11) that allows us to estimate the predicted probabilities of children's dropouts for an *absolute change* in programme participation, i.e. for every additional year of membership. We employ in the estimation four different groups of female borrowers that have been classified earlier in table 8.4. Each group of women reflect different levels of indebtedness. We compute the probit model employing the pooled sample and holding the rest of the variables at the mean. The results are shown in figure 8.5.

Figure 8. 5 Predicted probabilities of children's dropouts per length of programme participation



As we expected, the slope coefficient of the predicted probability of M_i showed a negative sign for each group of borrowers, reflecting *ceteris paribus*, an inverse relationship between the length of programme participation and children's dropouts; however, the magnitude of the impact was substantially different between the groups. Essentially, the effect of programme participation depended on

the magnitude of women's indebtedness. For example, women with one year of programme participation and borrowing only from a microfinance organisation (group 1) reported a *decreasing* predicted probability of children's dropouts in the order of $\Pr(y_i = 0.23 | M_i = 1)$ relative to $\Pr(y_i = 0.27 | M_i = 0)$ of the control group, whereas women in the same category but with 5 years of membership reported a much lower probability $\Pr(y_i = 0.10 | M_i = 5)$. We observed a very similar pattern in group 2, where women were borrowing from microfinance organisations *and* participating in rotating savings and credit association. In fact the statistical insignificance of the independent variable ROSCAS reported in table A8.5 in the Appendix to the Chapter 8 helps to explain this behaviour.

On the contrary, our results predict that women participating in microfinance organisations *and* borrowing from other lenders, with no participation in ROSCAS (group 3) have a high probability of withdrawing their children from school. Take the case of a programme participant with one year of membership and who faced an unexpected event. Since she could not borrow additional capital from the microfinance organisation until the credit cycle was completed, she made the choice of borrowing from the local moneylender. Our results suggest that by borrowing from the moneylender, this woman has increased the probability of her children dropping out of school up to 72% *ceteris paribus*, and although this probability falls in the long run, say after 5 years of programme participation, the negative impact of multi-sources of funding remains considerable: $\Pr(y_i = 0.52 | M_i = 5)$.

Notice that the likelihood of children's dropouts increases up to 77% when women have no access to funding from a microfinance organisation, i.e. the control group of Group 3. The results from the probit equation 8.11 also support our findings (see table A8.5 in the Appendix to Chapter 8). They show a large coefficient (0.387) and statistical significance at the 0.01 level of the impact of moneylenders on the probability of children's dropouts.

A similar behaviour was reported from Group 4 that clustered women participating in a microfinance programme, *and* borrowing from other lenders and participating in rotating credit and savings associations. The empirical evidence suggests that we cannot reject our hypothesis, which states that high levels of indebtedness, coming

from several sources of funding, increase the probability of children's dropouts. In this sense, if microfinance organisations are able to reduce the rigidity of loan contracts and make available to the poor *emergency loans* when contingencies emerge, this policy could have significant long-term impacts on human capital. So far, we have paid attention to the effects of programme participation on children's schooling as one of determinants to enhance human capital in the long run. However, we are also interested in analysing the effects of credit on health status. In the following section, we briefly discuss our findings.

8.3.3 The impact of credit on health status

Our interest in examining the relationship between credit and health status comes from the increasing evidence that show a clear and strong relationship between health and nutrition as determinants of labour productivity and earnings[14]. However, determining the magnitude of the relationship between the choice of participating in a credit programme and health status can be particularly difficult given unobservable factors that are difficult to control for in the estimation procedure. These factors can emerge from, for example, air and water pollution or bad nutritional habits that have an impact on people's health. Chronic diseases and illness are clear determinants of health status, independently of the choice of borrowing. Improvements in the local infrastructure or national campaigns to encourage people to reduce sugar intakes could have significant impacts on people's health.

Similarly, a poor household with access to the local public hospital is in a better position to cope with ill health than a household with no access to such services. If we do not control for the accessibility to institutional health care, we could wrongly attribute positive health impacts to the participation of the credit programme when in fact it is due to institutional health care services[15]. It is important, therefore, to

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[14] For a recent review on this particular issue see, Strauss and Thomas (1995).

[15] Problems in the estimation could also emerge from unobservable factors that are related to individual characteristics, preferences or attitudes, which determine the choice of borrowing. Healthy individuals, for example, are expected to be more likely to engage in income-generating activities and therefore, willing to borrow capital from microfinance organisations than individuals with ill health or chronic diseases. However, as we discussed in Chapter 7, the potential problems of self-selectivity have been addressed during the process of data collection.

investigate both the percentage of households with members with chronic diseases and the coverage of public health care amongst households participants.

Our sample survey collected a qualitative response variable that captured information on whether households' participants had members with cancer, diabetes, heart problems or other chronic diseases. In an initial data examination we found that 27.8% of treatment households at Fincomun and 31.6% of the corresponding control group had households members with chronic diseases. In the case of CAME, 46.4% of treatment groups reported family members with ill health relative to the 38.9% of the control group, whereas in the case of Promujer, 34.6% of treatment households and 42.9% of the control group did report members with chronic diseases.

The information also revealed a no significant association between treatment and control groups in relation to chronic diseases: [$\chi^2(1)=0.087$, $p=0.768$ in the case of Fincomun; $\chi^2(1)=0.253$, $p=0.615$ in the case of CAME; $\chi^2(1)=0.334$, $p=0.563$ in the case of Promujer, and $\chi^2(1)=0.086$, $p=0.769$ when we employed the pooled sample]. In other words, we could not find a correlation between the choice of programme participation and factors related to the health status that could affect the individual choice of borrowing and therefore, the impact assessment. Our findings confirmed what we report in Chapter 7 regarding the appropriate experimental design to address potential problems of endogeneity and selection bias.

We also paid attention to the accessibility of households to institutional health care. The structural characteristics of the health system in Mexico make the analysis particularly complex; however, we can make a clear distinction between two groups: those who are insured by social security and those who are not. On the one hand, those who are insured are cover by specific institutions according to the sectors of economic activity. For example, the Mexican Institute for Social Security (IMSS) gives provision of health care to workers employed in the formal private sector whereas the Social Security Institute for Civil Servants (ISSSTE), provides health services to civil servants. Other institutions are responsible for the provision of health care to the armed forces and employees of Mexican Petroleum (PEMEX).

The system as it is structured gives rise to inefficiency and inequality. For example, a household with members working in the formal private sector and in the federal government would be entitled to receive benefits from both the IMSS and ISSSTE[16]. On the other hand, the uninsured population, often the poor who is excluded from social security for not being engaged in activities that are related to the formal sector, is entitled to receive health care from institutions that are supposed to be open to the public. These institutions are belonging to the Secretary of Health (SSA) and the National System for Family Development (DIF). These institutions; however, are not always are available, and the patients have to absorb the cost of medication and other expenses.

In order to avoid the omission of possible effects of institutional health care, we collected a discrete response variable (coded as NHS) that captured information on whether or not households participants had access to institutional health care, independently of their status, i.e. insured or uninsured. Initially we were interested in examining a potential correlation between accessibility to institutional health care and the choice of participating in the credit programme; however, we did not find any statistical significant association in the cross-tabulations for the case-study organisations: [$\chi^2(1)=0.043$, $p=0.836$ in the case of Fincomun; $\chi^2(1)=0.0007$, $p=0.979$ in the case of CAME; $\chi^2(1)=0.059$, $p=0.808$ in the case of Promujer, and $\chi^2(1)=0.269$, $p=0.604$ when the pooled sample was employed]. The empirical evidence indicates that a similar percentage of treatment households relative to the percentage of control groups enjoyed the benefits of the health system. In this sense, by including the variable NHS in the impact equation, we should be able to control for the effects of institutional health care on health status.

The information about households perceptions on health status was collected through a discrete response variable (coded as HEALTH) that was computed with a value $y=1$ if household i reported a good health status; $y=0$, otherwise. Given the characteristics of our data, we followed the probit model derived in (8.6) with the maximum amount of credit borrowed C_i, as the explanatory variable. For comparative purposes, we estimated equation (8.6) with I_i in substitution of C_i.

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[16] For an overview of the National Health System in Mexico, see Frenk et al. (1994)

We also included in the vector of households characteristics, X_i, the variable NHS in substitution of WWORKER, which captures the access to the National Health System. We excluded WWORKER, which captures the number household's members employed as waged-workers, due to potential collinearity problems that could emerge from the correlation between accessibility to institutional health care and workers employed in the formal sector.

When we computed the LR test, the results indicated that we could not reject the null of *zero* effect of credit on the *propensity* of having a good health status in each of the case-study organisations: LR $\chi^2(1)=0.55$, $p=0.4591$ in the case of Fincomun; LR $\chi^2(1)=0$, $p=0.9522$ in the case of CAME; LR $\chi^2(1)=0.93$, $p=0.3336$ in the case of Promujer, and LR $\chi^2(1)=1.78$, $p=0.1817$ in the case of the pooled sample. We did not find significant effects when the same procedure was repeated but including I_i in substitution of C_i as the explanatory variable: LR $\chi^2(1)=0.63$, $p<0.4279$ in the case of Fincomun; LR $\chi^2(1)=0.01$, $p=0.9102$ in the case of CAME; LR $\chi^2(1)=0.93$, $p=0.3340$ in the case of Promujer, and LR $\chi^2(1)=2.40$, $p=0.1214$ in the case of the pooled sample.

In this sense, after controlling for the effects of institutional health care, the empirical evidence shows that although there might be a positive relationship between the propensity of having a better health status and the action of borrowing, there is no way we can ascribe a better health status to the selected credit programmes. In the final section of this chapter we discuss our findings regarding the impact of credit on labour. We focus on two effects, one direct and the other indirect: labour intensity and labour hiring.

8.4 The impact of credit on labour

The relationship between credit and labour is particularly important in the context of urban poverty. On the one hand, for the moderately poor and non-poor, income-generating activities and self-employment activities are often important sources of income, whereas for the extreme poor, labour is in many cases the only source of livelihood. In the particular case of Mexico, a considerable percentage of

households engaged in income-generating activities are in the informality, which cause serious problems of social exclusion[17]. Whilst direct effects of programme participation could emerge in the form of increasing levels of labour intensity at household level, indirect effects could materialise, through a rise in household income, in the form of labour hiring by loan-supported enterprising households. The latter effect could be particularly important for the extreme poor. In the following section we examine the effects of programme participation on labour-hiring before moving on to the discussion about the impact of labour intensity.

8.4.1 The impacts on labour-hiring

We begin this section by considering the hypothetical case of an enterprising household *i* hiring labour as a result of increasing levels of income. But, the choice of hiring labour, which is observed in the form of labour expenditure, is not exclusively a function of income but also of the cost of efficiency labour. The latter relationship, i.e. between labour expenditure and the cost of efficiency labour, is particularly important in the context of fragmented labour markets, where enterprising households may perceive it to be very risky to employ workers for not having enough information about their skills, behaviour or moral integrity (see e.g. Foster and Rosenzweig 1996; Bardhan and Rudra 1986). Furthermore, at low levels of household income, even if the enterprising household wants to hire labour, they soon realise that they can only afford hiring unskilled and malnourished labourers with very low productivity (see e.g. Leibenstein 1957; Mazumdar 1959; Dasgupta 1993). In the end, the enterprising household may simply self-employ, n^s.

Following Dasgupta and Ray (1986), we assume that households will only consider hiring labour when they have reached a certain level of earnings, $\bar{Y}$, where the cost

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[17] The urban informal sector is defined in various ways: for example 1) as the self-employed and workers in firms with five or fewer employees; 2) self-employed, unpaid workers, and domestics; 3) unpaid workers and those making less than the minimum wage; 3) workers not insured with social security; 4) and workers in businesses not registered with Mexico's Tax Bureau. Recent estimations of the size of the sector using the definition of *employed in businesses not registered with the Tax Bureau* have reported a 20.3% of the Mexican urban employment (OECD). However, when the definition includes own-account workers, unpaid family workers, and employers and employees working in establishments with fewer than 5 or 10 persons engaged, the estimation increased up to 54% (Fleck and Sorrentino 1994).

of an *efficiency unit of labour* is at its maximum, $\bar{\mu}$ [18]. The cost of buying an efficiency unit of labour is measured by $w/\lambda(w)$, where w is the wage rate, and the product $\lambda(w)$, captures the *labour efficiency*. The quantity of labour hired will be measured by the expenditure on efficiency labour, $n^L\lambda(w)$, where n^L is the number of units of labour in hours. At very low levels of household income, no household will hire workers given the relative high cost of buying an efficiency unit of labour, and they will remain self-employed (see figure 5.2 in section 5.2.1 of Chapter 5).

Once enterprising households reach a minimum level of earnings, $\bar{Y}$, as a result of higher production, they begin to consider hiring labourers with a minimum level of skills, abilities, and so on, that represent a maximum cost of efficiency labour, $\bar{\mu}$, that the household can afford to absorb. If the choice of borrowing from a credit programme increases the probability of an income rise (as we reported in section 7.4.1 for programme participants at Fincomun, and using the pooled sample), then we may observe an *indirect* effect of credit on the quantity of labour-hiring. An effect of credit could also be observed on poor labourers whose skills and nutrition levels may be improved by the fact of being employed by the enterprising household. Unfortunately given data constraints, we cannot confirm the latter proposition.

In order to investigate the links between programme participation and labour hiring, we collected in the sample survey a continuous variable, W_i that captured information on total expenditure on labour. This variable, coded as WAGEXP, is essentially the product of the number of hours worked by the labourer and the wage rate paid per hour, $W = n^L\lambda(w)$ [19]. In an earlier examination of WAGEXP, we found that a large percentage of the interviewed households did not hire labour. In fact, just about 15% of the sample did actually employ labourers. In this sense, we had two groups of households: one reporting a maximum level of labour expenditure, and another consisting of households that did not report information on labour expenditure. Thus, the continuous variable W_i took a maximum value and a lower threshold zero in the form $W_i = \max(W_i^*, 0)$, where $W_i = W_i^*$ if $W_i^* > 0$

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[18] This *maximum* is the upper limit of the cost of buying an efficiency unit of labour that an enterprising household is willing to pay.

(when households reported labour expenditure); and $W_i = 0$ if $W_i^* \leq 0$ (when households did not report labour expenditure). Since we had a *censored* sample, we decided to follow a Tobit specification equation (Tobin 1958) in the form:

$$W_i^* = \alpha_w + Y_i \beta_w + u_i^w \tag{8.18}$$

where Y_i is a continuous variable that measures household income, and β_w and u_i^w are the slope coefficient and the error term, respectively. Since we have a data-censoring case demanding the latent variable W_i^* to follow a homoskedastic normal distribution, we have transformed WAGEXP into logarithmic form to make this assumption more reasonable. The new variable has been coded as LGWAGEXP. Notice that the use of OLS for the sub-sample for which $W_i^* > 0$ will produce an inconsistent estimator β_w since we are using only the data on uncensored observations, causing a downward bias result (Greene 2003). We are particularly interested in looking at the conditional mean function of the observed dependent variable W_i that is censored at zero for enterprising households with no labour-hiring, and with disturbances normally distributed. This is actually the fundamental reason of using a standard Tobit specification. If no censoring had occurred, the use of a Tobit model would be inappropriate (Maddala 1999).

Since we have a large percentage of data censoring, the pooled sample has been employed in the estimation. As both labour expenditure and household income are in logarithmic form, the parameter estimate β in equation (8.18) is the elasticity of (latent) expenditure on efficiency labour with respect to household income. In an attempt to capture any *direct* relationship between labour hiring and the choice of borrowing, equation (8.18) has also been estimated with the logarithm of the maximum amount of credit borrowed, C_i in substitution of Y_i, as independent variable. In this case, the slope coefficient will measure the *elasticity of labour expenditure with respect to credit*. For comparative purposes, we have replaced C_i with I_i and M_i separately in order to estimate the magnitude of the effect of

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[19] Since we cannot observe λ, we assume that this factor is captured by the wage rate w.

programme participation, and the length of membership, respectively, on labour expenditure.

Table 8. 15. Determinants of labour expenditure
Dependent variable: Logarithm of household expenditure on labour (LGWAGEXP)

Independent variables	Tobit	OLS	Tobit	OLS	Tobit	OLS	Tobit	OLS
LGMAXCREDIT	0.225	0.078						
	(0.68)	(3.13)***						
LGMAXCREDIT †			1.122	0.720				
			(0.37)	(2.84)**				
MEMBERSHIP					0.300	0.186		
					(0.40)	(3.90)***		
LGHINCOME							7.777	0.575
							(2.80)***	(2.34)**
Observations	148	22	148	22	148	22	148	22
Pseudo R2/ R2	0.47	0.29	0.00	0.27	0.00	0.29	9.84	0.29
LR chi2 / F statistic	0.49	9.82	0.14	8.07	0.16	15.22	0.002	5.50
Prob > chi2 / Prob > F	0.0019	0.0052	0.7107	0.0101	0.6884	0.0009	0.0392	0.0295

Absolute value of t statistics in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%
† LGMAXCREDIT is transformed into a dummy variable = 1 for treatment households

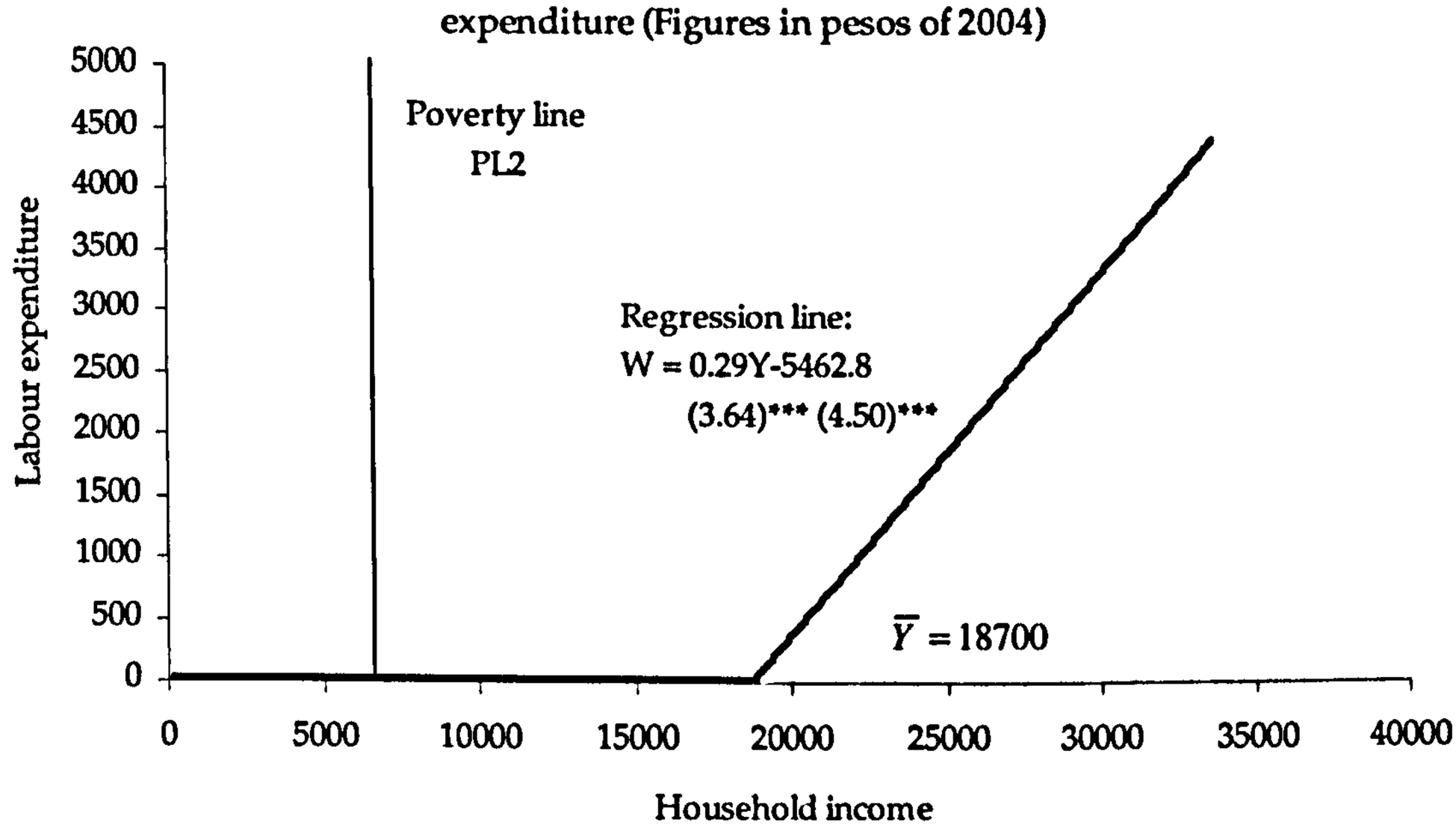
The results from the Tobit equations are presented in table 8.15. We have included OLS estimations for comparative purposes only[20]. The empirical evidence shows a large (and positive) elasticity of labour expenditure with respect to household income. Other things held constant, a one percent increase in the level of household income was predicted to give rise to a 7.8 percent in labour expenditure.

When the procedure was repeated with C_i as the independent variable the results reported a positive relationship between credit and labour expenditure; however, we did not find any evidence of statistical significance. In other words, the information suggests that although there might be a positive impact of credit on labour-hiring, the relationship is not strong enough to confirm this effect. The same statistical insignificance was found when equation (8.18) was computed with I_i and M_i separately, as independent variables.

What the evidence strongly supports, however, is the hypothesis of an *indirect* effect through a rise in household income. If by borrowing capital, enterprising households manage to increase the level of household income, then an increasing probability of labour expenditure is observed. Although the computed elasticities

derived from the Tobit equation give us interesting information about the large responsiveness of the labour expenditure-income relationship, it does not tell us at what level of income the enterprising household begins to consider hiring labour. In order to estimate this value, we transformed W_i and Y_i into linear variables and then computed equation (8.18) accordingly. The results are presented in figure 8.7.

Figure 8.7. The relationship between household income and labour expenditure (Figures in pesos of 2004)



Absolute value of t statistics in parentheses. *** significant at 1%

The slope coefficient β now reports the predicted values of an *absolute change* in W_i conditional upon an *absolute change* in Y_i. As we hypothesise graphically in figure 5.2, at low levels of income, no household will hire workers given the relative high cost of buying an efficiency unit of labour, and they remain self-employed. Our estimations suggest that after reaching a minimum level of income, $\overline{Y}$, predicted to be in the order of 18,700 pesos or about 1700 dollars per month, enterprising households begin to consider hiring labour[21]. After point $\overline{Y}$, the propensity of labour expenditure becomes positive and significant: a one-peso increase in the level of household income was predicted to give rise 29 cents in labour expenditure, *ceteris paribus*.

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[20] Note that the use of OLS for the sub-sample for $W_i > 0$ have caused not only a downward bias result, but also reported a statistical significance.

[21] The statistics of the Tobit equation are: LR $\chi^2(1) = 15.15$, $p < 0.01$

Notice that the average income of employer households is well above the poverty line[22]. It seems that at low levels of income, the relative cost of hiring labour is too high, either due to low levels of labour productivity or informational asymmetries. Mosley and Rock (2004:477) have actually reported qualitative evidence from Africa that shows poor households being reluctant to hire labour for *"a very considerable perceived risk associated with the initiation of financial relationships going outside the family"*. In our study, we find that labour hiring often emerges when the supply of labour from family members is not available. Take the following case:

Case study 8.6

Mr A, 37 years of age lives with his mother and two younger sisters in San Miguel Toetongo, in the Iztapalapa District. He has a small grocery shop located in a neighbourhood about 40 minutes from his place of residence. He is the only source of household income since his sisters are students, and his mother, responsible for housework and other chores.

He began the grocery business 5 years prior this interview, with voluntary savings that were gradually accumulated through the participation at ROSCAS. He also built the premise where the grocery is located with savings at ROSCAS. At that time, he did not know about Fincomun, although he became member after a relative told him about the organisation a year and a half ago.

As a competitive strategy, he decided to offer late opening hours that a few months later became a 24-hours service 7 days per week. At nights, the main selling products are beer, spirits and other complementary products. In order to attend the grocery shop throughout the night, he needed to hire two waged-workers. He pays 850 pesos each (some US $76) for 40 hours-work per week. This about 2.2 times the estimated capability based poverty lines for urban Mexico (PL2).

Based on reported revenues and costs, we estimate monthly profits in the order of 1728 US dollars, which weighted by equivalence factors, yielded an average income 3.15 times the PL2 for each member of the household. When we asked the reasons of employing two workers he said: *"The business has been growing and I wanted to open the shop longer hours but I could not work 24 hours, you know. My sisters and my mother could not help me either. It is too risky to work at nights. That is why I decided to hire my employees..."* Interview: Int2-01302004, minute 14:17.

[22] The poverty line at household level has been set up at 6570 pesos per month, which is the product of the poverty line at 1507.5 per month (PL2) multiplied by the household size using the equivalence factor (IAE1) proposed by Rothbarth (1943).

Although we found no evidence of poor households hiring labour, we did find that 27% of the hired labourers were below the threshold of extreme income deprivation (PL1), whereas 50% of workers were below the national poverty line (PL2), and 59% below the line of moderate poverty (PL3).

8.4.2 Labour intensity *vs.* labour efficiency

An important difference between treatment and control households was found in relation to the wage paid to labourers relative to the poverty line. For analytical purposes, we concentrate on the poverty line 2 (or PL2). Whilst labourers hired by treatment households received a wage 25% above the poverty line, the corresponding control households paid a wage far below that threshold (64.4%). It would seem that there is a positive relationship of programme participation on labourers' welfare. Evidence from a cross-tabulation showed a statistical significant association at the 0.05 level between treatment and control groups at Fincomun (and using the pooled sample) in relation to the units of labour hired, measured in hours per week (see table 8.16).

Table 8. 16 Association between programme participation and labour

	FINCOMUN		CAME		PROMUJER		Pooled sample	
	Treated	Control	Treated	Control	Treated	Control	Treated	Control
Self-employed per household (average)	1.94	1.27	1.39	1.61	1.35	1.19	1.60	1.35
Self-employment as % of income sources	85.37	65.71	65	87.88	71.43	58.14	75.39	69.37
Labour-hirers as proportion of total borrowers (%)	22.22	21.05	17.86	16.67	3.85	4.76	15.56	13.79
Labourers per household-hirer (average)	1.4	1	1.8	1.7	1	1	1.5	1.3
Average hours worked per week	35+++	17.5	27	26.6	40	15	34+++	19.72
Wage paid as % of Poverty Line 1 (784.5 pesos per month)	243.15	93.21	172.08	170.81	305.93	107.07	240.39	123.70
Wage paid as % of Poverty Line 2 (1507.5 pesos per month)	126.53	48.51	89.55	88.89	159.20	55.72	125.10	64.37
Wage paid as % of Poverty Line 3 (1881 pesos per month)	101.41	38.88	71.77	71.24	127.59	44.66	100.26	51.59

The statistically significant association in the cross-tabulations are indicated by the Chi-square values for the cell as a whole at 0.001 (+); 0.01 (++); 0.05 (+++); and 0.1 (++++) levels of significance.
Source. Author's sample survey 2004

The information obtained from CAME and Promujer was not statistically conclusive. The evidence from Fincomun suggests that workers employed by treatment households worked on the average 35 hours per week in contrast to 17.5 hours of workers hired by control households, and this relationship was 34 hours

vs. 19.7 hours, when the pooled sample was employed in the estimation. Thus, by participating in the credit programme, enterprising households increased the probability of rising the labour intensity that may ultimately benefited poor workers. We investigate this issue later in section (8.5.3).

The difference in the wage rate observed in the cross tabulation could also be due to efficiency factors and not only because of labour intensity. We remind the reader that labour expenditure, W, is given by the product $n^L\lambda(w)$, where n^L is the number of units of labour hired, and $\lambda(w)$ is a measure of labour efficiency. By deriving the elasticity coefficient $(dW/W)/(dn^L/n^L)$, we could get a linear parameter estimate from $d(\ln W)/d(\ln n^L)$, and then estimate the relative change in labour efficiency, $d\lambda(w)$. If the computed elasticity is greater than one, then an efficiency factor should be driving up the wage rate.

Accordingly, we estimated the predicted elasticity by computing the regression equation $W_i = \alpha_w + n_i^L\beta_w + u_i^w$ on the observed values, W_i. The regressor, n_i^L is a continuous variable that captured the number of units of labour hired (in hours) per month. This variable was transformed into logarithmic form and coded as LGHOURSLABPM. As both labour expenditure and units of labour are logarithmic, we are able to predict the *relative change in labour efficiency*.

The results from the regression equation reported an elasticity greater than one. The magnitude of the responsiveness was in the order of 1.36 in the case of programme participants at Fincomun; 1.02 in the case of CAME and 1.19 when the pooled sample was used in the estimation. The slope coefficients were statistically significant in all the cases: t –statistic = 4.41, p =.00 in the case of Fincomun; 2.41, $p < 0.05$ in the case of CAME; and 5.73, p =.00 in the case of the pooled sample)[23].

Interestingly, our findings suggest that enterprising households not only increase labour expenditure as a consequence of higher levels of labour intensity, but also

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[23] The statistics of the regression equations are: $F(1, 10)= 19.49$, $p= 0.00$, $R^2 = 0.54$ in the case of Fincomun; $F(1, 6)= 5.82$, $p= 0.05$, $R^2 = 0.51$ in the case of CAME; and $F(1, 20) = 32.81$, $p = 0.00$; $R^2 = 0.52$ in the case of the pooled sample. We could not get elasticity estimates for programme participants at Promujer due to micronumerosity in the sample survey: only two participants reported labour hiring.

because they are able to hire more efficient units of labour. Unfortunately, since panel data was not available in our study, we could not find out whether an improvement in labour efficiency was due to a process of training and specialisation or simply because enterprising households were able to hire better workers afterwards. We speculate the former given the proximity of the predicted elasticity to the unity and the low productivity reported in the informal sector[24].

8.4.3 The direct impact of credit on labour intensity

Given the apparent significant difference between treatment and control households in relation to labour intensity, we decided to investigate this issue in more detail. Given the characteristics and nature of the available information, we estimated equation (8.2) derived in section 8.1, but including now as the dependent variable the continuous variable, n_i. This variable captures the number of units of labour (in hours) per month invested by enterprising households, including labour-hiring. Thus, $n = n^S + n^L$, i.e. the sum of hours of self-employment and labour hiring. This variable was transformed into logarithmic form and coded as LGAGHOURSPM. The function for the outcome of interest, n_i, i.e. the intensity of labour conditional upon the level of programme participation C_i takes the form

$$n_i = \alpha_n + X_i\beta_n + L_i\theta_n + C_i\delta + u_i^n \tag{8.19}$$

where X_i and L_i are the same vectors of household and financial market characteristics, respectively, derived above in section 7.2.1, whereas α_n, β_n, θ_n and δ are the intercept and the unknown parameters respectively. u_i^n is the error term reflecting unmeasured determinants of n_i that vary from household to household. As both the units of labour and the maximum amount of credit borrowed C_i are in logarithmic form, the parameter estimate δ will measure the elasticities of (latent) hours of labour invested with respect to credit.

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[24] Productivity in the informal sector is quite low. Jusidman (1993) estimates that the urban informal sector accounted for only 10.4 percent of Mexican GDP

Alternatively, we have estimated equation (8.19) with I_i in substituting of C_i where I_i takes the value $I=1$ if household i is a programme participant, $I=0$ otherwise. The coefficient of the parameter estimate δ reports now the difference in the mean log of units of labour of treatment households relative to the control group.

Given that some households reported no business activity at the time the survey was conducted, we estimated equation (8.19) using a Tobit regression equation. For comparative purposes, we also estimated equation (8.19) excluding households with no business activity by the time the survey was conducted, and using an OLS analytical platform. The results are presented in table 8.17. Despite the fact that the level of data censoring was no significant (7.5%), the use of OLS for the sub-sample for which $n_i > 0$ has caused a downward bias result. Therefore we concentrate on the Tobit equation. The slope coefficient of the impact variable, C_i, reported as expected a positive sign for each of the three microfinance organisations; however, the coefficient was very small and statistically significant different from zero only in the case of Fincomun.

More precisely, the econometric results suggest that *ceteris paribus*, if the maximum amount of capital borrowed by treatment households at Fincomun had gone up by one percent, the units of labour invested in production is predicted to have increased in the order of 0.057%. Alternatively, when equation (8.19) was estimated with I_i as the impact variable, we found as expected a statistical significance only in the case of programme participants at Fincomun. The antilogs obtained from the Tobit regression reported a value in the order of $e^{0.547} = 1.7281$ suggesting that, other thing held constant, the *median* level of labour intensity of treatment households at Fincomun was higher than that of control groups by 73%.

In order to investigate the effects over time, we consider an extension of equation (8.19) with M_i (MEMBERSHIP) as the explanatory variable. We remind the reader that M_i measures the number of years of programme participation and takes a value $M_i > 0$ for treatment households and $M_i = 0$ for control groups.

Table 8. 17 The impact of programme participation on labour

Dependent variables	FINCOMUN			CAME			PROMUJER			Pooled sample		
Logarithm of hours at work during the last month, including labour-hiring (LGAGHOURSPM)	C_i as explanatory variable a/	I_i as explanatory variable b/	M_i as explanatory variable c/	C_i as explanatory variable a/	I_i as explanatory variable b/	M_i as explanatory variable c/	C_i as explanatory variable a/	I_i as explanatory variable b/	M_i as explanatory variable c/	C_i as explanatory variable a/	I_i as explanatory variable b/	M_i as explanatory variable c/
Tobit	0.057	0.547	0.155	0.007	0.012	-0.125	0.011	0.090	0.026	0.020	0.176	0.009
	(2.03)**	(2.06)**	(2.35)**	(0.11)	(0.02)	(1.03)	(0.18)	(0.18)	(0.10)	(0.76)	(0.72)	(0.15)
OLS	0.057	0.544	0.153	0.007	0.006	-0.111	0.007	0.061	0.009	0.020	0.176	0.014
	(2.07)**	(2.04)**	(2.18)**	(0.14)	(0.01)	(1.04)	(0.14)	(0.14)	(0.04)	(0.81)	(0.79)	(0.21)
Logarithm of hours at work during the last month, excluding households with no business (LGAGHOURSPM)												
OLS	0.049	0.471	0.111	0.004	0.063	0.028	0.028	0.215	-0.150	0.029	0.233	0.092
	(1.99)*	(1.97)*	(1.84)*	(0.18)	(0.32)	(0.65)	(0.66)	(0.62)	(0.78)	(2.11)**	(1.86)*	(2.90)***

Absolute value of t statistics in parentheses. * significant at 10%; ** significant at 5%; *** significant at 1%
a / C_i: logarithm of the maximum amount of credit borrowed (LGMAXCREDIT), b/ I_i: LGMAXCREDIT is transformed into a dummy variable = 1 for treatment households; c/ M_i: number of years of programme participation (MEMBERSHIP).
For more details, see tables A8.6 and A8.7 in the Appendix to Chapter 8

Since the regressand, n_i, is in logarithms, then the parameter δ is the *semilog* of labour intensity with respect to the length of membership. In other words, the slope coefficient measures the constant proportional or relative change in the number of hours invested in production for a given absolute change in the length of programme participation.

The results from the estimation equations are presented in tables 8.17 and A8.6 in the Appendix. The parameter estimate of the impact variable M_i reported statistical significance only in the case of programme participants at Fincomun. Other things held constant at the mean, the number of units of labour invested in the production process was predicted to increase at the annual rate of 15.5 percent after joining the microfinance organisation.

In order to estimate the rate of growth over the period of time that treatment households had participated in the credit programme, we computed the *compound* rate of growth as follows: [(antilog(δ)-1) x 100]. Our results predicted a compound rate of growth in units of labour invested in the order of 16.78 percent per year, which is slightly higher than the growth rate of 15.5 percent obtained from the *instantaneous* estimation. Note that the value reported from the constant is equal to 5.8. Since the constant is the log of units of labour invested at the beginning of programme participation, by taking the antilog of 5.8, we were able to estimate the average number of hours invested by control households. We predicted this value at approximately 330 hours per month. In this sense, after one year of programme participation, an average household would be able to increase the number of hours-work invested per month from 330 to 380.

8.5 Concluding remarks

The empirical analysis has given us important insights on the dynamics involving the relationship between credit and labour. With regards to the effects of credit on labour-hiring, the evidence shows that although there might be a positive impact, the relationship was not strong enough to confirm this effect. This was particularly true at low levels of income where no evidence of labour expenditure was found. We believe that this is related to problems of labour productivity and informational asymmetries that considerably increase the cost of hiring efficiency units of labour.

However, the evidence strongly supports the hypothesis of an *indirect* effect of credit through a rise in household income (see e.g. Rock and Mosley 2004, and Khandker 2005). This effect though, only emerged after reaching a minimum threshold of welfare. We think of this level as a *platform for employment generation.* We have estimated such a platform to be located well above the poverty line, at a level approximately three times as high as the poverty line. When programme participants reached that income status, the marginal propensity to hire labour increased significantly. The above appears to be reasonable *if* by borrowing capital, enterprising households manage to increase the levels of output to such an extent that they cannot supply by themselves the required units of labour.

In relation to labourers' earnings, we found a significant difference between wages paid by treatment and control households. Whilst workers employed by control households received, on the average, wages well below the poverty line, labourers hired by treatment households reported wages just above such a threshold. Two factors explain wage differences: the first one is associated with labour intensity. Labourers employed by treatment households worked more hours than those employed by control households. This was only statistically significant in the case of Fincomun.

The second factor explaining the wage differences is related to labour efficiency. We found an elastic response of wages paid in relation to the number of hours worked. This elasticity, however, was very small. This suggests that there might be efficiency factors driving up the wage rate; however, given data constraints, we were unable to investigate whether the wage difference was due to improvements in labour productivity or simply because better off households are able to hire relatively more skilled workers.

When we analysed labour intensity taken as a whole, i.e. including self-employment and labour hiring, we found a small impact coming from the choice of borrowing, but just in the case of Fincomun. It was not surprising though that the impact had a time-related effect linked to the length of membership. This effect was predicted to increase in 16 percent the units of labour invested by treatment households every year in relation to the control households. The results on the

impacts of credit on labour have important implications for policy and institutional design.

One the one hand, we find no evidence of labour hiring at low level of household income, say below or close to the poverty line. It means that organisations such as CAME and Promujer that impose upper limits on progressive lending and thus, exclude better off households from borrowing, are constraining themselves to achieve important *indirect* poverty impacts through labour markets. This is particularly relevant in the context of urban poverty, where the density of labour markets is very high[25]. By opening up the upper limits of credit, microfinance organisations could substantially increase the probability of achieving greater poverty impacts. As Mosley and Rock (2004:481) have pointed out *"this opens up the possibility that [...] poverty impact may be maximised by targeting microfinance on the vulnerable non poor, allowing the labour market to assume the brunt of the poverty reduction job"*.

On the other hand, rigid monitoring devices such a periodical compulsory meetings do actually prevent programme participants to invest more time on productive activities, and consequently, reduce the probability of those households to report direct impacts on labour intensity. It is not surprising thus that our estimations reported statistical insignificance in both income and labour impacts in CAME and Promujer that heavily rely the financial operation on group meetings. The significance of the impacts reported from rural households in the Pitt and Khandker (1998a) study, may reflect important differences between urban and rural poverty that need to be carefully addressed when designing credit programmes for the poor.

At the business level, it is interesting to observe, particularly in the case of Promujer, a statistical significance, although very small, from the impact of credit on the level of profitability. The empirical evidence indicates that the impact on profitability was greater than the one reported on income. In other words the benefits from programme participation did not materialised immediately in a rise in

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[25] According to the National Employment Survey (INEGI 1996), areas of high population density are cities with a population of 100,000 or more and state capitals. Employment in

disposable income but in other factors. For example, in relation to the effects of credit on the accumulation of business assets, we found a small short-term impact. It was clear, however, that the predicted probability of having impacts on business assets substantially increased with the length of membership.

An important finding in our study was the considerable effect of savings on assets accumulation at business and household level. Women whose loan portfolio was combined with savings deposits in ROSCAS reported the highest probability of asset accumulation. On the contrary, women borrowing from the microfinance organisation, and also from informal agents such as moneylenders, reported the lowest probability.

Qualitative information collected from interviews revealed that the decision of borrowing from moneylenders emerged from three sources: 1) problems of micro-rationing emerged from progressive lending; 2) a poor financial education, and 3) unexpected events and external shocks. Thus, borrowing from moneylenders was seen as a coping mechanism that helped households to deal with these shocks in the short run; however, given the high interest rate charged by these agents, it was not surprising that some of these households were forced afterwards to sell some of their assets to pay off the loans. This situation seriously exacerbates, as reported in the Amin et al (2003) study, the vulnerability of the poor.

In relation to business creation, we find a significant impact in the case of CAME and Promujer. Actually, a considerable percentage of programme participants in those originations began their business with seed capital from these microfinance organisations. Not surprisingly, Fincomun did not report any impact since the organisation has imposed lending restrictions to applicants with no income-generating activities. The impacts of credit on business creation can be particularly important in the context of urban poverty, where income sources from primary economic activities are practically non-existent. Women are often great beneficiaries of business activities given the remaining structural gender inequalities in the wage labour market.

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those urban areas has been estimated to range from 47.0% of total national employment in 1991 to 45.6% in 1995 (Martin 2000).

Interestingly, a significant effect of credit was found amongst women whose perception of having a better financial situation after joining the microfinance organisation increased according to the length of membership. Once again, the predicted probabilities of having a better financial situation were considerably higher when women used voluntary savings mechanisms as another source of financing and considerably lower when they borrowed from moneylenders. In this sense, financial innovations such as savings products and insurance could effectively protect the poor against unexpected events and substantially reduce the level of vulnerability

When we turn to the effects on housing conditions, we found only a significant impact from CAME. We believe that this statistical insignificance reported from programme participants at Fincomun and Promujer is related to the age of settlements such as San Miguel Teotongo and Tula Hidalgo, where Fincomun and Promujer operate, respectively. Families living in these neighbourhoods have had more time to improve their houses than families living in the Chalco Valley and therefore, get a higher utility by investing their credit in business or household assets than in housing improvements. Participants at CAME also reported significant impact in relation to vehicle purchases. Specific local characteristics of the Chalco Valley explained these results. The particular case of households living in the Chalco Valley investing in *bicitaxis* illustrates how the poor take advantage of business opportunities when sources of funding are available.

Our study has also reported interesting information on the effect of credit on human capital. In relation to the effect of credit on children's schooling, the information reported a statistical significant effect although small impact only in the case of Fincomun. We believe that the small effect from programme participation reflects two phenomena: the first is related to the presence of a short-run opportunity cost of school enrolment that substantially increases as soon as the children get older and are able to generate income. If by borrowing from microfinance organisations, enterprising households increase labour intensity, then they may prefer to increase labour inputs from family members before considering hiring workers. This assumption is reinforced with the evidence found in section 8.5.2, regarding the absence of labour hiring at low levels of household income.

The second phenomenon is related to a substitution effect that Pitt and Khandker (1998b) have reported in relation to parents' and children's time in self-employment activities and group meetings. If women borrowing from CAME and Promujer spend several hours in periodical group meetings, then the oldest children's time may be used to substitute the time women's withdraw from childcare or productive activities. The effect of credit also depended on the length of programme participation and the magnitude of women's indebtedness. In particular, female borrowers receiving loans from moneylenders increased substantially the probability of children's dropouts. In this sense, a reduction in the time-intensity and rigidity of group lending contracts as well as innovations in the form of *emergency loans* and *voluntary* savings products could have important impacts on human capital in the long-run (see Lenton and Mosley 2007 for a similar argument in the case of Bolivia). In the following chapter, we summarise the main findings and contributions of this thesis, and propose a list of policy recommendations to improve practice and increase impacts.

Table 8. 18: Summary of findings

Impacts reported by the organisation	FINCOMUN	CAME	PROMUJER	Pooled sample
1) On the impacts on the level of profitability				
Slope coefficient with C_i as explanatory variable	Significant but inelastic. 0.17% increase in profits relative to a 1% change in credit	Insignificant and inelastic	Significant but inelastic. 0.16% in profits relative to a 1% change in credit	Significant but inelastic. 0.06% in profits relative to a 1% change in credit
Slope coefficient with I_i as explanatory variable	Significant and very large difference between treated and control groups in relation to profits	Insignificant	Significant and very large difference between treated and control groups in relation to profits	Significant and large difference between treated and control groups in relation to profits
2) On the impacts on the accumulation of business assets				
Slope coefficient with C_i as explanatory variable	Significant but very small. Increasing probability of 0.04% relative to a 1% change in credit	Significant but very small. Increasing probability of 0.09% relative to a 1% change in credit	Significant but very small. Increasing probability of 0.10% relative to a 1% change in credit	Significant but very small. Increasing probability of 0.05% relative to a 1% change in credit
Slope coefficient with I_i as explanatory variable	Significant and large. Treated households with 50% higher probability relative to control groups	Significant and large. Treated households with 72% higher probability relative to control groups	Significant and large. Treated households with 84% higher probability relative to control groups	Significant and large. Treated households with 49% higher probability relative to control groups
Slope coefficient with M_i as explanatory variable	Significant but small. Increasing probability of 9% relative to one year of programme participation	Insignificant	Significant and large. Increasing probability of 49% relative to one year of programme participation	Significant but small. Increasing probability of 7% relative to one year of programme participation

3) On the impacts on business creation	Insignificant association	Significant association between treated and control groups	Significant association between treated and control groups	Significant association between treated and control groups
4) On the impacts on financial stability (perceptions on better situation)				
Slope coefficient with C_i as explanatory variable	Significant but small. Increasing probability of 0.05% relative to a 1% change in credit	Significant but small. Increasing probability of 0.09% relative to a 1% change in credit	Significant but small. Increasing probability of 0.05% relative to a 1% change in credit	Significant but small. Increasing probability of 0.03% relative to a 1% change in credit
Slope coefficient with I_i as explanatory variable	Significant. Treated households with 40% higher probability to report financial stability relative to control groups	Significant. Treated households with 62% higher probability to report financial stability relative to control groups	Significant. Treated households with 41% higher probability relative to control groups	Significant. Treated households with 29% higher probability relative to control groups
Slope coefficient with M_i as explanatory variable	Significant but small. Increasing probability of 9% relative to one year of membership	Significant but small. Increasing probability of 12% relative to one year of membership	Significant. Increasing probability of 24% relative to one year of membership	Significant but small. Increasing probability of 5% relative to one year of membership
5) On the impacts on housing improvements				
Slope coefficient with C_i as explanatory variable	Insignificant	Significant but small. Increasing probability of 0.11% relative to a 1% change in credit	Insignificant	Significant but small. Increasing probability of 0.03% relative to a 1% change in credit
Slope coefficient with I_i as explanatory variable	Insignificant	Significant and large. Treated households with 80% higher probability relative to control groups	Insignificant	Significant. Treated households with 22% higher probability relative to control groups

Slope coefficient with M_t as explanatory variable	Insignificant	Significant but small. Increasing probability of 4% relative to one year of programme participation	Insignificant	Significant but small. Increasing probability of 9% relative to one year of programme participation
6) On the impacts on vehicle purchases				
Slope coefficient with C_t as explanatory variable	Insignificant	Significant but small. Increasing probability of 0.06% relative to a 1% change in credit	Insignificant	Significant but small. Increasing probability of 0.01% relative to a 1% change in credit
Slope coefficient with I_t as explanatory variable	Insignificant	Significant and large. Treated households with 43% higher probability relative to control groups	Insignificant	Significant but small. Treated households with 12% higher probability relative to control groups
7) On the impacts on electrical appliances				
Slope coefficient with C_t as explanatory variable	Insignificant	Significant but small. Increasing probability of 0.07% relative to a 1% change in credit	Significant but small. Increasing probability of 0.04% relative to a 1% change in credit	Significant but small. Increasing probability of 0.02% relative to a 1% change in credit
Slope coefficient with I_t as explanatory variable	Insignificant	Significant and large. Treated households with 48% higher probability relative to control groups	Significant. Treated households with 30% higher probability relative to control groups	Significant. Treated households with 20% higher probability relative to control groups
Slope coefficient with M_t as explanatory variable	Insignificant	Significant but small. Increasing probability of 10% relative to one year of programme participation	Significant but small. Increasing probability of 19% relative to one year of programme participation	Significant but small. Increasing probability of 4% relative to one year of programme participation

Other important findings	We observed greater impacts of credit as the length of membership increased. Voluntary savings had a substantial positive effect on asset accumulation and financial stability. On the contrary, borrowing from moneylenders had a negative effect. Narrative evidence indicated two reasons for households to borrow from moneylenders: 1) credit rationing in the market and 2) external shocks that hit the household.			
8) On the impacts on children's schooling				
Slope coefficient with C_i as explanatory variable	Insignificant	Insignificant	Insignificant	Significant but small. Decreasing probability of dropouts by 0.02% relative to a 1% change in credit
Slope coefficient with I_i as explanatory variable	Insignificant	Insignificant	Insignificant	Significant. Treated households with 25% lower probability of dropouts relative to control groups
Slope coefficient with M_i as explanatory variable	Significant but very small. Decreasing probability of dropouts by 1% relative to one year of membership	Insignificant	Insignificant	Significant but very small. Decreasing probability of dropouts by 4% relative to one year of membership
9) On the impacts on health status				
Slope coefficient with C_i as explanatory variable	Insignificant	Insignificant	Insignificant	Insignificant
Slope coefficient with I_i as explanatory variable	Insignificant	Insignificant	Insignificant	Insignificant

10) **On the impacts on labour-hiring**	We observed a large elasticity of labour expenditure with respect to household income. A 1% increase in the level of household income was predicted to give rise to a 7.7% in labour expenditure. The large elasticity is explained by low level of initial wages relative to household income. We did not find evidence of a direct impact of credit on labour expenditure. We found that only households well above the poverty line, with an income estimated in the order of 1700 US dollars per month, hired labourers.			
	Treated households paid higher wages and above the poverty line, relative to control groups	Treated households paid higher wages than control groups but below the poverty line	Treated households paid higher wages and above the poverty line, relative to control groups	Treated households paid higher wages and above the poverty line, relative to control groups
11) On the impacts on labour intensity				
Slope coefficient with C_i as explanatory variable	Significant but inelastic. 0.06% increase in unit of labour relative to a 1% change in credit	Insignificant	Insignificant	Insignificant
Slope coefficient with I_i as explanatory variable	Significant difference between treated and control groups in relation to labour (73%)	Insignificant	Insignificant	Insignificant
Slope coefficient with M_i as explanatory variable	Significant but small. Increased use of labour by 16% per year of programme participation.	Insignificant	Insignificant	Insignificant
Other important findings	Statistical significance in the elasticity of labour efficiency. e = 1.36	Statistical significance in the elasticity of labour efficiency. e > 1.02	Not available for micronumerosity	Statistical significance in the elasticity of labour efficiency. e = 1.19

Source: Sample survey

Chapter 9
Conclusions

9.1 Methodological contributions and limitations of the study

Albert Einstein (quoted in Hoffmann 1974) once said: *"One thing I have learned in a long life: that all our science, measured against reality, is primitive and childlike -- and yet it is the most precious thing we have"*. Our study, primitive and childlike as it is, is an attempt to contribute to the measurement of the impact of one of the most promising interventions in the field of development and poverty reduction in recent times: *microfinance*. In the process of doing so, we used specific demographic characteristics, particularly related to the high population density and household homogeneity in deprived urban areas in Mexico, to facilitate the operationalisation of a quasi-experimental research design that served as the raw material for the econometric analysis, in which we tested the underlying assumptions of no selection bias and endogeneity problems in a relative straightforward manner. The results from the Heckit and Tobit selection models, presented in Chapter 7, have confirmed the efficacy of our method. In collecting primary data, we focused at the household level to reduce the fungibility problem, and made sure to get the information needed to control for potential problems of attribution.

Given the complexity and informational constraints that emerge from the choice of borrowing, we believe that our methodological research approach, which is discussed in detail in Chapter 6, is an important contribution to the field of impact analysis. Most of the studies that have successfully controlled for the problems of selection bias and endogeneity usually require the imposition of arbitrary exogenous rules that apply, in the best scenario, to a very few cases, and more likely to be replicated in the rural context. The widely cited study by Pitt and Khandker (1998a; 1998b) is a good example of such studies. Other methodological approaches, such as the one proposed by Coleman (1999) require prior institutional information on future geographical expansions, which in itself is restricted to organisations that focus on geographical expansion. This criterion is nonetheless difficult to replicate amongst organisations that focus on exhausting large local markets (usually in urban areas) before exploring other markets.

In order to avoid potential under- or over-estimations of the magnitude and severity of poverty in the areas under investigation, it was fundamental to identify

appropriate thresholds of human deprivation beyond the widely used World Bank's poverty line of US $1 a day (per capita). In that perspective, we followed three different poverty lines derived by Sedesol (2002) from domestic prices and patterns of consumption, adjusted by three different adult equivalence scales to take into account intra-household distribution of welfare. The empirical evidence, presented in Chapter 7, suggests that the magnitude of the impact of credit on income poverty is sensitive to both the poverty line and the equivalence factor selected by the researcher. Our study, as it is designed, faces limitations that we wish to assume as challenges for future investigations. These challenges are pointing in three different but interrelated directions: 1) to extend the methodological research design to the rural context; 2) to look at the impacts beyond the household level, and 3) collect other rounds of primary data, in the form of panel, to examine poverty dynamics and vulnerability. In that effort we hope to increase the sample size to strengthen the validity of the findings.

9.2 Implications of the empirical findings to the theory and practice

During the empirical investigation, we were interested in examining the degree of credit rationing in the markets where the case-study organisations operate. The evidence suggests, as Proposition No. 3 in section 5.3 states[1], that the rationing exists and materialise in various forms. For example, the large percentage of participation in rotating savings and credit associations that we observed amongst programme participants indicates how through the use of *complementary* indigenous mechanisms, households deal with micro-rationing caused by progressive lending. The propensity to participate in ROSCAS, as an enforcing savings-to-finance instrument had, in that perspective, a *complementary effect* to the choice of borrowing from a microfinance organisation. On the contrary, we find a *substitution effect* between the microfinance organisations and other institutional lenders, although the level of substitutability was rather small given the limited percentage of households with access to institutional financing. Similarly, we find a *substitution effect*, although insignificance, in the relationship between microfinance organisations and moneylenders. Despite the fact that a small number of households borrowed from moneylenders, those who actually borrowed did it due

[1] Our research hypotheses are stated as propositions in Chapter 5, section 5.3.

to the following reasons: 1) micro-rationing, particularly observed in peak seasons of demand that were exacerbated through the use of progressive lending; 2) to cope with idiosyncratic events and transitory shocks that often cause temporal shortfalls of liquidity and complicated the loan repayment to the microfinance organisation, and 3) a poor financial education that cause mismanagement and high levels of debt. In that context, the moneylender was able to compete with the microfinance organisation, perhaps not in price but by offering quick and *flexible* contracts.

In this sense our findings support recent institutional efforts aimed to design more flexible products such as *seasonal loans*, and ex-post *protective* risk-coping products such *emergency loans* and *insurance schemes* that could substantially benefit the poor. In addition, ex-ante *preventive* schemes aimed to improve the *financial literacy* of the poor, could considerably reduce the probability of households falling into a cycle of debt. Promujer for example, gives new group members a *pre-credit* training course that covers principles of credit management and finance. Although experimentation and analysis will be needed to identify the magnitude of the effects of financial education on the rate of loan default, it is a fact that credit indebtedness, coming from poor credit management, is a growing problem that goes beyond poor communities. Many governments in developed as well as in developing countries, in an attempt to reduce the incidence of household debt, have started offering financial counselling and other educational programmes to advice and help for those facing financial difficulties. We do not see why the poor should not be eligible to receive similar treatment. The Mexican government that supports the microfinance sector through PRONAFIM could facilitate the design and dissemination of e.g. financial literacy programmes that could be more efficiently distributed through networks and federations, for the benefit of both the lender and borrower.

9.2.1 The implications of high utility costs of borrowing

One of the main contributions of microfinance in the area of development finance has been its ability to reduce the informational costs to the lender, which are related to moral hazard and adverse selection problems, through the use of screening, incentive and enforcement devices that enable the poor to access credit markets

through institutional financing. Although recent theoretical work (e.g. Stiglitz 1990) suggests that these informational costs are partially or totally transferred to the borrower (Proposition No 1 in section 5.3), there have been very few empirical attempts to measure the magnitude of these costs and their effects on the poor. In section 7.3.1 we report our findings that point to a significant and *increasing* utility cost of borrowing, which is also correlated to an income rise, as a consequence of the rigidity of screening, incentive and enforcement devices exploited by microfinance organisations.

Apparently, the urban poor, unlike most of the rural poor, regularly travel long distances to find a source of livelihood. Our results show that although both treatment and control groups lived in the same neighbourhood, a large percentage of these enterprising households were engaged in income-generating activities that often took place in areas economically more active, faraway from the place of residence. In that context, those households that became more *mobile* as a result of joining a microfinance organisation also absorbed an *increasing* utility cost of borrowing. We find that this cost mainly comes from two sources: 1) a *transaction cost* related to transportation expenses, and 2) an *opportunity cost* related to the rigidity of peer-monitoring devices such as *periodical repayments schedules* in group meetings. The second cost was particularly high for households borrowing from CAME, a village-banking operator, where it was reported that group sessions often lasted for several hours. The incomes that poor borrowers have to forgo every week to attend group meetings were substantial, perhaps not in monetary terms, but for making a living. The costs of the time tied up in attending such meetings we estimate at 17% of the urban Mexico poverty line 2. "Time is gold", the proverb reads, and it turns out to be especially true in this case.

Surprisingly, we find an *elastic* demand for credit as a result of a percentage increase in the opportunity cost of borrowing. We believe that such responsiveness relates to an *income effect* coming from the monopolistic characteristics of the credit markets in which microfinance organisations operate. Credit constrained (or micro-rationed), and with no options but the local moneylender, poor households borrow the maximum amount of credit available to minimise the opportunity cost of borrowing, and remain in the credit programme expecting to take advantage of

progressive lending. The problem with progressive lending (as Proposition No. 3 in section 5.3 states) is that it potentially exacerbates micro-rationing, particularly when lenders impose upper limits of credit, which are often pursued through policies of *graduation*. Once experienced borrowers reach that upper limit, they are forced to either borrow below the optimum level or search for other sources of funding. However, due to the monopolistic characteristics of the market, the first is often the only possible option that leads to market inefficiency. But even in the hypothetical case that the household has access to other sources of funding, *graduation* in practice aggravates the informational costs related to monitoring and enforcement activities. This is simply because those borrowers that reach the upper limits of progressive lending are experienced and proven creditworthy clients, and by forcing them to "graduate", the microfinance organisation is in fact losing the best clients. In this sense, to eliminate the upper limits of progressive lending could benefit the borrower and lender, and lead to constrained Pareto improvements.

The empirical evidence also suggests that inefficiency and rigidity in peer-monitoring devices such as periodical repayment schedules, not only keep poor borrowers with large seasonal income from borrowing at the optimum level, but in fact, they may push good borrowers to leave the programme. Equally important is the connection that we find between rigid peer-monitoring devices and the insignificance of poverty impacts reported from CAME and Promujer (both employing village banking technology) vis-à-vis the significant, although marginal, poverty impacts reported from Fincomun (employing individual-lending technology). Our finding confirms Proposition No. 2. It is pertinent to keep in mind though that Fincomun reports poverty impacts only at the upper threshold of human deprivation, very close to the poverty line, but failed to reduce *extreme poverty*.

Although reaching the poor is in itself meritorious, it does not necessarily leads to poverty reduction. In fact, we find that microfinance organisations not only failed to reduce extreme poverty but also increased (in the case of Promujer) the likelihood of chronic poverty i.e. the probability of the poorest to remain in that level of deprivation. We believe that this is a good case for questioning the ability of microfinance to reduce *extreme poverty*, as suggested by the campaigners of the

Microcredit Summit. As long as microfinance organisations employ a rigid and inefficient lending technology, we have strong reservations of the potential ability of microfinance to help the *poorest*. In that perspective, we are in a position to accept Proposition No. 11, which states that credit is a significant determinant in reducing the incidence of poverty, but only on the basis of *moderate poverty*, and from the intervention of an *individual lending* organisation. Resources for nutrition, literacy, health care and other social safety nets could be more effective instruments to avoid *extreme deprivation*, and perhaps credit could play a complementary role of a wider poverty reduction strategy in urban areas. In that view, our results reinforce the recent calls from the academic community in Mexico for extending the governmental safety nets programme *Oportunidades* to urban areas, which at the moment only targets the extreme poor in rural communities. Ironically, as discussed earlier in Chapter 4, about one-third of the extreme poor in Mexico live in urban areas, and for that simple reason, remain excluded from receiving such support.

Financial support from donors and governmental agencies could potentially generate an important value if support was directed beyond the narrow objective of maximising outreach. The Mexican Government, for instance, has supported the expansion of the infant microfinance industry in Mexico, through PRONAFIM's *capital subsidisation* programme, and although this programme was in theory designed to improve access of poor households to credit, we have reported in Chapter 3 that the federal government may have ended up strengthening the monopoly power of a small number of microfinance organisations that received a large percentage of these subsidies. It would have been desirable if PRONAFIM had reserved at least a small percentage of the initial US $100 millions fund to support research activities to e.g. develop more efficient lending technology that could potentially reduce the utility cost of borrowing that cause a financial burden to the poor. This could also help microfinance organisations to improve client retention and achieve a *longer-term outreach*. Government subsidisation in that area is especially important not only in facilitating technological and financial innovation, but also in the dissemination of information and knowledge that in the form of a public good, could generate positive externalities.

9.2.2 Wider impacts beyond income poverty

In the process of subsidising the expansion of the microfinance industry, PRONAFIM (as well as many other multilateral donors and governmental agencies working with microfinance organisations in the developing world) has imposed *conditionality* to ensure that credit delivery targets the intended beneficiary, i.e. the poor. However, the empirical evidence suggests that *targeting* may actually diminish the potential wider impacts of credit. Particularly important is the indication that at low levels of income, households do not report *labour expenditure*. We believe that this is in part due to the relative high cost of buying an efficiency unit of labour. As a result, poor households remain self-employed. Nonetheless, we find an *indirect impact* of credit on poor labourers through *labour-hiring*, although this effect was *only* observed when enterprising households reached income levels well above the poverty line. If by borrowing capital from a microfinance organisation, enterprising households manage to increase income levels about three times the poverty line, then a significant propensity of labour expenditure is observed.

The empirical evidence also reveals a significant difference between wages paid by treatment and control households. Workers employed by the former group received on the average wages just above the poverty line, whereas workers employed by the latter group receive wages well below the poverty line. We find two factors that explain the wage difference: the first factor is associated with *labour intensity*, which although only significant in the case of Fincomun, was observed in more hours at work. The second factor is associated to *labour efficiency*, which is captured by an elastic, although small, wage responsiveness in relation to number of hours at work. This suggests that efficiency factors may drive up the wage rate; however, due to the lack of panel data, it was impossible to confirm this hypothesis. Nevertheless, the empirical results allow us to accept Proposition No. 5 that states that labour-hiring becomes positive only after reaching a minimum level of household income, well beyond the poverty line. We think of this level as a *platform for employment generation*. In that context, targeting at the poor, either due to donor conditionality or simply due to organisational goals through the imposition of upper limits of progressive lending, may actually diminish important trickle-down effects through labour markets that could *indirectly* benefit poor labourers. This is particularly

important in the urban context, where labour usually represents the only income source for the extreme poor.

Similarly important is the fact that in deprived urban areas farming activities are practically non-existent. As a result, non-farming business activities become a fundamental source of income for the poor. The impact of credit on business formation can be critical in that perspective, especially for women, who actively participate and often dominate local markets in Mexico. For that reason, the significant impact on the formation of new businesses with seed capital reported from CAME and Promujer (that confirms Proposition No. 9), takes on a special dimension here. It would be desirable, therefore, to eliminate restrictions on entry into institutional credit that are imposed to households with no business activity *but* in clear preparation for starting an income generating activity.

Our study has paid particular attention to the potential effects of credit on human capital. The empirical findings reveal bad and good news. One the one hand, we find no evidence to accept Proposition No. 17 that states that credit is a significant determinant for having a good health status. On the other hand, we find a significant, although small, impact of programme participation on children's schooling, which is contingent on the length of membership. Nonetheless, the magnitude of the impact (that confirms Proposition No. 16) was only significant in the case of Fincomun. We believe that the small effect reported from Fincomun, and the insignificant impacts reported from CAME and Promujer reflect two different but interconnected phenomena: the first is related to the presence of a short-run opportunity cost of school enrolment that increases once children get old enough to particulate in labour markets and generate income. If by borrowing from microfinance organisations, enterprising households increase labour intensity, then they may prefer to increase labour inputs from family members before considering hiring labour. The evidence reported earlier in relation to the fact that at low levels of income, households have a preference to self-employ, supports this assumption. The second phenomenon is related to a *substitution effect* that has been reported in the Pitt and Khandker (1998b) paper, and which emerges between parents' and children's time in self-employment activities and group meetings. If women (or men) borrowing from CAME and Promujer spend several hours in periodical group

meetings, then the oldest children's time may be used to substitute the time women (or men) withdraw from childcare or productive activities. In this sense, a reduction in the time-intensity and rigidity of group lending technology could potentially report significant *long-term impacts* on human capital.

Given the rigidity of peer-monitoring devices employed in group lending contracts, it was not surprising to find insignificant impacts of credit on labour intensity (including self-employment and labour-hiring) from programme participants at CAME and Promujer. It appears that such time-demanding devices prevent borrowers from investing longer working hours in productive activities. Only in the case of Fincomun, we find a significant impact, although marginal, on labour intensity. The evidence suggests that the significance of the impact (which confirms Proposition 4) is highly associated with the length of membership. This is especially important in the context of achieving *long-term impacts* through improvements in the existing lending technology that, as we discuss in 9.2.1, could potentially reduce the utility cost of borrowing, and improve client retention.

Long-term impacts from membership are also significant when we examine the magnitude of the impacts on business profitability (Proposition No. 6), which we find to be greater than the impact on income. It appears that the benefits from credit may not immediately materialise in an income rise, but in capital investments, e.g. in household and business assets (Propositions 7, 14 and 15). We believe that this is also related to our findings regarding the significant effects on *better financial stability* reported from the three case-study microfinance organisations (Proposition No. 8). In that context, although we report insignificant poverty impacts from CAME and Promujer, a positive and significant effect on households' perceptions about their economic status may denote a reduction in the level of *vulnerability*. This is comparable to the findings reported in Zaman (1999), although in the absence of panel data we cannot (as neither can Zaman) confirm this assumption.

In labour markets as well as in household income and human capital, we have seen the pervasive effects of rigid and inefficient screening, incentive and enforcement devices that undermine the desirable goals of reducing poverty and improving poor people´s well-being; however, our study also shows the urgency of supporting

research activities and other initiatives towards the development of financial products beyond credit, in particular savings and insurance products. For instance, we find that women whose loans from the microfinance organisation were combined with *voluntary* savings deposits in rotating savings and credit associations report the highest probability of asset accumulation at both the household and business level. Particularly important is to mention the significant impact of credit on housing improvements and vehicles in the case of CAME, and the increasing probability of achieving such outcomes when the household actively participate in voluntary savings-to-investment mechanisms such as ROSCAS. Our results show that the significance of the intervention responds to particular characteristics of the Chalco Valley, where CAME operates, and illustrates how the poor take advantage of credit, in combination with voluntary savings, to improve their living conditions and exploit business opportunities.

Voluntary savings and insurance can also play the role of *ex-ante* protective and *ex-post* risk-coping mechanisms against idiosyncratic income variability and transitory external shocks, and help microfinance organisations to reduce financial dependency on donor subsidisation. Savings-led organisations such as the Bank Rakyat in Indonesia and the cooperative and credit unions movement can give us important lessons in that respect, and although the popularity and successful stories of group lending organisations across the developing world have dominated the landscape of microfinance, and in particular impact studies, our study reveals that innovations in the territory of individual lending could make important contributions to the sector. A major constraint arises though (as discussed in Chapter 3), from restrictions that financial regulatory authorities impose on savings deposits. To meet these regulations can be very costly for a large percentage of credit programmes in the developing world, which often choose to continue operating as subsidy recipients than become fully regulated intermediaries. In that perspective, we believe that temporary subsidisation aimed to internalise such externalities from institutional transformation, could potentially lead to a more efficient and long-term sustainable microfinance system.

No lending model has superiority over the others; however, we are certainly convinced that important changes are needed, particularly in group-lending

organisations, to improve credit delivery and overall, market efficiency. In the urban context, individual lending technology is an important alternative that can potentially reduce the utility cost of borrowing. The experience of Fincomun in exploiting a direct deposit service from the HSBC that allows borrowers to deposit periodical loan instalments at any branch of the bank is an interesting innovation. We have observed, as Armendariz de Aghion and Morduch (2000) have reported from Eastern Europe, high rates of loan repayment from individual lending contracts, which can work, even without the use of collateral, by employing enforcement devices such as non-refinancing threats in case of default. Given the degree of fragmentation in credit markets, to lose the only source of capital beyond the moneylender can be devastating for the poor. Organisations that embrace group-lending technology should perceive individual contracts as a complementary component, rather than a substitute, to their operations. The innovative spirit of the Grameen Bank continues giving important lessons in that respect. The recent transformation of the classic solidarity group model into a more flexible and demand-led system, known as Grameen II, shows that in the process of *institutional evolution*, it is crucial to remove or reform rigid and inefficient practices in order to improve institutional performance, and potentially borrowers' welfare (see Rutherford 2006).

9.3 Policy recommendations and future research avenues

If the ultimate goal of microfinance organisations is to benefit the poor, then we need to explore other research avenues that could lead to the final destination of poverty *eradication*. We consider that the discussion is no longer a question of whether or not microfinance can achieve impacts on poverty and well-being, but on how we can maximise such impacts. In that course, experimentation based on our findings, as well as on the product of recent academic work, should be encouraged, and perhaps facilitated, by governmental agencies such as PRONAFIM and other donors, to improve credit market efficiency, through a number of possible policy actions:

1) Re-design periodical repayment schedules to cut down time in peer-monitoring activities; 2) removal of upper limits of progressive lending, which could be

simultaneously linked to the introduction of individual lending technology for "graduated borrowers"; 3) removal of credit *targeting* that could be facilitated by the elimination or relaxation of donor *conditionality*; 4) removal of loan restrictions to households with no business activity but clearly preparing to starting an income generating activity; 5) introduction of emergency and seasonal loans; 6) introduction of voluntary savings; 7) introduction of insurance schemes against accidents, death and robbery, which are more easy to control for the moral hazard problem; and 8) introduction of training courses in principles of business and credit management to improve financial literacy amongst new borrowers[2]. See table 9.1 for a summary of the policy recommendations and the expected benefits.

The rigidity and inefficiency that we have observed in the prevailing lending technology, particularly in group-lending models, bring up concerns about the potential adverse effects on long-term development patterns, especially on local production and technical innovation. This is especially relevant in the context of both market centralisation and market liberalisation in Mexico. Credit market inefficiency may reinforce the highly concentrated forces of economic growth that push enterprising members of disadvantage communities to flee to city in search for better opportunities, a situation that not only increases regional polarisation, but also drains human capital away from poor locations. Moreover, market liberalisation, in which Mexico has been involved over the last 15 years or so, has pushed domestic markets for opening, perhaps too quickly, to an increasing and aggressive competition from abroad.

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[2] It is important to note here that although the introduction of non-financial services such as training courses may increase organisations´ operational costs, they may also reduce the rate of loans in arrears (and as a consequence, the enforcement costs), and improve the organisations´ competitive position vis-à-vis other lenders operating in the market. Additionally, we could observe, at the household level, important changes in business knowledge and practices in the way credits are invested, which together could enhance the social mission of microfinance. Unfortunately, in our study we were unable to estimate the costs that training courses generate to microfinance organisations; however, in a earlier study (Junkin et al 2006) it was estimated that the business development training programme provided by Promujer to its clients in Bolivia and Peru represented 2% and 13%, respectively, of total costs. The difference in costs emerged from different factors: 1) the cost of labour; 2) the organisation's capacity to make links with outside providers; 3) the fees charged for the service provision, and 4) fundraising abilities. But, in the event of zero subsidisation, and in order to achieve operational self-sufficiency, organisations may need to charge a fee that could be spread over a period under which the firsts credits are repaid. It that process, diminishing marginal costs of training would be observed once both the length of membership and the loan portfolio increase. Nonetheless, more research is needed to identify a more accurate cost structure in the context of Mexico; however, the evidence reported from Promujer´s experience in Latin America suggests that a holistic approach can be achieved under the principles of operational self-sufficiency.

Table 9. 1 Policy recommendations for experimentation and potential benefits

Policy recommendations for experimentation	Expected benefits
Re-design of *periodical repayment schedules* to introduce more efficient lending technology and practices to cut down peer-monitoring activities' time in group-meetings.	Improvements in children schooling and long-term impacts on human capital, as well as increasing labour intensity in productive activities, and in general, an increasing probability of poverty reduction.
Removal of *upper limits of progressive lending*, in particular in group-lending models, that could be linked to the introduction of individual lending products for "graduated" borrowers.	Reduction in micro-rationing for the borrower; improvements in client retention and financial performance for the lender, and improvements in market efficiency as a whole.
Removal of *credit targeting* that could be facilitated by the elimination of *conditionality* from governmental agencies and donors	Trickle down effects through labour markets that could indirectly benefit poor labourers
Removal of *restrictions on entry* into institutional credit to households with no business but clearly preparing to start one	Formation of new businesses and reduction of unemployment rate
Introduction of *emergency loans*, as ex-post protective mechanism, to cope with idiosyncratic events and transitory shocks,	Reduction in the probability of temporal shortfalls of household liquidity that increases the expected rate of loan default.
Introduction of *seasonal loans* to respond the increasing demand in specific periods of the year (e.g. Christmas)	Increase the returns to the borrower and reduce the expected rate of loan default
Introduction of *voluntary savings schemes*	Help the poor to plan future investments, and reduce the level of exposure to risks. Help the lender to reduce financial dependency on donor subsidisation.
Introduction of *insurance schemes* against accidents, death, and robbery that can be controlled for the moral hazard problem	Help the poor to cope with idiosyncratic and transitory external shocks and reduce lenders' expected rate of loan default
Introduction of *training courses* in credit management, as an ex-ante preventive mechanism, to ensure a minimum financial literacy amongst programme participants	Improvements in financial education, and reductions in both household over-indebtedness, and the rate of loan default.

The problem with quick market liberalisation and trade agreements is that they are often implemented under unfair conditions that put local producers, especially small, to the limits of survival (see Stiglitz 2002). The use of rigid lending technology could, in that perspective, drive borrowers into activities with high returns that facilitate periodical loan repayments, but generate low added value. This could compromise sustainable and long-term improvements in the levels of welfare in enterprising communities.

During our investigation, we interviewed borrowers that had been engaged in the production of textile and clothing goods but forced to take on the business of buying cheap clothes from China or Korea and sell them in street markets to carry on and remain self-employed. This may have important effects on the level of labour expenditure and regional unemployment. It is not clear to what extent inefficiencies in credit markets exacerbate this pattern; but it is in our interest to follow this possible research avenue in the near future.

In an attempt to look at the dynamics of programme intervention, we wish to explore the possibility to extend our study to a second or third round in the form of panel data, which would allow us to measure the effects of credit on factors such as household vulnerability, labour efficiency, and changes in technology that we were unable to measure with a cross-sectional sample survey. Similarly, we are interested in extending the scope of our research to the rural context, where we believe there are important research areas and policy avenues yet to explore. In particular we are interested in examining the potential role that the microfinance sector, as an institutional network, could play in improving sustainable and organic farming and fair trade conditions. This is an area in which developing countries have an important competitive advantage. Recently, there have been important institutional efforts (e.g. the Fair Trade Foundation) to link small producers in poor communities, often organised in co-operatives and similar participative organisations, to retailers and supermarkets in industrialised economies. In that process, we believe that the inclusion of well-designed financial products could maximise the expected benefits.

Expanding access to credit (and other financial services) is, beyond all doubt, critical for the poor. However, design factors often constrain the magnitude of the impacts achieved by microfinance interventions. In that context, we hope that our findings will serve as *stimuli* to the case-study organisations, as well as to the microfinance industry in Mexico and in the developing world, to explore other possible ways to improve practice and increase impact. In that effort, we believe that both institutions and households win, and the orthodox hypothesis of divisibility between equity and efficiency collapses.

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Appendices

Appendix to Chapter 5

A5.1 The Index of Household Capital Endowments

The Index of Household Capital Endowments is an attempt to capture the multidimensional characteristic of human deprivation in urban poverty. It is built on three separate components, which are fundamental in the context of social interactions: human capital, physical capital and social capital. The conceptualisation of the Index of Household Capital Endowments goes beyond the restricted income variable usually employed as a measurement of human wellbeing, and consequently it uses other conceptual variables at household level:

A5.1.1 The Human Capital Index

Following the approach used by Anand and Sen (1990; 2000) we employ a combination of two components equally weighted as an indicator for the stock of human capital: *life expectancy at birth* at local level as a measurement of heath status, and a combination of adult literacy with a two-thirds weight and a combined primary, secondary and tertiary enrolment ratio, with one-third weight, as a measurement of educational attainment.

The result of this equally weighted indicator is referred here as the *human capital index* and represented as H_K. For the construction of the index, fixed minimum and maximum values were established based on the criteria used by the UNDP (2000). The minimum level for life expectancy at birth was set at 25 years while the maximum value for the same indicator was projected to reach 85 years in the year 2050. In this sense, the lower and upper limit for the first component of the human capital index was fixed at the endpoints of 25 and 85 years, respectively.

The second component of the index, educational attainment, was calculated by using an adult literacy index, derived from a [0, 100] range as a min-max interval, with a two-thirds weight; and an enrolment indicator developed from a combined primary, secondary and tertiary ratio with a [0-100] min-max interval, with a one-third weight. Consequently, the Human Capital Index (H_K) can be derived from the

simple arithmetic sum of the two equally weighted indicators I_{ij} for household j with respect to variable i as follows:

$$H_K = \frac{1}{2}\sum_{i=1}^{2} I_{ij} \qquad \text{(A5.1)}$$

where

$$I_{ij} = \frac{X_{ij} - \min\{X_{ij}\}}{\max\{X_{ij}\} - \min\{X_{ij}\}} \qquad \text{(A5.2)}$$

is the i^{th} variable's contribution to H_K. Following equation (A5.2), it is possible to compute each component of the Human Capital Index for population subgroups. Using data from our sample survey as source of primary data, and from the UNDP (2002) as secondary data, we calculated the components of the H_K for the population subgroup in for example the Iztapalapa District where borrowers from Fincomun and the corresponding control group live. Thus the l*ife expectancy index* $= \frac{77.2-25}{85-25} = 0.870$, is a measurement of health status, where the actual *Xij* value (life expectancy at birth) is equal to 77.2 years.

The a*dult literacy index* corresponding to borrowers of Fincomun is computed as $\frac{94.4-0}{100-0} = 0.944$, while the *Combined enrolment ratio index for* the same population subgroup is calculated as $\frac{58.1-0}{100-0} = 0.581$. By combining *the adult literacy index* with the *combined enrolment ratio index* with their assigned weights (two-thirds and one third, respectively) we get the *educational attainment index, EAI*: $\frac{2}{3}(0.944) + \frac{1}{3}(0.581) = 0.823$. Accordingly, the Human Capital Index as derived in (A5.1) is the simple sum of its components equally weighted, $H_K = \frac{1}{2}(0.870) + \frac{1}{2}(0.823) = 0.847$, as shown in table A5.1.

Table A5. 1 Human capital indicators
Figures in percentages (except indexes)

		FINCOMUN		CAME		PROMUJER	
	Sample size	Control	Treated	Control	Treated	Control	Treated
Human capital index	**148**	**0.773**	**0.847**	**0.852**	**0.828**	**0.871**	**0.809**
Life expectancy index	148	0.870	0.870	0.855	0.855	0.820	0.820
Life expectancy at birth (years)	148	77.2	77.2	76.3	76.3	74.2	74.2
Educational attainment index	148	0.675	0.823	0.849	0.802	0.922	0.798
Adult literacy index	148	0.789	0.944	0.944	0.929	1	0.923
Combined enrolment index	148	0.447	0.581	0.657	0.548	0.766	0.548
Education							
≤ 6 years of schooling	80	68.4	52.8	61.1	57.1	23.8	76.2****
≥ 7 years of schooling	68	31.6	47.2	38.9	42.9	61.5	38.5
Adult literacy rate							
Below the rate at local level a/	11	21.1	5.6	5.6	7.1	0	7.7
Combined enrolment rate							
Below the rate at local level b/	98	100	83.3	61.1	60.7	23.8	61.5**
Below the rate at country level c/	81	68.4	52.8	61	60.7	23.8	61.5**
Educational attainment index							
Below the rate at local level d/	51	73.7	55.6	22.2	21.4	4.8	23.1
Below the rate at country level e/	33	31.6	27.8	22.2	21.4	4.8	23.1

Note: The statistically significant association in the cross-tabulations are indicated by the Chi-square values for the cell as a whole at 0.001 (*); 0.01 (**); 0.05 (***); and 0.1 (****) levels of significance.
a/ The adult literacy rate was estimated at 96.97%, 93.54% and 85.02% for Mexico City, the state of Mexico and the state of Hidalgo, respectively: b/ The combined enrolment rate was estimated at 75.3%, 61.53% and 67.38% for Mexico City, the state of Mexico and the state of Hidalgo, respectively: c/ The combined enrolment rate was estimated at 64.54% for the country as a whole; d/ The educational attainment index was estimated at 0.897, 0.829 and 0.791 for Mexico City, the state of Mexico and the state of Hidalgo, respectively; e/ The educational attainment index was estimated at 0.818 for the country as a whole.
Sources: UNDP 2002 and author's sample survey

A5.1.2 The Physical Capital Index

Now, in order to measure the stock of physical capital (P_K) as defined in our analytical framework, we employ two components. The first one captures the effect of physical infrastructure on household wellbeing and it is measured by a combined ratio of the access to water pipe, electricity and drainage. The second component reflects the importance of incorporating household assets in our analysis, and it is measured by an indicator of housing ownership with a two-third weight, and a ratio of housing improvements, and vehicle purchases and expenditure on electrical

appliances, with one-third weight, as an indicator of household investments. The combination of the two indicators integrates the *physical capital index*,

$$P_K = \frac{1}{2}\sum_{i=1}^{2} I_{ij} \qquad \text{(A5.3)}$$

where I_{ij} is defined as in equation A5.2, which is computed in table A5.2.

Table A5. 2 Physical capital indicators

Figures in percentages except indexes

		FINCOMUN		CAME		PROMUJER	
	Sample size	Control	Treated	Control	Treated	Control	Treated
Overall	148	34.5	65.5	39.1	60.9	44.7	55.3
Physical Capital Index	**148**	**0.760**	**0.840**	**0.722**	**0.760**	**0.709**	**0.720**
Combined physical infrastructure index	148	0.982	0.991	1.000	0.976	0.921	0.936
Public services							
Electricity	147	94.7	100	100	100	100	100
Water piped	145	100	97.2	100	96.4	95.2	100
Drainage	138	100	100	100	96.4	81	80.8
Telephone	80	52.6	83.3***	66.7	39.3	42.9	30.8
Household assets ownership index	148	0.538	0.688	0.444	0.544	0.497	0.504
Housing ownership index	148	0.737	0.861	0.556	0.607	0.619	0.615
Combined household investment index	148	0.140	0.343	0.222	0.417	0.254	0.282
Household ownership	123	84.2	88.9	83.3	82.1	90.5	69.2
Title deeds holding	101	73.7	86.1	55.6	60.7	61.9	61.5
Housing characteristics							
Still in construction	117	68.4	72.2	88.9	96.4	76.2	73.1
Already finished	31	31.6	27.8	11.1	3.6	23.8	26.9
Recent property improvements	55	21.1	44.4****	22.2	57.1***	33.3	30.8
Recent vehicle purchases	39	15.8	36.1	27.8	25	23.8	23.1
Recent electronics and electrical appliances purchases	36	11.1	88.9	16.7	42.9****	19	30.8
Estimated average value of business							
≤ 5000	27	35.7	13.3	16.7	54.5	60	21.4
5001 – 20000	28	28.6	13.3	41.7	36.4	33.3	57.1
≥ 20001	26	35.7	73.3	41.7	9.1	6.7	21.4
≤ 49606	67	85.7	46.7	§83.3	100	100	85.7
49607 +	14	14.3	53.3	16.7	0	0	14.3
Housing condition							
Rented	18	15.8	11.1	16.7	10.7	4.8	15.4
Owned	123	84.2	88.9	83.3	82.1	90.5	69.2
Borrowed	7	0	0	0	7.1	4.8	15.4

Note: The statistically significant association in the cross-tabulations are indicated by the Chi-square values for the cell as a whole at 0.001 (*); 0.01 (**); 0.05 (***); and 0.1 (****) levels of significance.

Sources: Author's sample survey

A5.1.3 The Social Capital Index

The third component of the Index of Household Capital Endowments captures the stock of social capital. In building this component we recognise the importance of incorporating in the analysis not only well established forms of social organisations but also informal networks of trust and social interaction that are important for low-income households. In this sense, the *social capital index*, represented here as S_K, is designed on two components equally weighted. The first component reflects household membership to vertical organisations such as NGOs or trade unions, whereas the second component reflects any household membership to informal horizontal networks of mutual trust such as ROSCAS. The social capital index thus takes the following form:

$$S_K = \frac{1}{2}\sum_{i=1}^{2} I_{ij} \qquad \text{(A5.4)}$$

where I_{ij} is defined as in equation A5.2, which is computed in table A5.3.

Table A5. 3 Social capital indicators
Figures in percentages except indexes

		FINCOMUN		CAME		PROMUJER	
	Sample size	Control	Treated	Control	Treated	Control	Treated
Overall	148	34.5	65.5	39.1	60.9	44.7	55.3
Social Capital Index	148	0.368	0.347	0.306	0.117	0.262	0.231
Institutional membership index	148	0.105	0.111	0.111	0.028	0.048	0.038
Informal association index	148	0.632	0.583	0.500	0.205	0.476	0.423
Membership to any kind of social organisation	86	68.4	66.7	61.1	57.1	52.4	42.3
Membership to institutional organisations	12	16.7	16.7	18.2	12.5	9.1	9.1
Membership to another MFI	1	0	0	9.1	0	0	0
Membership to informal networks	78	92.3	87.5	81.8	93.8	90.9	100
The MFI as the first institutional membership	83	-	88.9	-	92.9	-	96.2

Note: The statistically significant association in the cross-tabulations are indicated by the Chi-square values for the cell as a whole at 0.001 (*); 0.01 (**); 0.05 (***); and 0.1 (****) levels of significance.
Sources: Author's sample survey

The Index of Household Capital Endowments, therefore, can be constructed with the components of the human capital, physical capital and social capital, by deriving

an unweighted average of each individual index, taking the form of the following equation:

$$= \frac{1}{3}\sum_{i=1}^{3} K_{ij} \qquad \text{(A5.5)}$$

where the aggregated Index of Household Capital Endowments is obtained from

$$K_{ij} = \frac{X_{ij} - \min\{X_{ij}\}}{\max\{X_{ij}\} - \min\{X_{ij}\}} \qquad \text{(A5.6)}$$

Following (A5.5) we compute the Index of Household Capital Endowments in table A5.4.

Table A5. 4 The Index of Household Capital Endowments

		FINCOMUN		CAME		PROMUJER	
	Sample size	Control	Treated	Control	Treated	Control	Treated
Overall	148	34.5	65.5	39.1	60.9	44.7	55.3
Index of Household Capital Endowments	148	0.634	0.826	0.627	0.730	0.614	0.747
Human capital index	148	0.773	0.847	0.852	0.828	0.871	0.809
Physical Capital Index	148	0.760	0.840	0.722	0.760	0.709	0.720
Social Capital Index	148	0.368	0.792	0.306	0.603	0.262	0.712

Sources: Author's sample survey

Appendix to Chapter 6

In this section, we presented a description of the screening, incentives and enforcement devices that the case-study organisations employed to deal with problems of adverse selection, moral hazard and transaction costs.

A6.1 Screening devices employed by Fincomun

Fincomun only lends to potential borrowers who already have a self-employment activity or a microenterprise with at least one year of activity. This strategy has been designed to help the institution to reduce the problem of moral hazard and the expected default rate that could substantially increase due to high rates of failure among inexperienced micro entrepreneurs. It is important to note that due to the problems of asymmetric information, this policy could also being excluding good potential borrowers that need seed capital to start their own business or self-employment activity but who are unable to enter the credit markets. By the end of 2004, women represented around 60% of the loan portfolio and this percentage has been gradually increasing over the last five years (see table A6.2).

Borrowers in the range of 22 and 75 years of age, with the home residence or business in close proximity (ideally no farther than 30 minutes using public transport) to any of the 34 branches that the institution has in the metropolitan area of Mexico City are eligible to receive loans. This strategy has helped the institution to deal with the problem of transaction costs, in particular the monitoring and supervisory costs and to reduce the expected default rate that could emerge from borrowers who are not regularly screened.

In order to get a loan, applicants are required to buy shares for a value equal to 10% of the amount borrowed. The price of each share is 10 pesos (around US $1). For example, a loan application of 5000 pesos is required to buy 50 shares for a value of 500 pesos. When the loan is fully repaid, the borrower can use the shares as form of *compulsory deposit* to get another credit or alternatively, to make liquid the shares and withdrawn the savings. This savings-loan mechanism has facilitated the organisation to deal with the problem of moral hazard and to reduce the expected

default rate and at the same time, it has reduced the institutional dependency on external sources of funding.

An interesting feature in the model developed by Fincomun is the use of electronic palms pilots with software designed by the Chilean firm *Automind* to evaluate the creditworthiness of applicants based on an information system. Data are collected by credit officers during interviews that take place in the business of the applicant. The interview explores the value of business assets, including equipment and raw material, and captures information on the cash flow, looking at revenues, costs, markets and other household incomes and expenditures. The cash flow, in particular helps credit officers to calculate a liquidity index and therefore, the creditworthiness of each applicant[1].

The system, known amongst credit officers as *intelicredit*, is an effective tool that helps reducing transaction costs and risk evaluations, by exploiting a HotSync[2] process that updates data on loan repayment and applications on a daily basis, and builds a centralised credit bureau that facilitates the risk management of the loan portfolio. The loan portfolio is highly concentrated in activities of retail commerce (93%), such as greengroceries, stationeries, canteens and shoe shops. Only 5% of borrowers are related to the services sector, in businesses such as car repairs, and the rest 2% is engaged in the industry, in activities such as bakeries and maquilas.

A6.2 Incentives devices

Fincomun employs progressive lending as one of its major incentive devices to reduce moral hazard and operational costs in the long term. The first disbursement is generally smaller than the amount originally requested by the applicant. Loans range from 500 pesos (US $50) to 35,000 pesos for a period of 16 or 24 weeks. When borrowers have no loans in arrears, they are allowed to borrow subsequent loans

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[1] Fincomun calculates the cash flow by summing revenues (R) and other household incomes (Y) and then subtracting costs (C) and other household expenses (E). The liquidity index (LI) is estimated by dividing the cash flow over the periodic instalments (I_p) as follows: $LI = \frac{\sum[(R+Y)-(C+E)]}{I_p}$. Credit officers are instructed to authorise loans when $LI \geq 1.5$

[2] *HotSync* is the process of synchronizing information between a Palm and a desktop computer. For further details, see www.palm.com

that can increase up to 50% in every cycle. Every time borrowers submit an application for additional loans, they receive a visit from the credit officer that evaluates the request. Loyalty and repayments in time are rewarded by granting loans with no screening in odd applications, i.e. the third and fifth application. This rule applies to "good participants"[3] unless the amount requested is greater than US $2,500. The institution also offers additional seasonal loans for good participants who may face an increasing demand for their products in specific periods of the year. Seasonal loans are given when borrowers have already repaid half of their actual loan; they can amount up to 50% of the highest credit previously received and must be repaid in a period of 2 months.

A6.3 Enforcement devices

For those borrowers with defaulting loans, the institution imposes penalties that vary from 30 to 150 pesos, depending on the amount borrowed (see table A6.1), and when the borrower has more than four overdue repayments, the institution cancels subsequent loans. The interest in arrears is 1.5 times the rate usually paid, and it is calculated based upon outstanding loan balances. When borrowers face external shocks that affect their economic stability, e.g. accidents, illness, death, or robberies or assaults, Fincomun defer loan repayments for a maximum period of 3 months.

Table A6. 1 Penalties for defaulting borrowers

Figures in pesos of 2004

Periodic instalments	Penalty
≥ 200	30
From 201 to 400	40
From 401 to 600	60
From 601 to 900	80
From 901 to 1500	100
From 1501 to 1900	120
From 1901 to 3000	150

Source: Fincomun

Despite the innovations that Fincomun has developed to screen out borrowers, it also employs traditional enforcement devices such as guarantees and physical

[3] Fincomun classifies as "good participants" to those borrowers with no more than three weekly (or two fortnightly) late repayments.

collateral to deal with the problems of moral hazard and adverse selection. The institution requires physical collateral with a market value of at least twice the amount borrowed and this ratio is reduced to 1.5 times after the fourth loan as an incentive device.

To some extend the use of conventional mechanisms is explained by the product characteristics itself. Fincomun largely relies upon individual lending and it makes very difficult for the institution to screen borrowers without the use of guarantees and collateral. These mechanisms have worked well for Fincomun. The loan portfolio at risk for more than 30 days[4] was 4.98% in 2004; however, they can also work as instruments of exclusion that leave the poorest potential borrowers with little opportunities to access credit for not having assets or being unable to provide guarantees to back their applications.

Table A6. 2 Growth of credits and borrowers

Year	Borrowers	Δ (%)	Loan Portfolio*	Δ (%)	Average loan portfolio per borrower*	Women borrowers (%)	Default rate (%)
1994	5	-	113	-	23	n/a	n/a
1995	90	1700	2 300	1937	26	n/a	n/a
1996	650	622	3 500	52	5	n/a	n/a
1997	1 200	85	5 800	66	5	n/a	n/a
1998	375	-69	4 681	-19	12	n/a	6,8
1999	1 334	256	8 040	72	6	45	2,2
2000	3 330	150	20 566	156	6	45	3,2
2001	4 583	38	27 238	32	6	51	2,7
2002	9 564	109	57 726	112	6	55	3,1
2003	14 020	47	82 566	43	6	58	2,7
2004	25 812	84	169 725	106	7	60	
Average		302		256			

Source: Fincomun

* Figures in thousands of pesos

Before the loan is given by the credit officer, applicants are required to present two guarantees who can be new applicants or current clients both with income sources. One of the guarantors can be the partner of the applicant and the other guarantor must live close by the branch where the potential borrower has submitted the loan

[4] The ratio of the portfolio at risk > 30 days = $\frac{\text{Outstanding balance of loans overdue} > 30\text{days}}{\text{Gross loan portfolio}}$

application. The screening, incentives and enforcement devices employed by Fincomun have facilitated the institution to experience a dynamic growth rate in terms of number of borrowers as well as the loan portfolio that averaged during the last decade (1994-2004) 302% and 256%, respectively (see table A6.2).

A6.4 Fincomun: Other financial indicators

Table A6. 3 Fincomun: selected financial indicators

Figures in US dollars

	2004	2002	2001	2000	1999	1998	1997
Exchange rate Peso-US dollar	11,16	10,43	9,14	9,63	9,49	9,89	8,06
Balance sheet							
Gross loan portfolio	15 102 965	5 696 556	3 302 020	3 278 938	2 117 275	1 265 671	1 339 291
Total assets	25 391 843	12 823 844	13 605 969	9 490 226	8 697 924	6 535 812	5 880 015
Savings	942 709	6 955 339	8 736 793	286 177	165 689	81 082	48 288
Total equity	4 577 156	1 042 241	1 017 639	903 579	548 185	431 394	204 691
Financial structure							
Capital/asset ratio (%)	18,03	8,13	7,48	9,52	6,30	6,60	3,48
Debt/equity ratio (%)	454,75	1130,41	1237,01	950,29	1486,70	1415,04	2772,63
Gross loan portfolio/total assets ratio (%)	59,48	44,42	24,27	34,55	24,34	19,37	22,78
Overall financial performance							
Return on assets (%)	2,92	0,64	0,15	-1,25	-4,05	-4,04	n/a
Return on equity (%)	16,05	8,27	1,86	-15,63	-62,92	-78,93	n/a
Operational self-sufficiency (%)	110,17	91,37	101,34	95,82	87,39	87,58	90,63
Revenues							
Financial revenue ratio (%)	46,75	28,50	28,39	27,95	27,70	28,51	n/a
Profit margin (%)	9,23	-9,44	1,32	-4,36	-14,42	-14,19	-10,33
Expenses							
Total expense ratio (%)	42,44	31,19	28,02	29,17	31,69	32,55	n/a
Financial expense ratio (%)	6,71	5,20	8,46	13,00	20,40	20,40	n/a
Loan loss provision expense ratio (%)	3,55	0,57	0,48	0,59	0,00	0,38	n/a
Operational expense ratio (%)	32,17	25,42	19,08	15,58	11,29	11,77	n/a
Efficiency							
Operating expense/loan portfolio (%)	58,85	74,67	66,96	52,53	50,85	56,09	n/a
Risk management							
Portfolio at risk > 30 days ratio (%)	4,98	3,31	4,31	1,50	1,60	3,90	5,60
Loan loss reserve ratio (%)	3,69	3,02	3,16	1,54	1,58	4,62	n/a
Risk coverage ratio (%)	74,04	91,34	73,46	102,78	98,63	118,39	n/a

Source: MIX Market and Fincomun

A6.5 Screening and monitoring devices employed by CAME

Compulsory group meetings play a fundamental role in screening out potential new members and monitoring loan repayments and compulsory deposits. These meetings take place on a weekly basis in the house of one of the group members and normally last for several hours. During the sessions, repayments are made in cash or are registered by handing in a receipt of the deposit made in the BANSEFI. Other issues of collective interest are also discussed, e.g. loan applications, the attendance report; the savings balance and loans in arrears. Peer-group monitoring and supervision occur to ensure that group members follow the regulations established in the *Reglamento*, and collective actions are taken to secure loan repayments in case defaults emerge.

Periodical repayment schedules and compulsory group meetings are at the centre of the model developed by CAME; however, these rigid devices involve a considerable high opportunity cost for group members who spend several hours in each session. Conflicts and frustration frequently become visible amongst members when these sessions extend for longer periods than expected, having an effect on collective cohesion that could undermine the stability of Income Generating Groups (IGGs) and affect the formation of new groups. In fact narrative evidence suggests that group meetings represent a high opportunity costs for participants and a factor for dropouts. For a discussion on the costs of group meetings, see Chapter 7.

A6.6 Incentives devices

Progressive lending represents one of the main incentive devices employed by CAME. Initially, group members receive loans that progressively increase over time on the basis of individual savings that represent at least 10% of the credit. During the first credit cycle, individual loans are very small, between 500 and 2,500 pesos (approximately 50 and 250 US dollars) that are repaid within 16 weeks. Instalments are fixed and include the principal, an interest rate of 5.5% per month (66% per annum); a fee of 4.60 pesos that absorb the cost of issuing debit cards, and VAT. Group members are also required to make deposits to increase their savings in order to receive larger loans in subsequent credit cycles (see table A6.4).

Progressive lending is based on the assumption that group members borrow capital to invest in income-generation activities. With increasing flows of funding, these businesses are expected to gradually develop and grow. However, CAME does not actually confirm the assumption of business activity and never employs direct monitoring devices to prevent potential problems of fungibility. Progressive lending is linked to another important incentive device: the revolving fund.

Table A6. 4 Characteristics and conditions to receive loans at CAME

Figures in pesos of 2004

Minimum savings required	Loans	Interests at 5% per month	VAT	Fee for debit cards	Total	Instalments per week (1-15)	Instalment in week 16	Compulsory savings per week
50	500	110	16,50	4,6	631,10	40	31,10	5
100	1 000	220	33,00	4,6	1 257,60	80	57,60	8
150	1 500	330	49,50	4,6	1 884,10	118	114,10	12
200	2 000	440	66,00	4,6	2 510,60	157	155,60	15
250	2 500	550	82,50	4,6	3 137,10	197	182,10	19
600	3 000	660	99,00	4,6	3 763,60	236	223,60	23
700	3 500	770	115,50	4,6	4 390,10	275	265,10	27
800	4 000	880	132,00	4,6	5 016,60	314	306,60	30
900	4 500	990	148,50	4,6	5 643,10	353	348,10	34
1 000	5 000	1 100	165,00	4,6	6 269,60	392	389,60	38
2 100	6 000	1 320	198,00	4,6	7 522,60	470	472,60	45
2 450	7 000	1 540	231,00	4,6	8 775,60	549	540,60	53
2 800	8 000	1 760	264,00	4,6	10 028,60	627	623,60	60
3 150	9 000	1 980	297,00	4,6	11 281,60	705	706,60	68
3 500	10 000	2 200	330,00	4,6	12 534,60	784	774,60	75
6 250	12 500	2 750	412,50	4,6	15 667,10	980	967,10	94
7 500	15 000	3 300	495,00	4,6	18 799,60	1175	1 174,60	113
8 750	17 500	3 850	577,50	4,6	21 932,10	1371	1 367,10	132
10 000	20 000	4 400	660,00	4,6	25 064,60	1567	1 559,60	150

Source: CAME

A6.6.1 The Revolving Fund as an incentive device

The revolving fund is a collective fund integrated by compulsory deposits that group members make every week, in addition to the interest rate paid by the BANSEFI on the group deposits; the interest rate in arrears charged by the Fund and CAME; penalties for absence; voluntary savings, and other deposits that IGGs establish individually. The group is free to charge discretional interest rates on loans from the revolving fund at a rate previously established by the IGG. This rate usually ranges from 7% to 10% per month. In the end of each credit cycle, those group members with no loans in arrears and good assistance report (with no more

than four absences) are entitled to receive a share of the generated revenues during the period based on individual savings. In this sense, the larger the amount of savings in the fund, the larger the agreement on revenue sharing a member is entitled to receive[5].

In addition to revenue sharing, members receive a bonus in cash, known as "incentive", which is the result of 0.75% of the interest rate paid to CAME, accumulated over 16 weeks. In the end of the credit cycle, members with no loans in arrears and who remain as active borrowers in the programme get back 12% of the interest paid to the institution. This feature is an important incentive device for group members to save (or invest in the fund), and remain in the programme, and for the organisation, to reduce the risk of defaulting loans.

Group members can receive loans from the Internal Fund. *Internal loans*, as known by group members, are only given to members with no loan in arrears (with CAME or the fund), with the allowance of 50% + 1 of group members. The upper limits of credit are based on the amount of savings that individual members have in the fund, and this amount is equal to 50% of the capital borrowed during the first 11 weeks of the credit cycle. In order to reduce the risks of default, from week 12 until the end of the cycle, the ratio savings-credit becomes one to one. Loan repayments to the revolving fund are in similar fashion to the instalments made to CAME, i.e. on weekly basis, including compulsory savings. The IGGs are responsible for monitoring and enforcement actions when loan in arrears emerge. Given the relative flexibility in terms of time of loan delivery and terms of instalments (always within the 15 weeks of the credit cycle), the revolving fund has become an important source of funding for group members and the main competitor for CAME. However, since the fund represents the guarantee for loan repayments, the institution has decided to keep the fund in the credit model.

An interesting product developed by CAME is a life insurance that cover borrowers for 10,000 pesos in case of death. The insurance make sure that external and internal

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[5] Revenue sharing, R, is the product of multiplying the revenues to savings ratio, a, by the balance of individual deposits, S: $R_i = \alpha S_i$, where $\alpha = \sum_{i=1} \frac{R_i}{S_i}$

loans are fully repaid, and in case of remaining surplus, the amount is given to the beneficiaries that the member had previously assigned. The idea of insuring group members is to prevent debt to be passed onto the borrower's family and to reduce the loan portfolio at risk.

A6.7 Enforcement devices

The IGG is in charge of ensuring that enforcing mechanisms are properly put in place. Compulsory savings play an important role in reducing the risk of default; however, group members are often required to present guarantees to back the loan. The guarantor is generally another group member with a credit balance in the fund, and willing to back her peer. When loan repayments are in arrears, the group is responsible to ensure that the guarantor and the defaulting borrower get a notice for repayment. Peer-pressure and visits to the home of the defaulting borrower are organised to demand the full payment, and when the defaulting borrower fails to payback the credit, confiscation of assets and legal actions follow. The screening, incentives and enforcement devices employed by CAME have facilitated the institution to expand its operations although it is highly concentrated in the Chalco Valley (see table A6.5).

Table A6. 5 CAME: Institutional growth

	Active members	Δ %)	IGGs	Δ %)	Credit officers	Δ %)	Loan Portfolio *	Δ %)	Savings *	Δ %)	Loans to savings ratio
1993	470		25		11		150				
1994	1261	168,3	55	120,0	13	18,2	539	258,9	373		144,4
1995	1693	34,3	75	36,4	9	-30,8	779	44,6	676	81,1	115,3
1996	1741	2,8	87	16,0	15	66,7	1205	54,7	1220	80,6	98,8
1997	2876	65,2	138	58,6	14	-6,7	2741	127,5	2669	118,8	102,7
1998	4566	58,8	202	46,4	23	64,3	5027	83,4	7776	191,3	64,7
1999	7991	75,0	312	54,5	30	30,4	6809	35,4	16870	117,0	40,4
2000	13641	70,7	521	67,0	47	56,7	16790	146,6	36592	116,9	45,9
2001	23872	75,0	876	68,1	76	61,7	33497	99,5	75594	106,6	44,3
2002	35000	46,6	1500	71,2	149	96,1	38000	13,4	119000	57,4	31,9
2003	38000	8,6	1600	6,7	150	0,7	58000	52,6	138000	16,0	42,0

* Figures in thousand of pesos of 2004

Source: CAME

A6.8 Incentive devices employed by Promujer

Promujer employs progressive lending as one of the main incentive devices. During the first loan, group members can receive individual loans for a maximum of 1,300 pesos (about US $118), see table A6.6. Instalments are fixed and include the principal; an interest rate of 6% per month (72% per annum) on outstanding loan balances, and an administration fee of 2.5%. In order to receive larger loans, group members are required to deposit savings that represent 10% to 15% of the loan size.

Promujer as well as other group lending operators, works under the assumption that borrowers invest the credit in income-generation activities. Although the organisation does not employ direct monitoring mechanisms to avoid fungibility and reduce potential problems of moral hazard, it requires village banks to monitor group members through individual reports, where it is recorded the assistance to group meetings and business revenues and costs generated during the credit cycle. These reports, known as *"Información de ciclo"* (Information on the credit cycle) work as screening device by checking loan applications and households earnings before loan disbursement takes place. The problem of such screening mechanisms is that there is no way the organisation or the village bank can confirm the figures reported by group members.

Table A6. 6 Promujer: Characteristics of progressive lending

Credit cycle	Loans	Period (months)	Instalments	Interest rate per month
1	500-1300	3	12	6%
2	500-1700	3	12	6%
3	500-2200	4	8 / 16	6%
4	500-2750	4	8 / 16	6%
5	500-3450	4	8 / 16	6%
6	1300-4150	4-6	12 / 16 / 24	6%
7	1300-5000	4-6	12 / 16 / 24	6%
8	1300-5500	4-6	12 / 16 / 24	6%
9	1300-6000	4-6	12 / 16 / 24	6%

Source: Promujer

As another incentive device, in 2004 the institution started to pilot a seasonal credit product that was offered to group members with more than four credit cycles, good attendance report and no records of defaulting loans. Seasonal loans were designed

to help borrowers to satisfy substantial increases in the demand for their products in specific periods of the year, e.g. Christmas, Easter, etc. In this sense, Promujer made available borrowers additional funds for up to 2,000 pesos to be repaid in a period of 1 or 2 months. The interest rate and fees were charged under the same criteria of regular loans.

A6.8.1 Training programmes as an incentive device

Unlike other *minimalistic* credit-only organisations operating in Mexico, group members at Promujer are required to take a 20-hours course, known as *"pre-credit"*, where methodological principles of the model developed by Promujer are fully explained. In the *pre-credit* course, women are expected to identify business opportunities and to plan the use of credit. After the loan is disbursed, group members are subjected to receive training in health care and business skills, including credit management and marketing.

A6.9 Screening and monitoring devices

Compulsory meetings organised in periodical repayment schedules play a fundamental role in screening out potential new members and monitoring loan repayments and compulsory deposits. Compulsory meetings are on a weekly basis and take place at the local branch or in the house of one group member. Each session last for 1 to 2 hours, in which loan repayments are made in cash. Other issues of collective interest are also discussed, e.g. loan applications, the attendance report; the savings balance and loans in arrears. Peer-group monitoring and supervision occur to ensure that group members follow the regulations established by the village bank (VB) and collective actions are taken to secure loan repayments in case members default the loan. As other organisations employing group lending technology, periodical repayment schedules and compulsory group meetings are fundamental to reduce moral hazard and adverse selection; however, the cost of these devices are absorbed by group members who often spend several hours in group meetings. This opportunity cost of borrowing can affect collective cohesion, group formation and ultimately institutional growth and stability. This issue is discussed in Chapter 7.

A6.10 Enforcement devices

The village bank, through a credit committee, is in charge of ensuring that enforcing mechanisms are properly put in place. Compulsory savings play an important role in reducing the risk of default; however, the solidarity group, and the village bank as a whole are responsible for loan repayment. When loan repayments are in arrears, the solidarity group ensures that the defaulting borrower get a notice for repayment, and when the defaulting borrower fails to payback the credit, peer-pressure, confiscation of assets and legal actions follow. VBs can only borrow from Promujer when there are no loans in arrears. Other mechanisms are imposed to ensure discipline. For example, members coming late to attend periodical group meetings are fined in money or in kind, and poor attendance is penalised with a temporal suspension from the VB. During that period, punished members are not allowed to borrow from the organisation. Enforcement devices employed by Promujer have facilitated the institution to expand at a relatively high rate.

A6.11 Selected socio economic indicators of the areas under analysis

Table A6. 7 Selected indicators by region

Figures in percentages of 2000

	Mexico City	Iztapalapa	Hidalgo	Tula City	State of México	Chalco Valley
Human capital characteristics						
Male population over 15 years of age	46,66	47,83	47,13	47,88	47,97	49,08
Female population over 15 years of age	53,34	52,17	52,87	52,12	52,03	50,92
Adult literacy rate	96,97	96,32	85,02	94,75	93,54	93,13
Male adult literacy rate	98,21	97,83	88,34	96,62	95,87	95,57
Female adult literacy rate	95,89	94,93	82,06	93,04	91,38	90,77
Years of schooling (average)	10,00	9,00	7,00	8,00	8,00	7,00
Population over 15 years of age without formal education	3,50	4,32	13,81	4,98	6,65	7,42
Population over 15 years of age with incomplete primary education	8,31	10,07	19,63	16,94	12,54	15,79
Population over 15 years of age with complete primary education	15,05	17,47	19,96	19,45	17,79	22,37
Population over 15 years of age with incomplete secondary education	5,17	5,92	4,58	5,21	4,96	7,23
Population over 15 years of age with complete secondary education	19,96	23,06	18,71	22,01	21,78	25,28
Population over 18 years of age with high education	24,57	23,72	12,84	19,06	18,72	12,79
Working population by occupation						
Employees and workers	72,97	72,08	51,72	69,56	68,00	70,07
Self-employed	24,03	24,80	32,09	23,62	25,54	25,49
No specified	2,29	2,35	3,00	2,64	2,82	2,64
Peasant	0,72	0,77	13,18	4,17	3,65	1,80

Income distribution						
Working population with incomes ≤ 50% of minimum wage	1,79	2,25	5,26	2,78	2,38	2,96
Working population with incomes ≤ 1 minimum wage	6,63	7,92	15,62	7,98	6,76	7,01
Working population with incomes between 1 - 2 minimum wages	31,83	37,76	31,63	32,47	35,67	43,47
Working population with incomes between 2 - 3 minimum wages	18,95	19,38	12,32	16,59	18,78	22,42
Working population with incomes between 3 - 5 minimum wages	14,18	13,28	10,62	15,11	14,45	12,38
Working population with incomes between 5 - 10 minimum wages	11,70	8,30	5,14	9,76	7,60	3,46
Working population with incomes ≥ 10 minimum wage	6,42	2,84	2,02	3,29	3,48	0,92
Physical capital characteristics						
Number of residents per house (average)	4,00	4,00	5,00	4,00	5,00	5,00
Number of residents per room (average)	1,00	1,00	2,00	1,00	2,00	2,00
House characteristics						
Houses with floor other than soil	96,78	96,61	81,29	95,79	88,06	87,89
Houses with 2 rooms including kitchen	12,03	13,85	21,90	15,37	17,10	25,12
Houses using gas for cooking	97,05	97,80	67,37	91,50	86,22	94,64
Houses using firewood for cooking	0,19	0,13	31,21	7,15	7,55	0,47
Houses using charcoal and/or oil for cooking	0,06	0,07	0,13	0,09	0,13	0,13
Houses with shower room	90,11	89,64	77,49	83,48	80,06	84,58
Houses with water pipe	95,58	95,86	79,10	86,38	85,21	93,24
Houses with drainage pipe	96,85	97,57	65,34	82,80	81,83	91,28
Houses with electric power	98,19	98,60	91,38	96,83	92,82	95,27
Houses with water pipe and electric power	95,40	95,66	75,76	84,99	84,52	92,77
Houses with water pipe, electric power and drainage pipe	94,45	94,94	59,29	73,84	77,53	88,84
Owned estate totally paid	57,10	56,64	74,48	71,44	61,54	64,32
Owned estate still paying	9,73	14,89	6,75	7,36	10,16	6,92
Rented	20,07	14,76	8,35	11,41	11,99	11,16
Household assets						
Households with television	95,54	95,55	74,99	89,02	86,52	89,01
Households with refrigerator	84,49	80,82	47,23	67,29	63,56	55,83
Households with washing machine	68,37	65,22	27,57	45,78	49,90	46,50
Households with telephone line	65,09	55,94	19,70	30,28	38,29	18,81
Households with boiler	72,74	63,34	39,08	56,61	48,71	24,96
Household with car	38,28	31,56	25,00	34,84	27,66	13,60

Source: INEGI (2000)

Table A6. 8 Distribution of working population by activity

Figures in percentages

	Mexico City	Iztapalapa	Hidalgo	Tula City	State of México	Chalco Valley
Commerce	20,32	22,95	13,96	15,96	19,36	24,80
Manufacturing	15,39	20,15	18,00	27,74	22,38	21,36
Other services	10,74	9,45	8,05	9,63	9,67	11,57
Education	6,77	5,18	6,03	4,43	4,93	2,07
Government	6,72	6,66	3,75	2,46	4,66	4,49
Public transport	5,50	5,92	3,65	4,29	5,83	5,45
Building industry	5,19	5,81	9,54	9,72	8,14	12,33
Health	5,04	3,90	2,36	3,22	2,95	1,70
Hotels and restaurants	4,96	4,87	2,96	3,94	4,30	5,62
Professional services	4,73	3,08	1,11	1,45	2,13	1,01
Business support	3,56	3,45	0,77	1,83	2,68	4,03
Unspecified	3,24	3,37	1,98	3,44	4,07	3,22
Financial services	2,45	1,57	0,32	0,31	0,86	0,30
Media	2,32	1,57	0,40	0,58	0,98	0,54
Leisure	1,27	0,91	0,47	0,83	0,80	0,58
Real estate	0,66	0,49	0,22	0,22	0,40	0,28
Agriculture, livestock, forestry, fishing and hunting	0,57	0,19	25,23	7,55	5,21	0,36
electricity and water supply	0,48	0,42	0,53	1,65	0,52	0,26
Mining industry	0,09	0,05	0,66	0,75	0,14	0,03

Source: INEGI (2000)

A6.12 Cross-tabulations

Table A6. 9 Households characteristics (figures in percentages)

		FINCOMUN		CAME		PROMUJER		Pooled sample	
	Sample size	Control	Treated	Control	Treated	Control	Treated	Treated	Control
Overall	**148**	**34,5**	**65,5**	**39,1**	**60,9**	**44,7**	**55,3**	**60,8**	**39,2**
Sex									
Men	52	57,9	47,2	33.2	21,4	0	0	30,2	21,2
Women	96	42,1	52,8	66.7	78,6	100	100	69,8	78,8
Age									
≤ 42	79	42,1	55,6	38,9	57,1	71,4	50	54,4	51,7
≥ 43	69	57,9	44,4	61,1	42,9	28,6	50	45,9	48,3
≤ 30	27	15,8	22,2	5,6	14,3	33,3	15,4	17,8	19
31 – 45	69	26,3	41,7	50	53,6	47,6	57,7	50	41,4
≥ 46	52	57,9	36,1	44,4	32,1	19	26,9	32,2	39,7
Marital status									
Not in a relationship	36	5,3 **	38,9	16,7	14,3	28,6	30,8	28,9	17,2
In a relationship	112	94,7	61,1	83,3	85,7	71,4	69,2	71,1	82,8
Household size									
4 members and less	91	68,4	60,6	66,7	60,7	57,1	65,4	60	63,8
5 members and more	57	31,6	72,7	33,3	39,3	42,9	34,6	40	36,2
Household members working									
Only one member	45	36,8	33,3	22,2	35,7	23,8	26,9	32,2	27,6
2 members	70	36,8	38,9	66,7	42,9	52,4	53,8	44,4	51,7
More than 3 members	33	26,3	27,8	11,1	21,4	23,8	19,2	23,3	20,7
Housing condition									
Rented	18	15,8	11,1	16,7	10,7	4,8	15,4	12,2	12,1
Owned	123	84,2	88,9	83,3	82,1	90,5	69,2	81,1	86,2
Borrowed	7	0	0	0	7,1	4,8	15,4	6,7	1,7
Housing characteristics									
Still in construction	117	68,4	72,2	88,9	96,4	76,2	73,1	80	77,6
Already finished	31	31,6	27,8	11,1	3,6	23,8	26,9	20	22,4
Public services									
Electricity	147	94,7	100	100	100	100	100	100	98,3
Water piped	145	100	97,2	100	96,4	95,2	100	97,8	98,3
Drainage	138	100	100	100	96,4	81	80,8	93,3	93,1
Telephone	80	52,6	83.3***	66,7	39,3	42,9	30,8	54,4	53,4

The statistically significant association in the cross-tabulations are indicated by the Chi-square values for the cell as a whole at 0.001 (*); 0.01 (**); 0.05 (***); and 0.1 (****) levels of significance.

Source: Author's sample survey

Table A6. 10 Indicators of household capital endowments (figures in percentages)

		FINCOMUN		CAME		PROMUJER		Pooled sample	
	Sample size	Control	Treated	Control	Treated	Control	Treated	Treated	Control
Overall	148	34,5	65,5	39,1	60,9	44,7	55,3	60,8	39,2
Physical capital									
Household ownership	123	84,2	88,9	83,3	82,1	90,5	69,2	81,1	86,2
Title deeds holding	101	73,7	86,1	55,6	60,7	61,9	61,5	71,1	63,8
Recent real estate acquisitions	11	10,5	11,1	0	14,3	0	3,8	10,0	3,4
Recent property improvements	55	21,1	44.4****	22,2	57.1***	33,3	30,8	44.4***	25,9
Recent vehicle purchases	39	15,8	36,1	27,8	25	23,8	23,1	28,9	22,4
Recent electronics and electrical appliances purchases	36	11,1	88,9	16,7	42.9****	19	30,8	31.1***	13,8
Estimated average value of business									
≤ 5000	27	35,7	13,3	16,7	54,5	60	21,4	27,5	39
5001 - 20000	28	28,6	13,3	41,7	36,4	33,3	57,1	35	34,1
≥ 20001	26	35,7	73,3	41,7	9,1	6,7	21,4	37,5	26,8
≤ 49606	67	85,7	46,7	83,3	100	100	85,7	75****	90,2
49607 +	14	14,3	53,3	16,7	0	0	14,3	25	9,8
Human capital									
Education									
≤ 6 years of schooling	80	68,4	52,8	61,1	57,1	23,8	76.2****	56,7	50
≥ 7 years of schooling	68	31,6	47,2	38,9	42,9	61,5	38,5	43,3	50
Adult literacy rate									
below the rate at local level a/	11	21,1	5,6	5,6	7,1	0	7,7	6,7	8,6
Combined enrolment rate									
below the rate at local level b/	98	100	83,3	61,1	60,7	23,8	61.5**	57,8	50
below the rate at country level c/	81	68,4	52,8	61	60,7	23,8	61.5**		
Educational attainment index									
below the rate at local level d/	51	73,7	55,6	22,2	21,4	4,8	23,1	24,4	19
below the rate at country level e/	33	31,6	27,8	22,2	21,4	4,8	23,1		
Health status									
Good	77	47,4	69,4	44,4	39,3	38,1	61,5	57,8	43,1
Regular	61	47,4	25	38,9	57,1	61,9	26,9	35,6	50
Bad	10	5,3	5,6	16,7	3,6	0	11,5	6,7	6,9
Access to the NHS	88	47,4	44,4	61,1	60,7	76,2	73,1	57,8	62,1
Social capital									
Membership to any kind of social organisation	86	68,4	66,7	61,1	57,1	52,4	42,3	56,7	60,3
Membership to institutional organisations	12	16,7	16,7	18,2	12,5	9,1	9,1	13,7	14,7
Membership to informal networks	78	92,3	87,5	81,8	93,8	90,9	100	92,2	88,6
The MFI as the first institutional membership	83	-	88,9	-	92,9	-	96,2	92,2	-

Note: The statistically significant association in the cross-tabulations are indicated by the Chi-square values for the cell as a whole at 0.001 (*); 0.01 (**); 0.05 (***); and 0.1 (****) levels of significance.

a/ The adult literacy rate was estimated at 96.97%, 93.54% and 85.02% for Mexico City, the state of Mexico and the state of Hidalgo, respectively

b/ The combined enrolment rate was estimated at 75.3%, 61.53% and 67.38% for Mexico City, the state of Mexico and the state of Hidalgo, respectively

c/ The combined enrolment rate was estimated at 64.54% for the country as a whole

d/ The educational attainment index was estimated at 0.897, 0.829 and 0.791 for Mexico City, the state of Mexico and the state of Hidalgo, respectively

e/ The educational attainment index was estimated at 0.818 for the country as a whole

Sources: Author's sample survey and UNDP (2002)

Table A6. 11 Use of savings and its mechanisms (figures in percentages)

		FINCOMUN		CAME		PROMUJER		Pooled sample	
	Sample size	Control	Treated	Control	Treated	Control	Treated	Treated	Control
Overall	148	34,5	65,5	39,1	60,9	44,7	55,3	60,8	39,2
Savings in financial institutions	25	5,3	13,9	16,7	21,4	33,3	11,5	15,6	19
Type of institution									
Bank	20	5,3	11,1	16,7	10,7	33,3	7,7	10	19
BANSEFI	3	0,0	0,0	0	10,7	0	0,0	3,3	0
Savings and Credit Co-operatives	2	0	2,8	0	0	0	3,8	2,2	0
Reasons for not having savings									
Insufficient income	64	47,4	41,7	33,3	39,3	47,6	50	43,3	43,1
Lack of trust	15	10,5	19,4	11,1	7,1	4,8	3,8	11,1	8,6
Fees	18	36,8	0	22,2	7,1	4,8	15,4	6,7	20.7***
Prefer to invest in business	49	47,4	38,9	38,9	28,6	9,5	34,6	34,4	31
Average deposit every time									
≤ 350	14	100	50	100	83,3	80	0	58,2	87,5
350 +	6	0	50	0	16,7	20	100	41,7	12,5
Use of savings									
In Physical capital	9	0	40	100	33,3	28,6	0	28,6	45,5
In Social capital	2	100	0	0	16,7	0	0	7,1	9,1
As preventive mechanism	11	100	40	0	33,3	57,1	66,7	42,9	45,5
Consumption purposes	7	0	20	33,3	16,7	42,9	33,3	21,4	36,4
Reasons for not having savings									
Insufficient income	80	68.4****	41,7	38,9	60,7	71,4	50	50	60,3
Lack of trust	6	0	5,6	16,7	0	0	3,8	3,3	5,2
Fees	30	36,8	13,9	27,8	7,1	4,8	38,5	18,9	22,4
Prefer to invest in business	68	47,4	55,6	55,6	35,7	33,3	46,2	46,7	44,8
Voluntary savings in the MFI	18	-	19,4	-	35,7	-	3,8	20	-
Reasons for no savings in the MFI									
Insufficient income	43	-	55,2	-	77,8	-	52	59,7	-
Prefer to invest in business	38	-	44,8	-	33,3	-	76	52,8	-
Average deposit in MFI									
≤ 100	11	-	50	-	88,9	-	100	75,6	-
101 +	3	-	50	-	11,1	-	0	21,4	-
Use of savings									
In Physical capital	3	-	14,3	-	20	-	0	16,7	-
As preventive strategies	10	-	57,1	-	60	-	0	55,6	-
Consumption purposes	4	-	0	-	30	-	100	22,2	-
ROSCAS	57	63	58,3	50	53,6	47,6	42,3	52,2	53,4
Reasons for not participating in ROSCAS									
Risky mechanism	65	86,7	68,8	60	78,3	54,5	50	67,3	68,3
For have joined in the MFI	10	0	12,5	0	13	0	56,3	25.5**	2,4
Insufficient income	18	13,3	25	20	8,7	54,5	6,3	12,7	26.8****
Prefer to invest in business	8	0	0	20	13	18,2	0	5,5	12,2
Average savings in ROSCAS every time									
≤ 200	64	91,7	80	88,9	93,3	90	54,5	78,3	90,3
201 +	13	8,3	20	11,1	6,7	10	45,5	21,7	9,7

Use of savings									
In Physical capital	53	66,7	71,4	88,9	26,7	90	81,8	59,6	80.6****
In Human capital	5	0	4,8	11,1	20	0	0	8,5	3,2
As preventive strategies	24	16,7	33,3	11,1	53,3	20	36,4	40.4***	16,1
Consumption purposes	35	50	28,6	66,7	53,3	40	45,5	40,4	51,6
Savings at home	106	68,4	91,7	61,1	75	71,4	50	74,4	67,2

Note: The statistically significant association in the cross-tabulations are indicated by the Chi-square values for the cell as a whole at 0.001 (*); 0.01 (**); 0.05 (***); and 0.1 (****) levels of significance.

Source: Author's sample survey

Table A6. 12 The use and sources of credit (figures in percentages)

		FINCOMUN		CAME		PROMUJER		Pooled sample	
	Sample size	**Control**	**Treated**	**Control**	**Treated**	**Control**	**Treated**	**Treated**	**Control**
Overall	148	34,5	65,5	39,1	60,9	44,7	55,3	60,8	39,2
Credit application to financial institution	46	31,6	27,8	27,8	21,4	28,6	50	32,2	29,3
Type of institution									
Bank	16	0	40	60	83,3	33,3	15,4	37,9	29,4
Savings and Credit Co-operative	15	0	20	0	0	50	61,5	37,9	17,9
MFI	10	83,3	40	20	0	0	0	13,8	35,3
Governmental programme	6	16,7	10	20	16,7	16,7	7,7	10,3	17,6
Credit authorised by financial institution	21	33,3	60	60	33,3	50	38,5	44,8	47,1
Requirements									
Collateral	14	50	66,7	50	100	66,7	60	69,2	55,6
Guarantees	17	50	100	50	100	66,7	80	92,3	55,6
Savings	9	50	66,7	50	50	0	20	46,2	33,3
Interest rate (annual rate)									
≤ 36	7	100	50	25	0	0	20	30,8	37,5
37 - 50	7	0	33,3	50	50	50	20	30,8	37,5
51 +	7	0	16,7	25	50	50	60	38,5	25,0
Interest rate (mean annual rate)									
≤ 49	13	100	66,7	75	50	50	40	53,8	75,0
50 +	8	0	33,3	25	50	50	60	46,2	25,0
Assets sold to repay credit	2	50	0	25	0	0	0	0	22,2
Reasons for not applying for a credit									
Not having collateral	58	52,9	48,3	26,7	38,5	44,4	61,9	48,7	42,0
Irregular income	30	5,9	27,6	26,7	23,1	16,7	38,1	28.9****	16,0
Interest rate	16	29,4	6,9	20	7,7	5,6	14,3	9,2	18,0
Lack of trust	64	41,2	51,7	53,3	61,5	50	42,9	52,6	48,0
Use of credit in									
Physical capital	5	0,0	33,3	25,0	0,0	33,3	20,0	23,1	22,2
The business	10	100,0	16,7	50,0	0,0	66,7	60,0	30,8	66,7
Human capital	1	50,0	0,0	0,0	0,0	0,0	0,0	0	11,1
Credit from MFI	90	-	24,3	-	18,9	-	17,6	60,8	-
Service mostly interested									
Savings	27	-	5,6	-	89,3	-	0,0	30	-
Credit	83	-	97,2	-	78,6	-	100,0	92,2	-
Length of membership (years)									
≤ 2	24	-	44,4	-	28,6	-	100,0	55,6	-
3-3	17	-	30,6	-	21,4	-	0,0	18,9	-
4+	23	-	25,0	-	50,0	-	0,0	25,6	-

Advantages of MFI									
Location	8	-	22,2	-	0,0	-	0,0	8,9	-
Requirements	56	-	61,1	-	42,9	-	84,6	62,2	-
Interest rate	36	-	38,9	-	60,7	-	19,2	40	-
Short-term contracts	19	-	25,0	-	17,9	-	19,2	21,1	-
Periodic instalments	5	-	0,0	-	3,6	-	15,4	5,6	-
Progressive lending	3	-	2,8	-	0,0	-	7,7	3,3	-
Training	16	-	0,0	-	0,0	-	61,5	17,8	-
Savings products	11	-	0	-	35,7	-	3,8	12,2	-
Repayment problems	14	-	13,9	-	25	-	7,7	15,6	-
Reasons for default									
Low revenues	6	-	20	-	57,1	-	50	42,9	-
Unemployment	1	-	0	-	14,3	-	0	7,1	-
Ill-health	6	-	20	-	28,6	-	100	35,7	-
Robbery or assault	2	-	40	-	0	-	0	14,3	-
Indebtedness	5	-	40	-	42,9	-	0	35,7	-
Assets sold to repay credit	4	-	5,6	-	3,6	-	3,8	4,4	-
Use of credit in									
Physical capital	15	-	8,3	-	39,3	-	3,8	16,7	-
The business	81	-	100	-	67,9	-	100	90	-
Human capital	10	-	0	-	25	-	11,5	11,1	-
Consumption	18	-	5,6	-	50	-	7,7	20	-
Credit from informal agents	67	47,4	44,4	50	50	47,6	34,6	43,3	48,3
Agent									
Money lender	24	22,2	37,5	22,2	42,9	50	33,3	38,5	32,1
Relatives or friends	37	66,7	18,8	77,8	71,4	50	66,7	48,7	64,3
Supplier	15	11,1	56,3	33,3	7,1	0	11,1	28,2	14,3
Requirements									
Collateral	14	22,2	31,3	11,1	21,4	10	22,2	25,6	14,3
Guarantees	6	0	6,3	11,1	14,3	10	11,1	10,3	7,1
No requirements	49	77,8	62,5	100	64,3	80	66,7	64,1	85.7***
Repayment problems	16	11,1	25	11,1	35,7	20	33,3	30,8	14,3
Reasons for default									
Low revenues	11	100	75	100	100	0	33,3	75	50
Ill-health	3	0	0	0	0	100	33,3	8,3	50
Robbery or assault	1	0	25	0	0	0	0	8,3	0
Indebtedness	3	0	0	0	20	0	66,7	25	0
Assets sold to repay credit	7	0	0	11,1	7,1	20	33,3	10,3	10,7
Use of credit in									
Physical capital	5	15,8	0	5,6	3,6	0	0	1,1	6,9
The business	28	26,3	27,8	38,9	0	9,5	15,4	15,6	24,1
Human capital	12	0	5,6	11,1	7,1	23,8	3,8	5,6	12,1
Consumption	22	15,3	5,6	11,1	32,1	14,3	11,5	15,6	13,8

Note: The statistically significant association in the cross-tabulations are indicated by the Chi-square values for the cell as a whole at 0.001 (*); 0.01 (**); 0.05 (***); and 0.1 (****) levels of significance.

Source: Author's sample survey

Table A6. 13 Use of other financial services (figures in percentages)

		FINCOMUN		CAME		PROMUJER		Pooled sample	
	Sample size	Control	Treated	Control	Treated	Control	Treated	Treated	Control
Remittances	27	15	25	22,2	10,7	23,8	11,5	16,7	20,7
Means of receiving remittances									
Financial institution	27	100	100	100	100	100	100	100	100
Informal agents	1	0	11,1	0	0,0	0	0,0	6,7	0
Regularity									
Monthly	13	66,7	33,3	0	100,0	80	33,3	46,7	50
Occasionally	14	33,3	66,7	100	0,0	20	66,7	53,3	50
Average remittance (in pesos of 2004)									
≤ 2577	8	100	66,7	100	50,0	25	100,0	66,7	57,1
2578+	5	0	33,3	0	50,0	75	0,0	33,3	42,9
Use of remittances									
in Physical capital	5	0	22,2	25	0,0	40	0,0	13,3	25
in the business	4	0	11,1	75	0,0	0	0,0	6,7	25
in Human capital	3	0	11,1	0	33,3	20	0,0	13,3	8,3
Consumption	20	66,7	66,7	50	100,0	80	100,0	80	66,7

Note: The statistically significant association in the cross-tabulations are indicated by the Chi-square values for the cell as a whole at 0.001 (*); 0.01 (**); 0.05 (***); and 0.1 (****) levels of significance.

Source: Author's sample survey

Table A6. 14 Labour markets and income sources (figures in percentages)

		FINCOMUN		CAME		PROMUJER		Pooled sample	
	Sample size	Control	Treated	Control	Treated	Control	Treated	Treated	Control
Household members working									
≤ 2	115	73,7	72,2	88,9	78,6	76,2	80,8	76,7	79,3
3 +	33	26,3	27,8	11,1	21,4	23,8	19,2	23,3	20,7
Household members with a wage-earning job									
= 1	50	62,5	77,8	100	57,1	80	92,9	75,7	78,6
2 +	15	37,5	22,2	0	42,9	20	7,1	24,3	21,4
Average salary per month (in pesos of 2004)									
≤ 3627	18	88,9	0	80	0	28,6	50	50	57,1
3628 +	14	11,1	0	20	0	71,4	50	50	42,9
Type of business									
Industry	26	26,3	22,2	27,8	14,3	14,3	3,8	14,4	22,4
Commerce	84	52,6	58,3	38,9	42,9	57,1	84,6	61,1	50
Service	27	15,8	19,4	33,3	21,4	9,5	11,5	17,8	19
Location of business									
At home	47	33,3	36,1	27,8	31,8	47,1	30,8	33,3	35,8
Rented premise	36	61.1**	19,4	72.2*	13,6	5,9	3,8	13,1	47.2*
Owned premise	14	0	22,2	0	4,5	0	19,2	16.7**	0
Street market	45	5,6	30,6	5,6	50**	47,1	50	41.7**	18,9
Time in business (years)									
≤ 2	50	61.1*	13,9	44,4	27,3	47,1	46,2	27,4	50.9***
3 - 5	44	11,1	44.4*	22,2	45,5	29,4	26,9	39.3***	20,8
6 +	43	27,8	41,7	33,3	27,3	23,5	26,9	33,3	28,3
≤ 6	94	72,2	58,3	66,7	72,7	76,5	73,1	66,7	71,7
7 +	43	27,8	41,7	33,3	27,3	23,5	26,9	33,3	28,3
Reasons for being in business									
Improving income	70	44,4	55,6	33,3	68.2***	29,4	61.5**	60.7**	35,8
Having own business	92	50,0	66,7	72.2***	31,8	88	92,3	65,5	69,8
Lost previous job	11	11,1	5,6	22,2	9,1	0	3,8	6	11,3
Source of seed capital									
Gift	20	5,6	8,3	27,8	9,1	17,6	23,1	13,1	17
Credit	51	11,1	30,6	44,4	54,5	23,5	53.8***	44***	26,4
Savings	93	88,9	80,6	72.2***	40,9	76.5****	50	60.7***	79,2
Assets sold	5	5,6	8,3	5,6	0	0	0	3,6	3,8
Remittances	8	0	5,6	5,6	9,1	11,8	3,8	6	5,7
If savings in									
financial institutions	5	0	0	15,4	0	15,4	7,7	2	9,5
MFI	1	0	0	0	11,1	0	0	2	0
informal agents	89	100	100	92,3	100	84,6	92,3	98	92,9
If credit from									
financial institutions	4	50	9,1	12,5	8,3	0	0	5,4	14,3
MFI	23	0,0	18,2	12,5	66,7	25,0	78,6	56.8**	14,3
informal agents	27	50,0	72,7	87,5	33,3	75,0	28,6	43,2	78.6***
People working in the business									
≤ 2	79	61,1	44,4	33,3***	68,2	70,6	73,1	59..5	54,7
3 +	58	38,9	55,6	66,7	31,8	29,4	26,9	40,5	45,3
Employees in the business									
= 1	12	100,0	62,5	33,3	100,0	100,0	0,0	66,7	75
2 +	5	0,0	37,5	66,7	0,0	0,0	0,0	33,3	25
Salary of employees per month (in pesos of 2004)									
≤ 2200	5	100	50,0	50	0,0	0	0,0	42,9	50
2201 +	5	0	50,0	50	100,0	100	0,0	57,1	50

Hours at work a day									
≤ 8	86	50	52,8	66,7	63,6	76,5	73,1	61,9	64,2
9 +	51	50	47,2	33,3	36,4	23,5	26,9	38,1	35,8
								***	
Days at work per week									
≤ 5	26	5,6	16,7	0	31,8	23,5	30,8	25	9,4
6 +	111	94,4	83,3	100	68,2	76,5	69,2	75	90,6
Business expenses per month (in pesos of 2004)									
≤ 9532	94	88,9*	41,7	88,9***	54,5	76,5	84,6	58,3*	84,9
9533 +	43	11,1	58,3	11,1	45,5	23,5	15,4	41,7	15,1
Business revenues per month (in pesos of 2004)									
≤ 14227	90	88,9*	33,3	83,3****	54,5	76,5	84,6	54,8	83*
14228 +	47	11,1	66,7	16,7	45,5	23,5	15,4	45,2	17
Profits per month (in pesos of 2004)									
≤ 4735	90	88,9*	41,7	70,6	72,7	70,6	73,1	59,5	76,9***
4736 +	46	11,1	58,3	29,4	27,3	29,4	26,9	40,5	23,1
Economic situation after setting up the business									
Better off	82	38,9	72,2	27,8	59,1	52,9	84,6	72.6*	39,6
Same	41	33,3	22,2	55,6	27,3	41,2	15,4	21,4	43.4*
Worse off	14	27,8	5,6	16,7	13,6	5,9	0,0	6	17*
Household income per month (in pesos of 2004)									
≤ 6817	96	84,2**	41,7	77,8	71,4	76,2	57,7	55,6	79,3**
6818 +	52	15,8	58,3	22,2	28,6	23,8	42,3	44,4	20,7
Income per capita per month (in pesos of 2004)									
≤ 1737	96	84,2**	41,7	77,8	71,4	71,4	61,5	56,7	77,6**
1738 +	52	15,8	58,3	22,2	28,6	28,6	38,5	43,3	22,4
Social Security (NHS)	41	36,8	16,7	11,1	32,1	28,6	42,3	28,9	25,9
Safety nets (Oportunidades)	6	5,3	0,0	0	0,0	14,3	7,7	2,2	6,9

Note: The statistically significant association in the cross-tabulations are indicated by the Chi-square values for the cell as a whole at 0.001 (*); 0.01 (**); 0.05 (***); and 0.1 (****) levels of significance.

Sources: Author's sample survey

Table A6. 15 External shocks and coping strategies (figures in percentages)

		FINCOMUN		CAME		PROMUJER		Pooled sample	
	Sample size	Control	Treated	Control	Treated	Control	Treated	Control	Treated
Overall	148	34,5	65,5	39,1	60,9	44,7	55,3	39,2	60,8
Recent external shocks	97	47,4	66,7	66,7	85,7	61,9	57,7	58,6	70
Type of shock									
Death, illness or accident	65	66,7	41,7	66,7	83,3	84,6	66,7	73,5	63,5
Robbery, burglary or assault	52	66,7	70,8	75****	45,8	23,1	40	52,9	54
Natural disaster	3	0	0	0	4,2	0	13,3	0	4,8
Destabilising factors									
Losing source of income	42	15,8	27,8	33,3	32,1	33,3	26,9	27,6	28,9
Ill-health	114	84,2	69,4	72,2	75	81	84,6	79,3	75,6
Crime and delinquency	40	26,3	36,1	61.1***	28,6	0	11,5	27,6	26,7
Coping strategies									
Borrowing from money lender	10	5,3	8,3	0	10,7	9,5	3,8	5,2	7,8
Borrowing from relatives and friend	124	68,4	97,2	88,9	67,9	90,5	84,5	82,8	84,4
Use credit from MFI	22	0	11,1	0	57.1*	0	7,7	0	24.4*
Use of savings	67	42,1	50	50	39,3	38,1	50	43,1	46,7
Sold off Physical capital	17	5,3	19,4	11,1	7,1	9,5	11,5	8,6	13,3

The statistically significant association in the cross-tabulations are indicated by the Chi-square values for the cell as a whole at 0.001 (*); 0.01 (**); 0.05 (***); and 0.1 (****) levels of significance.

Sources: Author's sample survey

A6.13 Content areas of the semi-structured interviews

Question number	Question	Variable name	Coding instructions
I	**Household's general information**		
I.1	**Age**	**age.I.1age**	Years
I.2	**Gender**	**gender.I.2**	
I.2.1	Male		1
I.2.2	Female		2
I.3	**Marital status (head of household)**	**maritalstatus.I.3**	
I.3.1	Single		1
I.3.2	Married		2
I.3.3	Divorced		3
I.3.4	Separated		4
I.3.5	Widow		5
I.4	**Length of membership with the MFI**	**membership.I.4**	Years
I.5	**How much did you get in your first credit from the MFI?**	**firstcredit.I.5**	In pesos of 2004
I.6	**How much did you get in your last credit from the MFI?**	**lastcredit.I.6**	In Pesos of 2004
I.7	**Number of Household's members**	**householdmembers.I.7**	Number
I.8	**Activity of household's members**	**activity.I.8**	Number
I.8.1	Wage earner	**activity.I.8.1**	Number
I.8.2	Pensioner	**activity.I.8.2**	Number
I.8.3	Unemployed (housewife)	**activity.I.8.3**	Number
I.8.4	Self-employed	**activity.I.8.4**	Number
I.8.5	Student/small children	**activity.I.8.5**	Number
I.9	**How long have you been living in this house?**	**timelivinghouse.I.9**	Years
I.11	**Are there some members of your household living abroad?**	**membersabroad.I.11**	
I.11.1	Yes		1
I.11.2	No		2
II.A	**Household's physical capital (home assets)**		
II.A.1	**Is your house?**	**house.II.A.1**	
II.A.1.1	rented		1
II.A.1.2	owned		2
II.A.1.3	borrowed		3
II.A.4	**Have you got the title deeds of the property?**	**titledeeds.II.A.4**	
II.A.4.1	Yes		1
II.A.4.2	No		2
II.A.5	**If owned, how did you get (build) your house?**		
II.A.5.1	I got a credit	**howgothouse.II.A.5.1**	{1, 0}
II.A.5.2	I used my savings	**howgothouse.II.A.5.2**	{1, 0}
II.A.5.3	I sold a physical asset	**howgothouse.II.A.5.3**	{1, 0}
II.A.5.4	As a heritage	**howgothouse.II.A.5.4**	{1, 0}
II.A.5.5	I live with my parents	**howgothouse.II.A.5.5**	{1, 0}

II.A.5.7	I went to work to the US/from my relative living abroad	howgothouse.II.A.5.6	{1, 0}
II.A.6	**If savings, where did you deposit?**		
II.A.6.1	Formal institutions	formalsavings.II.A.6.1	{1, 0}
II.A.6.2	MFI	MFIsavings.II.A.6.2	{1, 0}
II.A.6.3	informal mechanisms	informalsavings.II.A.6.3	{1, 0}
II.A.7	**If credit, where did you get the credit from?**		
II.A.7.1	Formal institutions	formalcredit.II.A.7.1	{1, 0}
II.A.7.2	MFI	MFI.II.A.7.2	{1, 0}
II.A.7.3	informal agents	informalcredit.II.A.7.3	{1, 0}
II.A.8	**Characteristics of the house**	characthouse.II.A.8	
II.A.8.1	Still in construction		1
II.A.8.2	Already finished		2
II.A.9	**What public services does your house have?**		
II.A.9.1	electricity	publicservices.II.A.9.1	{1, 0}
II.A.9.2	water piped	publicservices.II.A.9.2	{1, 0}
II.A.9.3	drainage	publicservices.II.A.9.3	{1, 0}
II.A.9.4	rubbish collection	publicservices.II.A.9.4	{1, 0}
II.A.9.5	telephone	publicservices.II.A.9.5	{1, 0}
II.A.10	**Have you recently bought/build real estate properties/or are you paying a mortgage?**	Recenthouseassets.II.A.10	
II.A.10.1	Yes		1
II.A.10.2	No		2
II.A.11	**If yes, how did you get the money from?**		
II.A.11.1	Credit	howgotassets.II.A.11.1	{1, 0}
II.A.11.2	Savings	howgotassets.II.A.11.2	{1, 0}
II.A.12	**If savings, where do you deposit?**		
II.A.12.1	Formal institutions	formalsavings.II.A.12.1	{1, 0}
II.A.12.2	MFI	MFIsavings.II.A.12.2	{1, 0}
II.A.12.3	informal mechanisms	informalsavings.II.A.12.2	{1, 0}
II.A.13	**If credit, where did you get the credit from?**		
II.A.13.2	MFI	MFIcredit.II.A.13.2	{1, 0}
II.A.14	**Have you made recently improvements to your property (ies) or built rooms to let or premises to set a business?**	improvements.II.A.14	
II.A.14.1	Yes		1
II.A.14.2	No		2
II.A.15	**If yes, where did you get the money from?**		
II.A.15.1	credit	howdidimprovements.II.A.15.1	{1, 0}
II.A.15.2	savings	howdidimprovements.II.A.15.2	{1, 0}
II.A.15.3	I sold out household assets	howdidimprovements.II.A.15.3	{1, 0}
II.A.15.4	I receive money from my relatives living abroad	howdidimprovements.II.A.15.4	{1, 0}
II.A.16	**If savings, where do you deposit?**		
II.A.16.1	Formal institutions	formalsavings.II.A.16.1	{1, 0}
II.A.16.2	MFI	MFIsavings.II.A.16.2	{1, 0}
II.A.16.3	informal mechanisms	informalsavings.II.A.16.3	{1, 0}
II.A.17	**If credit, where did you get the credit from?**		
II.A.17.1	Formal institutions	formalcredit.II.A.17.1	{1, 0}
II.A.17.2	MFI	MFIcredit.II.A.17.2	{1, 0}
II.A.17.3	informal agents	informalcredit.II.A.17.3	{1, 0}

II.A.18	**Have you recently bought a bicycle, motorcycle, car, van, truck or other vehicle?**	**gotvehicle.II.A.18**	
II.A.18.1	yes		1
II.A.18.2	no		2
II.A.19	**If yes, where did you get the money from?**		
II.A.19.1	credit	**howgotvehicle.II.A.19.1**	{1, 0}
II.A.19.2	savings	**howgotvehicle.II.A.19.2**	{1, 0}
II.A.19.3	from my relative living abroad	**howgotvehicle.II.A.19.3**	{1, 0}
II.A.19.4	I sold out a household asset	**howgotvehicle.II.A.19.4**	{1, 0}
II.A.20	**If savings, where do you deposit?**		
II.A.20.1	Formal institutions	**formalsavings II.A.20.1**	{1, 0}
II.A.20.2	MFI	**MFIsavings II.A.20.2**	{1, 0}
II.A.20.3	informal mechanisms	**informalsavings II.A.20.3**	{1, 0}
II.A.21	**If credit, where did you get the credit from?**		
II.A.21.1	Formal institutions	**formalcredit.II.A.21.1**	{1, 0}
II.A.21.2	MFI	**MFIcredit.II.A.21.2**	{1, 0}
II.A.21.3	informal agents	**informalcredit.II.A.21.3**	{1, 0}
II.A.22	**Have you recently bought electronic or electro-domestic products or other household assets?**	**electronics.II.A.22**	
II.A.22.1	Yes		1
II.A.22.2	No		2
II.A.23	**If yes, where did you get the money from?**		
II.A.23.1	a credit	**howgotelectronics.II.A.23.1**	{1, 0}
II.A.23.2	savings	**howgotelectronics.II.A.23.2**	{1, 0}
II.A.23.3	from my relative living abroad	**howgotelectronics.II.A.23.3**	{1, 0}
II.A.24	**Have you used your household's assets to collateralise a credit?**	**collateral.II.A.24**	
II.A.24.1	Yes		1
II.A.24.2	no		2
II.A.25	**If yes, what assets have you used?**		
II.A.25.1	Real estate	**assetscollateral.II.A.25.1**	{1, 0}
II.A.25.2	Vehicles	**assetscollateral.II.A.25.2**	{1, 0}
II.A.25.3	Electronic or electro-domestic products	**assetscollateral.II.A.25.3**	{1, 0}
II.A.26	**Have you faced some unexpected event (illness, robbery, assault) or to payback a debt?**	**unexpectedevents.II.A.26**	
II.A.26.1	Yes		1
II.A.26.2	No		2
II.A.27	**If yes, what event did you face?**		
II.A.27.1	death, illness or accident of one of the household's members	**whateventfaced.II.A.27.1**	{1, 0}
II.A.27.2	Robbery or assault	**whateventfaced.II.A.27.2**	{1, 0}
II.A.27.3	Natural disaster	**whateventfaced.II.A.27.3**	{1, 0}
II.A.27.4	Indebtedness	**whateventfaced.II.A.27.4**	{1, 0}
II.A.28	**Have you sold part of your assets to cope with unexpected events (illness, robbery, assault) or to payback a debt?**	**assetssold.II.A.28**	
II.A.28.1	Yes		1
II.A.28.2	No		2
II.A.29	**if yes what assets had you sold out?**		
II.A.29.1	Real estate	**whatassetssold.II.A.29.1**	{1, 0}
II.A.29.2	Vehicles	**whatassetssold.II.A.29.2**	{1, 0}
II.A.29.3	Electronic or electro-domestic products	**whatassetssold.II.A.29.3**	{1, 0}

II.B	**Household's physical capital (business assets)**		
II.B.1	**In case of having a microenterprise (or self-employment activity), what is the value of your assets?**	**valuebusiness.II.B.1**	In pesos of 2004
II.B.2	**How did you get your assets?**		
II.B.2.1	credit	**howstartedbusiness.II.B.2.1**	{1, 0}
II.B.2.2	savings	**howstartedbusiness.II.B.2.2**	{1, 0}
II.B.2.3	selling out properties or assets	**howstartedbusiness.II.B.2.3**	{1, 0}
II.B.2.4	I went to work to the US	**howstartedbusiness.II.B.2.4**	{1, 0}
II.B.2.5	I inheritaged it	**howstartedbusiness.II.B.2.5**	{1, 0}
II.B.2.6	No business	**howstartedbusiness.II.B.2.6**	{1, 0}
II.B.3	**Have you sold part of your assets to cope with unexpected events (illness, robbery, assault) or to payback a debt?**	**assetssold.II.B.3**	
II.B.3.1	Yes		1
II.B.3.2	No		2
II.B.4	**If yes, what event did you face?**		
II.B.4.1	Illness of one of your household's member	**whateventfaced.II.B.4.1**	{1, 0}
II.B.4.2	Robbery and assault	**whateventfaced.II.B.4.2**	{1, 0}
III.A	**Household's human capital (education)**		
III.A.1	**What is your education?**	**education.III.A.1**	years
III.A.2	**Have you recently taken training courses?**	**training.III.A.2**	
III.A.2.1	Yes		1
III.A.2.2	No		2
III.A.3	**Have you stopped sending your children to the school due to economic problems?**	**stopeducation.III.A.3**	
III.A.3.1	Yes		1
III.A.3.2	No		2
III.B	**Household's human capital (health)**		
III.B.1	**How is the health status of your family?**	**heath.III.B.1**	
III.B.1.1	Very good		1
III.B.1.2	Good		2
III.B.1.3	Regular		3
III.B.1.4	Bad		4
III.B.2	**Is there someone in your household suffering from health problems?**	**healthproblems.III.B.2**	
III.B.2.1	Yes		1
III.B.2.2	No		2
III.B.3	**Do you enjoy the benefits of the national health system (IMSS, ISSSTE, Salubridad, etc.)?**	**NHS.III.B.3**	
III.B.3.1	yes		1
III.B.3.2	No		2
III.B.4	**Where do you use to attending your health problems?**		
III.B.4.1	Private sector	**healthservice.III.B.4.1**	{1, 0}

III.B.4.2	National health system	**healthservice.III.B.4.2**	{1, 0}
III.B.5	**What do you do to deal with unexpected health problems?**		
III.B.5.1	I go to the NHS; public hospitals	**howdealhealthproblem.III.B.5.1**	{1, 0}
III.B.5.2	I sold out a household asset	**howdealhealthproblem.III.B.5.2**	{1, 0}
III.B.5.3	I use my savings	**howdealhealthproblem.III.B.5.3**	{1, 0}
III.B.5.4	I use part of my credit from the MFI	**howdealhealthproblem.III.B.5.4**	{1, 0}
III.B.5.5	Ask for a credit to informal agent (family, friend, moneylender)	**howdealhealthproblem.III.B.5.5**	{1, 0}
III.B.5.6	I ask money to my relatives living abroad	**howdealhealthproblem.III.B.5.6**	{1, 0}
IV	**Household's social capital**		
IV.1	**Are you or have you been member of any kind of social organisation apart of the MFI?**	**membershiporg.I.IV.1**	
IV.1.1	Yes		1
IV.1.2	No		2
IV.2	**If yes, what type of organisation?**		
IV.2.1	Formal institutions	**formalorg.IV.2.1**	{1, 0}
IV.2.2	MFI	**MFIorg.IV.2.2**	{1, 0}
IV.2.3	Informal organizations	**informalorg.IV.2.3**	{1, 0}
IV.3	**If not, is the MFI the first organisation that you belong to?**	**isMFIfirstorg.IV.3**	
IV.3.1	Yes		1
IV.3.2	No		2
V.A	Intersection with financial markets (savings in formal institutions)		
V.A.1	**Have you got a savings in financial institutions?**	**havesavings.V.A.1**	
V.A.1.1	Yes		1
V.A.1.2	No		2
V.A.2	**If yes, what type of institution?**		
V.A.2.1	bank	**typeinst.V.A.2.1**	{1, 0}
V.A.2.2	BANSEFI	**typeinst.V.A.2.2**	{1, 0}
V.A.2.4	Savings and credit co-operatives	**typeinst.V.A.2.4**	{1, 0}
V.A.3	**If not in banks, why?**		
V.A.3.1	insufficient money	**whynotsavings.V.A.3.1**	{1, 0}
V.A.3.2	the branch is far a way from home	**whynotsavings.V.A.3.2**	{1, 0}
V.A.3.3	I do not trust banks	**whynotsavings.V.A.3.3**	{1, 0}
V.A.3.4	Banks charge a lot of fees	**whynotsavings.V.A.3.4**	{1, 0}
V.A.3.5	I prefer to invest (low interest rates) in my house/business	**whynotsavings.V.A.3.5**	{1, 0}
V.A.4	**if yes, how far the institution is from your home/business (in minutes)?**	**howfarinst.V.A.4**	
V.A.4.2	Between 10 and 20 minutes		2
V.A.4.3	Between 20 and 30 minutes		3
V.A.4.4	More than 30 minutes		4
V.A.5	**If yes, how do you go to the institution?**	**howtransport.V.A.5**	

V.A.5.1	by walking		1
V.A.5.2	by public transportation		2
V.A.5.3	by owned car		3
V.A.6	**If not by walking, how much do you spend in transportation every time you go there?**	**howmuchtransport.V.A.6**	In pesos of 2004
V.A.7	**If yes, how often do you deposit in your savings account?**	**howoftensave.V.A.7**	
V.A.7.1	Once a week		1
V.A.7.2	Once every two weeks		2
V.A.7.3	Once a month		3
V.A.7.4	Once every 6 months		4
V.A.7.5	Occasionally		5
V.A.7.6	When I receive payments from my clients		6
V.A.7.7	I receive my wage in my account		7
V.A.7.8	When I receive money from my relatives living abroad		8
V.A.8	**If yes, how much do you deposit every time you do so (average)?**	**howmuchdeposit.V.A.8**	In pesos of 2004
V.A.9	**If yes, why do you save?**		
V.A.9.1	to increase stock of PK	**whysavingsPK.V.A.9.1**	{1, 0}
V.A.9.3	to increase stock of SK	**whysavingsSK.V.A.9.3**	{1, 0}
V.A.9.4	Preventive strategies to reduce vulnerability	**whysavingsreducvulnera.V.A.9.4**	{1, 0}
V.A.9.5	For income-expenditure purposes	**whysavingsincom.exp.V.A.9.5**	{1, 0}
V.A.10	**What are the reasons for people to not having savings in formal financial institutions?**		
V.A.10.1	People do not have money to save	**whyNOTsavings.V.A.10.1**	{1, 0}
V.A.10.2	Banks charge a lot of fees	**whyNOTsavings.V.A.10.2**	{1, 0}
V.A.10.3	Banks are not trusty institutions (steal money)	**whyNOTsavings.V.A.10.3**	{1, 0}
V.A.10.4	the bank is far away from my residence	**whyNOTsavings.V.A.10.4**	{1, 0}
V.A.10.5	I prefer to invest (low interest rates) in my house/business	**whyNOTsavings.V.A.10.5**	{1, 0}
V.B	Intersection with financial markets (savings in MFI)		
V.B.1	**Do you have voluntary saving in the MFI?**	**savingsinMFI.V.B.1**	
V.B.1.1	Yes		1
V.B.1.2	No		2
V.B.2	**If not why?**		
V.B.2.1	insufficient money	**whyNOT.V.B.2.1**	{1, 0}
V.B.2.2	the branch is far a way from home	**whyNOT.V.B.2.2**	{1, 0}
V.B.2.4	I prefer to invest (low interest rates)	**whyNOT.V.B.2.4**	{1, 0}
V.B.3	**If yes, how far the MFI is from your home/business?**	**howfarMFI.V.A.4**	
V.B.3.1	Less than 10 minutes		1
V.B.3.2	Between 10 and 20 minutes		2
V.B.3.3	Between 20 and 30 minutes		3
V.B.3.4	More than 30 minutes		4
V.B.4	**If yes. How do you go to the MFI?**	**howtransportMFI.V.B.4**	
V.B.4.1	by walking		1
V.B.4.2	by public transportation		2

V.B.4.3	by owned car		3
V.B.5	**If not by walking, how much do you spend in transportation every time you go there?**	**howmuchtransportMFI.V.B.5**	In pesos of 2004
V.B.6	**If yes, how often do you deposit in the MFI?**	**howoftensaveMFI.V.B.6**	
V.B.6.1	Weekly		1
V.B.6.3	Monthly		3
V.B.6.5	Occasionally		5
V.B.7	**If yes, how much do you deposit every time (average)?**	**howmuchdeposit.V.B.7**	In pesos of 2004
V.B.8	**If yes, why do you save in the MFI?**		
V.B.8.1	to increase stock of PK	**whysavingsMFIPK.V.B.8.1**	{1, 0}
V.B.8.2	to increase stock of HK	**whysavingsMFIHK.V.B.8.2**	{1, 0}
V.B.8.4	Preventive strategies to reduce vulnerability	**whysavingsMFIredcvulnera.V.B.8.4**	{1, 0}
V.B.8.5	For income-expenditure purposes	**whysavingsMFIincom.exp.V.B.8.5**	{1, 0}
V.B.9	**What are the advantages of the MFI in relation to other financial intermediaries?**		
V.B.9.1	Security	**advantagesMFI.V.B.9.1**	{1, 0}
V.B.9.2	Near to home	**advantagesMFI.V.B.9.2**	{1, 0}
V.B.9.3	High interest rates	**advantagesMFI.V.B.9.3**	{1, 0}
V.C	**Intersection with financial markets (savings in informal mechanisms)**		
V.C.1	**Have you participated in ROSCAS?**	**ROSCAS.V.C.1**	
V.C.1.1	Yes		1
V.C.1.2	No		2
V.C.2	**If yes, how often do you deposit in ROSCAS?**	**howoftenROSCAS.V.C.2**	
V.C.2.1	Daily		1
V.C.2.2	Weekly		2
V.C.2.3	Biweekly		3
V.C.2.4	Monthly		4
V.C.3	**If yes, how many persons do integrate the ROSCA?**	**membersROSCAS.V.C.3**	Number
V.C.4	**If yes, how much do you deposit every time?**	**howmuchsaveROSCAS.V.C.4**	In pesos of 2004
V.C.5	**If yes, why do you participate in the ROSCA?**		
V.C.5.1	to increase stock of PK	**whysavingsROSCASPK.V.C.5.1**	{1, 0}
V.C.5.2	to increase stock of HK	**whysavingsROSCASHK.V.C.5.2**	{1, 0}
V.C.5.3	to increase stock of SK	**whysavingsROSCASSK.V.C.5.3**	{1, 0}
V.C.5.4	Preventive strategies to reduce vulnerability	**whysavingsROSCASreducvulnera.V.C.5.4**	{1, 0}
V.C.5.5	For income-expenditure purposes	**whysavingsROSCASincom.exp.V.C.5.5**	{1, 0}
V.C.6	**If yes, what are the advantages of using ROSCAS in relation to financial intermediaries?**		
V.C.6.1	a credit mechanism with no interest rate	**advantagesROSCAS.V.C.6.1**	{1, 0}
V.C.6.2	Security	**advantagesROSCAS.V.C.6.2**	{1, 0}
V.C.6.3	Near to home	**advantagesROSCAS.V.C.6.3**	{1, 0}
V.C.6.4	A efficient savings mechanism	**advantagesROSCAS.V.C.6.4**	{1, 0}
V.C.7	**If not why?, what are the disadvantages of ROSCAS?**		
V.C.7.1	Risky mechanism	**disadvantagesROSCAS.V.C.7.1**	{1, 0}

V.C.7.2	I dot have enough money for being in the MFI	disadvantagesROSCAS.V.C.7.2	{1, 0}
V.C.7.3	I don't have money to save	disadvantagesROSCAS.V.C.7.3	{1, 0}
V.C.7.4	I prefer to invest in my business	disadvantagesROSCAS.V.C.7.4	{1, 0}
V.C.8	**Do you save money with relatives or friends?**	**savingsrelatives.V.C.8**	
V.C.8.1	Yes		1
V.C.8.2	No		2
V.C.9	**Do you save at home?**	**savingshome.V.C.9**	
V.C.9.1	Yes		1
V.C.9.2	No		2
V.D	**Intersection with financial markets (credit from formal institutions)**		
V.D.1	**Have you applied for a credit to formal financial institutions (not the current MFI)?**	**appliedcreditformalinst.V.D.1**	
V.D.1.1	Yes		1
V.D.1.2	No		2
V.D.2	**If yes, what type of financial institution?**		
V.D.2.1	bank	typeinstcredit.V.D.2.1	{1, 0}
V.D.2.3	savings and credit association	typeinstcredit.V.D.2.3	{1, 0}
V.D.2.4	Savings and credit co-operatives	typeinstcredit.V.D.2.4	{1, 0}
V.D.2.5	MFIs (other than this MFI)	typeinstcredit.V.D.2.5	{1, 0}
V.D.2.6	Governmental programme	typeinstcredit.V.D.2.6	{1, 0}
V.D.3	**If yes, did you get the credit?**	**didyougetcredit.V.D.3**	
V.D.3.1	Yes		1
V.D.3.2	No		2
V.D.4	**If you have not applied for or got a credit, what were the reasons?**		
V.D.4.1	Not having enough collateral	whynocredit.V.D.4.1	{1, 0}
V.D.4.2	Not having regular sources of income	whynocredit.V.D.4.2	{1, 0}
V.D.4.3	High interest rates	whynocredit.V.D.4.3	{1, 0}
V.D.4.4	Lack of trust to financial institutions	whynocredit.V.D.4.4	{1, 0}
V.D.5	**If yes how much did you borrow?**	howmuchborrow.V.D.5	In pesos of 2004
V.D.6	**If yes, what are the requirements to get a credit from this institution?**		
V.D.6.1	Collateral	requirementcredit.V.D.6.1	{1, 0}
V.D.6.2	Guarantees	requirementcredit.V.D.6.2	{1, 0}
V.D.6.3	Savings	requirementcredit.V.D.6.3	{1, 0}
V.D.7	**If yes, what is the interest rate paid?**	interest.V.D.7	rate of interest (per annum)
V.D.8	**If yes, what is the period the credit is due to be repaid?**	repayment.V.D.8	
V.D.8.3	Between 1 and 3 months		3
V.D.8.4	More than 3 months		4
V.D.8.5	Unspecified		5
V.D.9	**If yes, why did you ask for a credit to this institution?**		
V.D.9.1	To invest in PK	whycredit.V.D.9.1	{1, 0}
V.D.9.2	Best option	whycredit.V.D.9.2	{1, 0}
V.D.9.3	I needed a larger credit	whycredit.V.D.9.3	{1, 0}
V.D.10	**Have you faced problems to repay the credit?**	problemsrepayment.V.D.10	

V.D.10.1	Yes		1
V.D.10.2	No		2
V.D.11	**If yes, what are the reasons?**		
V.D.11.1	Poor performance in business	**reasonsproblems.V.D.11.1**	{1, 0}
V.D.11.2	Illness of one of the household's members	**reasonsproblems.V.D.11.2**	{1, 0}
V.D.11.3	Over indebtedness	**reasonsproblems.V.D.11.3**	{1, 0}
V.D.12	**Have you sold off some of your assets to pay back the credit to this institution?**	**assetsoldrepayment.V.D.12**	
V.D.12.1	Yes		1
V.D.12.2	No		2
V.D.13	**Are you still member of the organisation?**	**membership.V.D.13**	
V.D.13.1	Yes		1
V.D.13.2	No		2
V.D.14	**What have you invested the credit for?**		
V.D.14.1	to increase stock of PK	**investedcreditPK.V.D.14.1**	{1, 0}
V.D.14.2	to increase stock of HK	**investedcreditHK.V.D.14.2**	{1, 0}
V.D.14.3	For income-expenditure purposes	**investedcreditincom.exp.V.D.14.3**	{1, 0}
V.D.15	**Are you planning to ask for another credit?**	**planningcredit.V.D.15**	
V.D.15.1	Yes		1
V.D.15.2	No		2
V.D.16	**If yes, how are you planning to use it?**		
V.D.16.1	In my business	**investplanningcredit.V.D.16.1**	{1, 0}
V.E	**Intersection with financial markets (credit from the MFI)**		
V.E.1	**How did you know about the MFIs?**	**knowMFI.V.E.1**	
V.E.1.1	From a friend or relative		1
V.E.1.2	From advertisement/promoter		2
V.E.1.3	It is near home/business		3
V.E.2	**What is the product that interested you most to join the MFI?**		
V.E.2.1	Savings	**interestproduct.V.E.2.1**	{1, 0}
V.E.2.2	Credit	**interestproduct.V.E.2.2**	{1, 0}
V.E.2.3	Insurance	**interestproduct.V.E.2.3**	{1, 0}
V.E.3	**How long have you been member of the MFI for?**	**Membership.V.E.3**	Years
V.E.4	**What did you need to get a credit?**		
V.E.4.1	Physical collateral	**RequirementsMFI.V.E.4.1**	{1, 0}
V.E.4.2	Guarantees	**RequirementsMFI.V.E.4.2**	{1, 0}
V.E.4.3	Social collateral	**RequirementsMFI.V.E.4.3**	{1, 0}
V.E.4.4	Minimum savings	**RequirementsMFI.V.E.4.4**	{1, 0}
V.E.4.5	To have a business	**RequirementsMFI.V.E.4.5**	{1, 0}
V.E.5	**Did you find difficult to fulfil all the requirements requested by the MFI?**	**difficultrequirement.V.E.5**	
V.E.5.1	Yes		1
V.E.5.2	No		2
V.E.6	**How long did you wait to get the first credit for?**	**waitingcredit.V.E.6**	
V.E.6.1	Less than 1 week		1
V.E.6.2	Between 1 and 2 weeks		2
V.E.6.3	Between 2 and 4 weeks		3

V.E.6.4	More than 1 month		4
V.E.7	**What are the comparative advantages of the MFI in relation to other financial institutions**		
V.E.7.1	Near to home	**advantageMFI.V.E.7.1**	{1, 0}
V.E.7.2	Easy requirements to fulfil	**advantageMFI.V.E.7.2**	{1, 0}
V.E.7.3	Lower interest rate	**advantageMFI.V.E.7.3**	{1, 0}
V.E.7.4	Short-term contracts	**advantageMFI.V.E.7.4**	{1, 0}
V.E.7.5	Periodic instalments	**advantageMFI.V.E.7.5**	{1, 0}
V.E.7.6	Progressive lending	**advantageMFI.V.E.7.6**	{1, 0}
V.E.7.7	Complementary services (training)	**advantageMFI.V.E.7.7**	{1, 0}
V.E.7.8	Voluntary savings	**advantageMFI.V.E.7.8**	{1, 0}
V.E.8	**How far the MFI is from your home/business?**	**howfarMFI.V.E.8**	
V.E.8.1	Less than 10 minutes		1
V.E.8.2	Between 10 and 20 minutes		2
V.E.8.3	Between 20 and 30 minutes		3
V.E.8.4	More than 30 minutes		4
V.E.9	**How do you go to the MFIs?**	**howtransportMFI.V.E.9**	
V.E.9.1	by walking	**V.E.9.1**	1
V.E.9.2	by public transportation	**V.E.9.2**	2
V.E.9.3	by owned car, bicycle or other vehicle	**V.E.9.3**	3
V.E.10	**If not walking, how much do you spend in transportation every time you go there?**	**howmuchtransportMFI.V.E.10**	In pesos of 2004
V.E.11	**Have you faced problems to repay the credit?**	**problemsrepaymentMFI.V.E.11**	
V.E.11.1	Yes		1
V.E.11.2	No		2
V.E.12	**If yes, what are the reasons?**		
V.E.12.1	poor sales performance in the business	**reasonsproblemsMFI.V.E.12.1**	{1, 0}
V.E.12.2	I lost my job	**reasonsproblemsMFI.V.E.12.2**	{1, 0}
V.E.12.3	Illness of one of the household's members	**reasonsproblemsMFI.V.E.12.3**	{1, 0}
V.E.12.4	Robbery or assault	**reasonsproblemsMFI.V.E.12.4**	{1, 0}
V.E.12.5	Indebtedness	**reasonsproblemsMFI.V.E.12.5**	{1, 0}
V.E.12.6	I forgot to pay the instalment	**reasonsproblemsMFI.V.E.12.6**	{1, 0}
V.E.13	**Have you sold off some of your assets to pay back the credit to the MFI?**	**assetsoldrepayMFI.V.E.13**	
V.E.13.1	Yes		1
V.E.13.2	No		2
V.E.14	**If yes, what assets had you sold out?**		
V.E.14.1	Real estate	**assetsold.V.E.14.1**	{1, 0}
V.E.14.3	Electronics, electro-domestics or other assets	**assetsold.V.E.14.3**	{1, 0}
V.E.15	**How have you invested the credit?**		
V.E.15.1	to increase stock of PK	**investcreditMFIPK.V.E.15.1**	{1, 0}
V.E.15.2	to increase stock of HK	**investcreditMFIHK.V.E.15.2**	{1, 0}
V.E.15.3	to increase stock of SK	**investcreditMFISK.V.E.15.3**	{1, 0}
V.E.15.4	For income-expenditure purposes	**investcreditMFIincom.exp.V.E.15.4**	{1, 0}
V.E.16	**Are you planning to apply for another credit?**	**planningcreditMFI.V.E.16**	
V.E.16.1	Yes		1
V.E.16.2	No		2
V.E.17	**If yes, how are you planning to use it?**		

V.E.17.1	to increase stock of PK	**investplanningcreditMFI.PK.V.E.17.1**	{1, 0}
V.E.17.2	to increase stock of HK	**investplanningcreditMFI.HK.V.E.17.2**	{1, 0}
V.E.17.4	For income-expenditure purposes	**investplanningcreditMFI.incom.exp.V.E.17.4**	{1, 0}
V.E.18	**How have you benefited from the credit?**		
V.E.18.1	to increase stock of PK	**benefitsMFIPK.V.E.18.1**	{1, 0}
V.E.18.2	to increase stock of HK	**benefitsMFIHK.V.E.18.2**	{1, 0}
V.E.18.3	employment generation	**benefitsMFIemployment.V.E.18.3**	{1, 0}
V.E.18.4	Preventive strategies to reduce vulnerability	**benefitsMFIreducvulnera.V.E.18.4**	{1, 0}
V.E.18.5	For income-expenditure purposes	**benefitsMFIincom.exp.V.E.18.5**	{1, 0}
V.E.18.6	No benefits	**benefitsMFIno benef.V.E.18.16**	{1, 0}
V.F	**Intersection with financial markets (credit from informal agents)**		
V.F.1	**Have you received credits from informal agents?**	**informalcredit.V.F.1**	
V.F.1.1	Yes		1
V.F.1.2	No		2
V.F.2	**If yes, what informal agent?**		
V.F.2.1	Money lender	**informalagent.V.F.2.1**	{1, 0}
V.F.2.2	Relatives and friends	**informalagent.V.F.2.2**	{1, 0}
V.F.2.3	Supplier	**informalagent.V.F.2.3**	{1, 0}
V.F.3	**If yes, what are the requirements to get a credit from this agent?**		
V.F.3.1	Collateral	**requirementinformalcredit.V.F.3.1**	{1, 0}
V.F.3.2	Guarantees	**requirementinformalcredit.V.F.3.2**	{1, 0}
V.F.3.3	No requirements	**requirementinformalcredit.V.F.3.3**	{1, 0}
V.F.4	**If yes, what is the interest rate paid?**	**interest.V.F.4**	rate of interest (per annum)
V.F.5	**If yes, what is the period the credit is due to be repaid?**	**repayment.V.F.5**	
V.F.5.1	A week		1
V.F.5.2	Between 2 and 4 weeks		2
V.F.5.3	Between 1 and 3 months		3
V.F.5.4	More than 3 months		4
V.F.5.5	Unspecified		5
V.F.6	**If yes, why did you ask for a credit to this agent?**		
V.F.6.1	Rapid delivery	**whycredit.V.F.6.1**	{1, 0}
V.F.6.2	to pay back the MFI	**whycredit.V.F.6.2**	{1, 0}
V.F.6.3	it was my only option	**whycredit.V.F.6.3**	{1, 0}
V.F.7	**Have you faced problems to repay the credit?**	**problemsrepayment.V.F.7**	
V.F.7.1	Yes		1
V.F.7.2	No		2
V.F.8	**If yes, what are the reasons?**		
V.F.8.1	Poor sales in the business	**reasonsproblems.V.F.8.1**	{1, 0}
V.F.8.2	Illness of one of the household's members	**reasonsproblems.V.F.8.2**	{1, 0}
V.F.8.3	Robbery or assault	**reasonsproblems.V.F.8.3**	{1, 0}
V.F.8.4	Indebtedness	**reasonsproblems.V.F.8.4**	{1, 0}

V.F.9	**Have you sold off some of your assets to pay back the credit to the agent?**	**assetsoldrepayment.V.F.9**	
V.F.9.1	Yes		1
V.F.9.2	No		2
V.F.10	**If yes, what assets had you sold out?**		
V.F.10.1	Real estate	**assetsold.V.F.10.1**	{1, 0}
V.F.10.2	Livestock	**assetsold.V.F.10.2**	{1, 0}
V.F.11	**What have you invested the credit for?**		
V.F.11.1	to increase stock of PK	**investedinfomalcreditPK.V.F.11.1**	{1, 0}
V.F.11.2	to increase stock of HK	**investedinfomalcreditHK.V.F.11.2**	{1, 0}
V.F.11.3	to increase stock of SK	**investedinfomalcreditSK.V.F.11.3**	{1, 0}
V.F.11.4	For income-expenditure purposes	**investedinfomalcreditincom.exp.V .F.11.4**	{1, 0}
V.F.12	**Are you planning to ask for another credit?**	**planninginformalcredit.V.F.12**	
V.F.12.1	Yes		1
V.F.12.2	No		2
V.F.13	**If yes, how are you planning to use it?**		
V.F.13.1	In my business	**investplanninginformalcredit.V.F. 13.1**	{1, 0}
V.F.13.2	in paying back the credit that I have	**investplanninginformalcredit.V.F. 13.2**	{1, 0}
V.F.14	**Who do you turn to when you faced an unexpected event?**		
V.F.14.1	Money lender	**whomturningto.V.F.14.1**	{1, 0}
V.F.14.2	Relatives and friends	**whomturningto.V.F.14.2**	{1, 0}
V.F.14.3	MFIs	**whomturningto.V.F.14.3**	{1, 0}
V.F.14.4	I use my savings	**whomturningto.V.F.14.4**	{1, 0}
V.F.14.5	I sell out my assets	**whomturningto.V.F.14.5**	{1, 0}
V.G	Intersection with financial markets (remittances)		
V.G.1	**Do you receive money from relatives or friends living abroad?**	**remittances.V.G.1**	
V.G.1.1	Yes		1
V.G.1.2	No		2
V.G.2	**If yes, how do you get the money?**		
V.G.2.1	Formal institutions	**whereremittances.V.G.2.1**	{1, 0}
V.G.2.2	informal agents	**whereremittances.V.G.2.2**	{1, 0}
V.G.3	**How far the institution is from your home/business?**	**howfarinst.V.G.3**	
V.G.3.1	Less than 10 minutes		1
V.G.3.2	Between 10 and 20 minutes		2
V.G.3.3	Between 20 and 30 minutes		3
V.G.3.4	More than 30 minutes		4
V.G.4	**If yes. How did you go to the institution?**	**howtransport.V.G.4**	
V.G.4.1	by walking		1
V.G.4.2	by public transportation		2
V.G.5	**If not walking, how much do you spend in transportation every time you go there?**	**howmuchtransport.V.G.5**	In pesos of 2004
V.G.6	**How often do you receive money?**	**howoftenremittances.V.G.6**	
V.G.6.1	Every two weeks		1
V.G.6.2	Every month		2

V.G.6.3	Every two months		3
V.G.6.4	Occasionally		4
V.G.7	**How much do you receive every time?**	**howmuch.V.G.7**	In pesos of 2004
V.G.8	**How do you use the money?**		
V.G.8.1	to increase stock of PK	**investremittancesPK.V.G.8.1**	
V.G.8.2	to increase stock of HK	**InvestremittancesHK.V.G.8.2**	
V.G.8.3	For income-expenditure purposes	**investremittancesincom.exp.V.G.8.3**	
V.H	**Intersection with financial markets (Insurance)**		
V.H.1	**Do you have insurance?**	**insurance.V.H.1**	
V.H.1.1	Yes		1
V.H.1.2	No		2
V.H.2	**If yes, What kind of insurance do you have?**		
V.H.2.1	To cover my credit in the MFI in case of death	**typeinsurance.V.H.2.1**	{1, 0}
V.H.2.2	To cover health expenses or death	**typeinsurance.V.H.2.2**	{1, 0}
V.H.2.3	To cover my vehicle (s) in case of robbery and accident	**typeinsurance.V.H.2.3**	{1, 0}
VI.A	**Intersection with labour markets (self-employment activities) and income sources**		
VI.A.1	**What type of business do you have?**	**typebusiness.VI.A.1**	
VI.A.1.1	Industry		1
VI.A.1.2	Commerce		2
VI.A.1.3	Services (restaurant, mechanics)		3
VI.A.1.4	No business		4
VI.A.2	**Where do you have your business?**		
VI.A.2.1	At home	**wherebusiness.VI.A.2.1**	{1, 0}
VI.A.2.2	In a rented premise	**wherebusiness.VI.A.2.2**	{1, 0}
VI.A.2.3	In a owned premise (not at home)	**wherebusiness.VI.A.2.3**	{1, 0}
VI.A.2.4	On the street market (tianguis; ventas a domicilio)	**wherebusiness.VI.A.2.4**	{1, 0}
VI.A.3	**When did you start the business? (Years ago)**	**startbusinessVI.A.3**	Years ago
VI.A.4	**Why did you decide to start a business?**		
VI.A.4.1	To improve income	**whybusiness.VI.A.4.1**	{1, 0}
VI.A.4.2	To have my own business	**whybusiness.VI.A.4.2**	{1, 0}
VI.A.4.3	For having lost my previous job	**whybusiness.VI.A.4.3**	{1, 0}
VI.A.5	**Where did you get the money from to start your business?**		
VI.A.5.1	a gift (in heritage)	**howstartedbusiness.VI.A.5.1**	{1, 0}
VI.A.5.2	credit	**howstartedbusiness.VI.A.5.2**	{1, 0}
VI.A.5.3	savings	**howstartedbusiness.VI.A.5.3**	{1, 0}
VI.A.5.4	By selling out properties or assets	**howstartedbusiness.VI.A.5.4**	{1, 0}
VI.A.5.5	I went to work to the US	**howstartedbusiness.VI.A.5.5**	{1, 0}
VI.A.6	**If savings, where do you deposit?**		
VI.A.6.1	Formal institutions	**ifsavingsformal.VI.A.6.1**	{1, 0}
VI.A.6.2	MFI	**ifsavingsMFI.VI.A.6.2**	{1, 0}
VI.A.6.3	informal mechanisms	**ifsavingsinformal.VI.A.6.3**	{1, 0}

VI.A.7	**If credit, where did you get the credit from?**		
VI.A.7.1	Formal institutions	**ifcreditformal.VI.A.7.1**	{1, 0}
VI.A.7.2	MFI	**ifcreditMFI.VI.A.7.2**	{1, 0}
VI.A.7.3	Informal agents	**ifcreditinformal.VI.A.7.3**	{1, 0}
VI.A.8	**How many people do work in your business? (including household's members and the interviewee)**	**employment.VI.A.8**	number
VI.A.9	**How many employees do work in your business? (non-household's members)**	**employees.VI.A.9**	number
VI.A.10	**In case of having employees, what is the salary per week (individual)?**	**salaryemployees.VI.A.10**	In pesos of 2004
VI.A.11	**How many hours do you work a day?**	**hoursworked.VI.A.11**	hours
VI.A.12	**How many days do you work a week?**	**daysworked.VI.A.12**	days
VI.A.13	**What are the expenses of your business per week?**	**expenses.VI.A.13**	In pesos of 2004
VI.A.14	**What are the revenues of your business per week?**	**revenues.VI.A.14**	In pesos of 2004
VI.A.15	**What are the profits per week**	**profits.VI.A.15**	In pesos of 2004
VI.A.16	**What do you need to improve the performance of your business?**		
VI.A.16.1	Investment (machinery, premise, working capital, vehicles, etc)	**neededimprobusiness.VI.A.16.1**	{1, 0}
VI.A.16.2	Better markets for my products (too much competition); better national economy	**neededimprobusiness.VI.A.16.2**	{1, 0}
VI.A.17	**How is you financial situation since having your own business?**	**situationbusiness.VI.A.17**	
VI.A.17.1	Better than before		1
VI.A.17.2	Same		2
VI.A.17.3	Worse than before		3
VI.B	Intersection with labour markets (wage-earning job) and income sources		
VI.B.1	**How many members of your household work?**	**working.VI.B.1**	number
VI.B.2	**How many members of your household have a wage-earning job?**	**wagejob.VI.B.2**	number
VI.B.3	**In case of having wage earning job, how much do you receive from employment (monthly)**	**incomewagejob.VI.B.3**	In pesos of 2004
VI.B.4	**Have you worked previously as employee?**	**workedemployee.VI.B.4**	
VI.B.4.1	Yes		1
VI.B.4.2	No		2
VI.B.5	**Have you faced problems to find a job?**	**problemsgettingjob.VI.B.5**	
VI.B.5.1	Yes		1
VI.B.5.2	No		2
VI.B.6	**If yes, what are the reasons?**		
VI.B.6.1	I am not educated	**reasonsnotjobs.VI.B.6.1**	{1, 0}
VI.B.6.2	I have health problems	**reasonsnotjobs.VI.B.6.2**	{1, 0}
VI.B.6.3	I am old	**reasonsnotjobs.VI.B.6.3**	{1, 0}
VI.B.6.4	Economic recession	**reasonsnotjobs.VI.B.6.4**	{1, 0}
VI.B.7	**What is the household's income per month?**	**householdincome.VI.B.7**	In pesos of 2004
VI.B.8	**What is the income per capita per month?**	**incomepercapita.VI.B.8**	In pesos of 2004

VI.B.9	**What are the household's expenses per month (excluding repayments to credits and unexpected events)?**	**householdexpenses.VI.B.9**	In pesos of 2004
VI.B.10	**Do you enjoy the benefits of social security (IMSS, ISSSTE, and PEMEX)?**	**socialsecurity.VI.B.10**	
VI.B.10.1	Yes		1
VI.B.10.2	No		2
VI.B.11	**Do you receive Oportunidades or other governmental support (safety net)?**	**safetynets.VI.B.11**	
VI.B.11.1	Yes		1
VI.B.11.2	No		2
VI.B.12	**If yes, how much do you receive (monthly)**	**howmuch.VI.B.12**	In pesos of 2004
VI.B.13	**Do you receive money from relatives or friends living abroad?**	**moneyfromabroad.VI.B.13**	
VI.B.13.1	Yes		1
VI.B.13.2	No		2
VI.B.14	**If yes, how much do you receive (monthly)**	**howmuch.VI.B.14**	In pesos of 2004
VI.B.15	**Do you receive a pension or do you have a part-time job or other businesses?**	**pension.VI.B.15**	
VI.B.15.1	Yes		1
VI.B.15.2	No		2
VI.B.16	**If yes, how much do you receive (monthly)**	**howmuch.VI.B.16**	In pesos of 2004
VI.B.17	**Do you receive money from renting real estate or another property?**	**rent.VI.B.17**	
VI.B.17.1	Yes		1
VI.B.17.2	No		2
VI.B.18	**If yes, how much do you receive (monthly)**	**howmuch.VI.B.18**	In pesos of 2004
VI.B.19	**Have you recently an unexpected income (from lottery, inheritance, etc.)?**	**otherincome.VI.B.19**	
VI.B.19.1	Yes		1
VI.B.19.2	No		2
VII	**Household's decision making under risk**		
VII.1	**Have you suffered from unexpected events that affect the stability of your household?**	**externalshocks.VII.1**	
VII.1.1	Yes		1
VII.1.2	No		2
VII.2	**If yes, what type of events?**		
VII.2.1	death, illness or accident of one of the household's members	**whatshocks.VII.2.1**	{1, 0}
VII.2.2	Robbery, burglary or assault	**whatshocks.VII.2.2**	{1, 0}
VII.2.3	Natural disaster	**whatshocks.VII.2.3**	{1, 0}
VII.2.4	Financial crisis	**whatshocks.VII.2.4**	{1, 0}
VII.3	**What have you done to cope with this shock?**		
VII.3.1	Get a credit from informal agents	**copingstrat.informalcredit.VII.3.1**	{1, 0}
VII.3.2	To use part of my credit from the MFI	**copingstrat.MFI.VII.3.2**	{1, 0}
VII.3.3	Use my savings	**copingstrat.savings.VII.3.3**	{1, 0}
VII.3.4	Work more (either self-employment activity or wage job)	**copingstrat.LM.VII.3.4**	{1, 0}
VII.3.5	Sell out PK	**copingstrategyPK.VII.3.5**	{1, 0}

VII.4	**Have you or another member of your household lost the job recently?**	**lostjob.VII.4**	
VII.4.1	Yes		1
VII.4.2	No		2
VII.5	If yes, what have you done to cope with this situation		
VII.5.1	Get a credit from informal agents	**copingstrat.informalcredit.VII.5.2**	{1, 0}
VII.5.2	Work more (either self-employment activity or wage job)	**copingstrat.LM.VII.5.3**	{1, 0}
VII.6	**What factors do you think could affect most the stability of your household?**		
VII.6.1	Failure in labour markets	**destabiliserfactorsLM.VII.6.1**	{1, 0}
VII.6.2	Health problems	**destabiliserfactorsHK.VII.6.2**	{1, 0}
VII.6.3	Stop receiving remittances	**destabiliserfactorsRemmtt.VII.6.3**	{1, 0}
VII.6.4	Crime and delinquency	**destabiliserfactorscrimeVII.6.4**	{1, 0}
VII.6.5	Natural disaster	**destabiliserfactorsdisaster.VII.6.5**	{1, 0}
VII.7	**What would you do with 100,000 pesos if you win the lottery?**		
VII.7.1	to increase stock of PK	**bestinvestmentPK.VII.7.1**	{1, 0}
VII.7.2	Invest in business	**bestinvestmentbusiness.VII.7.2**	{1, 0}
VII.7.3	to increase stock of HK	**bestinvestmentHK.VII.7.3**	{1, 0}
VII.7.4	to increase stock of SK	**bestinvestmentSK.VII.7.4**	{1, 0}
VII.7.5	Preventive strategies to reduce vulnerability	**bestinvestmentreducvulnera.VII.7.5**	{1, 0}
VII.7.6	For income-expenditure purposes	**bestinvestmentincom.exp.VII.7.6**	{1, 0}

Note: a copy of the interview, contact me at: m.nino@sheffield.ac.uk

Appendix to Chapter 7

Table A7.1 a Identifying equation with logarithm of monthly income per capita in pesos of 2004 (LGINCOMEPC) as dependent variable in (7.12)

Logarithm of the cost of borrowing per credit cycle (LGCOSTBORROWPC) as identifying instrument
Dependent variable in (7.11): logarithm of the maximum amount of credit borrowed (LGMAXCREDIT)

	FINCOMUN		CAME		PROMUJER	
	equation (7.11)	equation (7.12)	equation (7.11)	equation (7.12)	equation (7.11)	equation (7.12)
AVEDU	-0.029	0.023	0.078	0.015	-0.060	0.033
	(0.72)	(0.82)	(1.01)	(0.58)	(0.77)	(1.84)*
HOWNER	0.719	0.239	1.196	-0.087	-0.680	0.080
	(1.78)*	(1.14)	(1.92)*	(0.50)	(1.50)	(0.57)
HESTATE	0.036	-0.341	-1.042	-0.078	0.148	-0.063
	(0.11)	(1.86)*	(0.94)	(0.33)	(0.29)	(0.46)
TIMEBUS	-0.017	0.013	0.133	-0.008	-0.018	-0.020
	(0.61)	(0.74)	(1.63)	(0.51)	(0.48)	(1.69)
WWORKER	0.143	0.080	0.781	-0.030	-0.905	0.059
	(0.77)	(0.90)	(1.88)*	(0.27)	(1.81)*	(0.45)
DEPENDRATIO	-1.327	0.794	-0.039	1.132	5.377	0.951
	(1.98)*	(1.90)*	(0.03)	(3.13)***	(2.40)**	(1.69)*
AGE	0.014	0.001	-0.007	-0.010	0.031	0.009
	(0.91)	(0.08)	(0.19)	(0.95)	(1.12)	(1.04)
WOMAN	0.014	-0.294	0.715	-0.281		
	(0.04)	(1.37)	(1.08)	(1.46)		
MARITAL	-0.847	0.072	0.284	0.455	0.918	0.009
	(2.29)**	(0.26)	(0.29)	(2.95)***	(1.52)	(0.06)
ROSCAS	-0.017	0.154	0.344	-0.082	-0.231	-0.157
	(0.06)	(0.77)	(0.73)	(0.51)	(0.53)	(1.38)
FORMALCREDIT	-0.751	0.061	-0.787	-0.022	-2.624	0.186
	(1.03)	(0.31)	(0.80)	(0.10)	(1.65)	(0.79)
MONEYLENDER	0.155	-0.203	-1.140	0.230	-0.191	0.130
	(0.22)	(0.71)	(1.32)	(0.85)	(0.30)	(0.95)
LGCOSTBORROWPC	1.574	0.314	1.705	0.081	1.458	0.063
	(21.18)***	(1.91)*	(10.74)***	(0.63)	(14.61)***	(0.56)
LGMAXCREDIT		-0.160		-0.044		-0.034
		(1.27)		(0.46)		(0.39)
CONSTANT	-0.929	6.319	-4.203	6.912	-3.879	6.293
	(0.89)	(11.10)***	(1.50)	(11.09)***	(1.69)	(13.31)***
Observations	55	55	46	46	47	47
Left-censored	19		18		21	
R-squared		0.4406		0.4877		0.3446
F-statistic		5.68		3.64		4.19
Prob > F		0.0000		0.0013		0.0004
Pseudo R2	0.6428		0.6069		0.5962	
LR chi2(13)	177.25		134.74		124.20	
Prob > chi2	0.0000		0.0000		0.0000	
Log likelihood	-49.238		-43.631		-42.062	

Absolute value of t statistics in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%

Table A7.1 b Identifying equation with logarithm of monthly income per adult equivalent 1 in pesos of 2004 (LGINCOMEPAE1) as dependent variable in (7.12) a/
Logarithm of the cost of borrowing per credit cycle (LGCOSTBORROWPC) as identifying instrument
Dependent variable in (7.11): logarithm of the maximum amount of credit borrowed (LGMAXCREDIT)

	FINCOMUN		CAME		PROMUJER	
	equation (7.11)	equation (7.12)	equation (7.11)	equation (7.12)	equation (7.11)	equation (7.12)
AVEDU	-0.029	0.024	0.078	0.020	-0.060	0.030
	(0.72)	(0.89)	(1.01)	(0.70)	(0.77)	(1.75)*
HOWNER	0.719	0.256	1.196	-0.060	-0.680	0.097
	(1.78)*	(1.22)	(1.92)*	(0.34)	(1.50)	(0.68)
HESTATE	0.036	-0.354	-1.042	-0.150	0.148	-0.031
	(0.11)	(1.97)*	(0.94)	(0.63)	(0.29)	(0.23)
TIMEBUS	-0.017	0.009	0.133	-0.006	-0.018	-0.019
	(0.61)	(0.56)	(1.63)	(0.40)	(0.48)	(1.65)
WWORKER`	0.143	0.048	0.781	-0.030	-0.905	0.042
	(0.77)	(0.58)	(1.88)*	(0.26)	(1.81)*	(0.32)
DEPENDRATIO	-1.327	0.442	-0.039	0.829	5.377	0.689
	(1.98)*	(1.06)	(0.03)	(2.25)**	(2.40)**	(1.22)
AGE	0.014	0.002	-0.007	-0.010	0.031	0.008
	(0.91)	(0.24)	(0.19)	(0.91)	(1.12)	(1.03)
WOMAN	0.014	-0.268	0.715	-0.280		
	(0.04)	(1.28)	(1.08)	(1.42)		
MARITAL	-0.847	0.042	0.284	0.449	0.918	0.026
	(2.29)**	(0.16)	(0.29)	(2.99)***	(1.52)	(0.18)
ROSCAS	-0.017	0.155	0.344	-0.071	-0.231	-0.165
	(0.06)	(0.80)	(0.73)	(0.43)	(0.53)	(1.44)
FORMALCREDIT	-0.751	0.054	-0.787	-0.042	-2.624	0.192
	(1.03)	(0.30)	(0.80)	(0.19)	(1.65)	(0.84)
MONEYLENDER	0.155	-0.222	-1.140	0.217	-0.191	0.103
	(0.22)	(0.78)	(1.32)	(0.76)	(0.30)	(0.75)
LGCOSTBORROWPC	1.574	0.325	1.705	0.082	1.458	0.055
	(21.18)***	(2.05)**	(10.74)***	(0.62)	(14.61)***	(0.50)
LGMAXCREDIT		-0.168		-0.043		-0.029
		(1.39)		(0.44)		(0.33)
CONSTANT	-0.929	6.621	-4.203	7.210	-3.879	6.588
	(0.89)	(12.02)***	(1.50)	(11.55)***	(1.69)	(14.05)***
Observations	55	55	46	46	47	47
Left-censored	19		18			
R-squared		0.4228		0.4199		0.2875
F-statistic		5.03		2.89		2.77
Prob > F		0.0000		0.0068		0.0090
Pseudo R2	0.6428		0.6069		0.5962	
LR chi2(13)	177.25		134.74		124.20	
Prob > chi2	0.0000		0.0000		0.0000	
Log likelihood	-49.237		-43.631		-42.062	
Observations		0.44		0.49		0.41

Absolute value of t statistics in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%
a/ Income per adult equivalent 1 follows the approach developed by Rothbarth (1943), and it has been used by the Mexican government to identify poverty lines at national level. For more details, see Chapter 4

Table A7.1 c Identifying equation with logarithm of monthly income per adult equivalent 2 in pesos of 2004 (LGINCOMEPAE2) as dependent variable in (7.12) a/
Logarithm of the cost of borrowing per credit cycle (LGCOSTBORROWPC) as identifying instrument
Dependent variable in (7.11): logarithm of the maximum amount of credit borrowed (LGMAXCREDIT)

	FINCOMUN		CAME		PROMUJER	
	equation (7.11)	equation (7.12)	equation (7.11)	equation (7.12)	equation (7.11)	equation (7.12)
AVEDU	-0.029	0.023	0.078	0.010	-0.060	0.024
	(0.72)	(0.90)	(1.01)	(0.41)	(0.77)	(1.46)
HOWNER	0.719	0.216	1.196	-0.008	-0.680	0.119
	(1.78)*	(1.03)	(1.92)*	(0.05)	(1.50)	(0.89)
HESTATE	0.036	-0.323	-1.042	0.018	0.148	-0.048
	(0.11)	(1.80)*	(0.94)	(0.10)	(0.29)	(0.38)
TIMEBUS	-0.017	0.019	0.133	-0.008	-0.018	-0.017
	(0.61)	(1.19)	(1.63)	(0.61)	(0.48)	(1.50)
WWORKER	0.143	0.114	0.781	0.011	-0.905	0.066
	(0.77)	(1.45)	(1.88)*	(0.12)	(1.81)*	(0.54)
DEPENDRATIO	-1.327	0.328	-0.039	0.753	5.377	0.656
	(1.98)*	(0.84)	(0.03)	(2.33)**	(2.40)**	(1.21)
AGE	0.014	0.001	-0.007	-0.011	0.031	0.006
	(0.91)	(0.12)	(0.19)	(1.08)	(1.12)	(0.84)
WOMAN	0.014	-0.205	0.715	-0.268		
	(0.04)	(1.04)	(1.08)	(1.55)		
MARITAL	-0.847	0.152	0.284	0.406	0.918	0.072
	(2.29)**	(0.62)	(0.29)	(3.21)***	(1.52)	(0.54)
ROSCAS	-0.017	0.165	0.344	-0.098	-0.231	-0.132
	(0.06)	(0.91)	(0.73)	(0.66)	(0.53)	(1.21)
FORMALCREDIT	-0.751	0.060	-0.787	-0.007	-2.624	0.185
	(1.03)	(0.28)	(0.80)	(0.04)	(1.65)	(0.78)
MONEYLENDER	0.155	-0.249	-1.140	0.265	-0.191	0.073
	(0.22)	(0.93)	(1.32)	(1.04)	(0.30)	(0.60)
LGCOSTBORROWPC	1.574	0.318	1.705	0.094	1.458	0.056
	(21.18)***	(2.23)**	(10.74)***	(0.77)	(14.61)***	(0.51)
LGMAXCREDIT		-0.157		-0.055		-0.034
		(1.46)		(0.61)		(0.40)
CONSTANT	-0.929	6.794	-4.203	7.471	-3.879	6.946
	(0.89)	(13.19)***	(1.50)	(13.04)***	(1.69)	(15.66)***
Observations	55	55	46	46	47	47
Left-censored	19		18		21	
R-squared		0.4566		0.4594		0.2756
F-statistic		5.78		4.01		2.89
Prob > F		0.0000		0.0006		0.0068
Pseudo R2	0.6428		0.6069		0.5962	
LR chi2(13)	177.25		134.74		124.20	
Prob > chi2	0.0000		0.0000		0.0000	
Log likelihood	-49.237		-43.631		-42.062	

Absolute value of t statistics in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%
a/ Income per adult equivalent 2 follows the approach developed by Wagstaff and van Doorslaer (1998). For more details, see chapter 4.

Table A7.1 d. Identifying equation with logarithm of monthly income per adult equivalent 3 in pesos of 2004 (LGINCOMEPAE3) as dependent variable in (7.12) a/
Logarithm of the cost of borrowing per credit cycle (LGCOSTBORROWPC) as identifying instrument
Dependent variable in (7.11): logarithm of the maximum amount of credit borrowed (LGMAXCREDIT)

	FINCOMUN		CAME		PROMUJER	
	equation (7.11)	equation (7.12)	equation (7.11)	equation (7.12)	equation (7.11)	equation (7.12)
AVEDU	-0.029	0.026	0.078	0.009	-0.060	0.024
	(0.72)	(1.01)	(1.01)	(0.37)	(0.77)	(1.45)
HOWNER	0.719	0.212	1.196	0.014	-0.680	0.118
	(1.78)*	(1.01)	(1.92)*	(0.09)	(1.50)	(0.88)
HESTATE	0.036	-0.317	-1.042	0.035	0.148	-0.041
	(0.11)	(1.76)*	(0.94)	(0.20)	(0.29)	(0.32)
TIMEBUS	-0.017	0.017	0.133	-0.009	-0.018	-0.017
	(0.61)	(1.06)	(1.63)	(0.69)	(0.48)	(1.47)
WWORKER	0.143	0.105	0.781	0.005	-0.905	0.065
	(0.77)	(1.31)	(1.88)*	(0.05)	(1.81)*	(0.53)
DEPENDRATIO	-1.327	0.228	-0.039	0.624	5.377	0.548
	(1.98)*	(0.58)	(0.03)	(1.91)*	(2.40)**	(1.01)
AGE	0.014	0.001	-0.007	-0.012	0.031	0.006
	(0.91)	(0.07)	(0.19)	(1.15)	(1.12)	(0.77)
WOMAN	0.014	-0.213	0.715	-0.243		
	(0.04)	(1.07)	(1.08)	(1.42)		
MARITAL	-0.847	0.163	0.284	0.417	0.918	0.080
	(2.29)**	(0.66)	(0.29)	(3.30)***	(1.52)	(0.60)
ROSCAS	-0.017	0.161	0.344	-0.099	-0.231	-0.129
	(0.06)	(0.88)	(0.73)	(0.67)	(0.53)	(1.17)
FORMALCREDIT	-0.751	0.057	-0.787	-0.005	-2.624	0.189
	(1.03)	(0.28)	(0.80)	(0.03)	(1.65)	(0.82)
MONEYLENDER	0.155	-0.272	-1.140	0.272	-0.191	0.058
	(0.22)	(1.02)	(1.32)	(1.08)	(0.30)	(0.47)
LGCOSTBORROWPC	1.574	0.324	1.705	0.101	1.458	0.053
	(21.18)***	(2.25)**	(10.74)***	(0.82)	(14.61)***	(0.48)
LGMAXCREDIT		-0.161		-0.062		-0.031
		(1.48)		(0.68)		(0.37)
CONSTANT	-0.929	7.024	-4.203	7.699	-3.879	7.191
	(0.89)	(13.46)***	(1.50)	(13.62)***	(1.69)	(16.22)***
Observations	55	55	46	46	47	47
Left-censored	19		18		21	
R-squared		0.4528		0.4425		0.2510
F-statistic		5.77		4.05		2.37
Prob > F		0.0000		0.0006		0.0224
Pseudo R2	0.6428		0.6069		0.5962	
LR chi2(13)	177.25		134.74		124.20	
Prob > chi2	0.0000		0.0000		0.0000	
Log likelihood	-49.237		-43.631		-42.062	

Absolute value of t statistics in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%
a/ Income per adult equivalent 3 follows the OECD modified equivalence scale based on the work of Hagenarrs et. al, (1998). For more details, see chapter 4.

Table A7.2 a Identifying equation with DISTANCE (distance from business (or place of residence) to the branch in minutes) as identifying instrument
Dependent variable in (7.12): logarithm of monthly income per capita in pesos of 2004 (LGINCOMEPC)
Dependent variable in (7.11): logarithm of the maximum amount of credit borrowed (LGMAXCREDIT)

	FINCOMUN		CAME		PROMUJER	
	equation (7.11)	equation (7.12)	equation (7.11)	equation (7.12)	equation (7.11)	equation (7.12)
AVEDU	0.076	0.029	-0.317	0.005	-0.122	0.031
	(1.15)	(1.05)	(3.16)***	(0.18)	(1.50)	(1.79)*
HOWNER	0.477	0.165	2.287	-0.073	-0.166	0.087
	(0.77)	(0.73)	(3.12)***	(0.42)	(0.33)	(0.60)
HESTATE	0.439	-0.370	0.639	-0.044	0.898	-0.104
	(0.89)	(1.87)*	(0.59)	(0.19)	(1.50)	(0.92)
TIMEBUS	0.094	0.016	-0.058	-0.011	-0.080	-0.017
	(1.41)	(0.82)	(0.84)	(0.78)	(2.13)**	(1.48)
WWORKER	-0.310	0.041	0.279	-0.073	-1.449	0.072
	(1.13)	(0.45)	(0.57)	(0.63)	(2.13)**	(0.56)
DEPENDRATIO	0.746	0.954	-1.329	1.085	3.538	0.855
	(0.82)	(2.31)**	(0.75)	(3.22)***	(1.53)	(1.47)
AGE	-0.007	-0.001	-0.161	-0.013	0.053	0.006
	(0.27)	(0.11)	(3.01)***	(1.15)	(2.15)**	(0.70)
WOMAN	0.177	-0.316	0.488	-0.307		
	(0.32)	(1.38)	(0.71)	(1.47)		
MARITAL	-1.725	0.166	2.248	0.509	1.172	-0.040
	(2.03)**	(0.57)	(3.21)***	(3.17)***	(1.47)	(0.30)
ROSCAS	-0.031	0.174	0.686	-0.098	0.457	-0.142
	(0.06)	(0.80)	(1.17)	(0.61)	(0.84)	(1.27)
FORMALCREDIT	0.162	0.176	-2.953	-0.095	-2.078	0.245
	(0.21)	(0.88)	(2.38)**	(0.38)	(2.74)***	(0.96)
MONEYLENDER	-0.494	-0.260	-1.048	0.239	-0.972	0.111
	(0.67)	(0.89)	(1.06)	(0.90)	(1.51)	(0.80)
DISTANCE	0.028	-0.000	0.073	0.005	0.066	-0.005
	(2.58)***	(0.09)	(2.56)**	(0.94)	(2.29)**	(1.57)
LGMAXCREDIT †		0.559		0.074		0.182
		(2.55)**		(0.41)		(1.09)
CONSTANT	-0.510	6.341	4.543	7.007	-4.477	6.616
	(0.29)	(9.89)***	(1.80)*	(11.33)***	(2.11)**	(12.71)***
Observations	55	55	46	46	47	47
Left-censored	19		18		21	
R-squared		0.3789		0.4930		0.3652
F-statistic		3.33		4.00		4.50
Prob > F		0.0014		0.0006		0.0002
Pseudo R2	0.3295		0.4962		0.4514	
Wald chi2(13)	23.13		30.83		23.59	
Prob > chi2	0.0401		0.0036		0.0231	
Log pseudolikelihood	-23.770		-15.511		-17.725	

Absolute value of t statistics in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%
† The Heckman procedure transforms LGMAXCREDIT into a dummy variable for treatment group = 1

Table A7.2 b Identifying equation on functional form with DISTANCE (distance from business (or place of residence) to the branch in minutes) as identifying instrument
Dependent variable in (7.12): logarithm of monthly income per adult equivalent 1 in pesos of 2004 (LGINCOMEPAE1) a/
Dependent variable in (7.11): logarithm of the maximum amount of credit borrowed (LGMAXCREDIT) †

	FINCOMUN		CAME		PROMUJER	
	equation (7.11)	equation (7.12)	equation (7.11)	equation (7.12)	equation (7.11)	equation (7.12)
AVEDU	0.076	0.030	-0.317	0.010	-0.122	0.027
	(1.15)	(1.12)	(3.16)***	(0.32)	(1.50)	(1.64)
HOWNER	0.477	0.183	2.287	-0.047	-0.166	0.099
	(0.77)	(0.83)	(3.12)***	(0.27)	(0.33)	(0.68)
HESTATE	0.439	-0.385	0.639	-0.115	0.898	-0.077
	(0.89)	(1.98)*	(0.59)	(0.49)	(1.50)	(0.70)
TIMEBUS	0.094	0.011	-0.058	-0.010	-0.080	-0.017
	(1.41)	(0.64)	(0.84)	(0.66)	(2.13)**	(1.44)
WWORKER	-0.310	0.006	0.279	-0.070	-1.449	0.051
	(1.13)	(0.07)	(0.57)	(0.59)	(2.13)**	(0.40)
DEPENDRATIO	0.746	0.604	-1.329	0.782	3.538	0.616
	(0.82)	(1.51)	(0.75)	(2.24)**	(1.53)	(1.06)
AGE	-0.007	0.000	-0.161	-0.013	0.053	0.006
	(0.27)	(0.02)	(3.01)***	(1.08)	(2.15)**	(0.67)
WOMAN	0.177	-0.295	0.488	-0.304		
	(0.32)	(1.31)	(0.71)	(1.42)		
MARITAL	-1.725	0.136	2.248	0.500	1.172	-0.023
	(2.03)**	(0.48)	(3.21)***	(3.15)***	(1.47)	(0.17)
ROSCAS	-0.031	0.177	0.686	-0.085	0.457	-0.149
	(0.06)	(0.84)	(1.17)	(0.52)	(0.84)	(1.35)
FORMALCREDIT	0.162	0.174	-2.953	-0.110	-2.078	0.246
	(0.21)	(0.95)	(2.38)**	(0.44)	(2.74)***	(1.00)
MONEYLENDER	-0.494	-0.280	-1.048	0.227	-0.972	0.083
	(0.67)	(0.97)	(1.06)	(0.80)	(1.51)	(0.59)
DISTANCE	0.028	-0.001	0.073	0.005	0.066	-0.006
	(2.58)***	(0.16)	(2.56)**	(0.85)	(2.29)**	(1.62)
LGMAXCREDIT †		0.559		0.091		0.182
		(2.65)**		(0.51)		(1.07)
CONSTANT	-0.510	6.659	4.543	7.305	-4.477	6.941
	(0.29)	(10.66)***	(1.80)*	(11.68)***	(2.11)**	(13.46)***
Observations	55	55	46	46	47	47
Left-censored	19		18		21	
R-squared		0.3535		0.4231		0.3209
F-statistic		2.88		3.05		2.89
Prob > F		0.0044		0.0048		0.0069
Pseudo R2	0.3295		0.4962		0.4514	
Wald chi2(13)	23.13		30.83		23.59	
Prob > chi2	0.0401		0.0036		0.0231	
Log pseudolikelihood	-23.770		-15.511		-17.725	

Absolute value of t statistics in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%
† The Heckman procedure transforms LGMAXCREDIT into a dummy variable for treatment group = 1
a/ Income per adult equivalent 1 follows the approach developed by Rothbarth (1943), and it has been used by the Mexican government to identify poverty lines at national level. For more details, see Chapter 4

Table A7.2 c Identifying equation on functional form with DISTANCE (distance from business (or place of residence) to the branch in minutes) as identifying instrument
Dependent variable in (7.12): logarithm of monthly income per adult equivalent 2 in pesos of 2004 (LGINCOMEPAE2) a/
Dependent variable in (7.11): logarithm of the maximum amount of credit borrowed (LGMAXCREDIT) †

	FINCOMUN		CAME		PROMUJER	
	equation (7.11)	equation (7.12)	equation (7.11)	equation (7.12)	equation (7.11)	equation (7.12)
AVEDU	0.076	0.028	-0.317	0.002	-0.122	0.022
	(1.15)	(1.11)	(3.16)***	(0.09)	(1.50)	(1.36)
HOWNER	0.477	0.148	2.287	-0.011	-0.166	0.121
	(0.77)	(0.65)	(3.12)***	(0.07)	(0.33)	(0.88)
HESTATE	0.439	-0.358	0.639	0.067	0.898	-0.094
	(0.89)	(1.82)*	(0.59)	(0.35)	(1.50)	(0.95)
TIMEBUS	0.094	0.021	-0.058	-0.011	-0.080	-0.015
	(1.41)	(1.16)	(0.84)	(0.84)	(2.13)**	(1.30)
WWORKER	-0.310	0.072	0.279	-0.013	-1.449	0.076
	(1.13)	(0.87)	(0.57)	(0.13)	(2.13)**	(0.62)
DEPENDRATIO	0.746	0.477	-1.329	0.702	3.538	0.582
	(0.82)	(1.28)	(0.75)	(2.14)**	(1.53)	(1.04)
AGE	-0.007	-0.001	-0.161	-0.013	0.053	0.004
	(0.27)	(0.10)	(3.01)***	(1.20)	(2.15)**	(0.44)
WOMAN	0.177	-0.237	0.488	-0.280		
	(0.32)	(1.09)	(0.71)	(1.47)		
MARITAL	-1.725	0.240	2.248	0.431	1.172	0.023
	(2.03)**	(0.89)	(3.21)***	(3.30)***	(1.47)	(0.18)
ROSCAS	-0.031	0.187	0.686	-0.111	0.457	-0.116
	(0.06)	(0.93)	(1.17)	(0.74)	(0.84)	(1.10)
FORMALCREDIT	0.162	0.177	-2.953	-0.020	-2.078	0.240
	(0.21)	(0.86)	(2.38)**	(0.09)	(2.74)***	(0.95)
MONEYLENDER	-0.494	-0.304	-1.048	0.287	-0.972	0.053
	(0.67)	(1.12)	(1.06)	(1.10)	(1.51)	(0.42)
DISTANCE	0.028	-0.001	0.073	0.002	0.066	-0.006
	(2.58)***	(0.19)	(2.56)**	(0.46)	(2.29)**	(1.61)
LGMAXCREDIT †		0.619		0.084		0.147
		(3.05)***		(0.53)		(0.88)
CONSTANT	-0.510	6.848	4.543	7.567	-4.477	7.299
	(0.29)	(11.43)***	(1.80)*	(13.04)***	(2.11)**	(14.65)***
Observations	55	55	46	46	47	47
Left-censored	19		18		21	
R-squared		0.3848		0.4464		0.3147
F-statistic		3.32		4.09		3.23
Prob > F		0.0014		0.0005		0.0032
Pseudo R2	0.3295		0.4962		0.4514	
Wald chi2(13)	23.13		30.83		23.59	
Prob > chi2	0.0401		0.0036		0.0231	
Log pseudolikelihood	-23.770		-15.511		-17.725	

Absolute value of t statistics in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%
† The Heckman procedure transforms LGMAXCREDIT into a dummy variable for treatment group = 1
a/ Income per adult equivalent 2 follows the approach developed by Wagstaff and van Doorslaer (1998). For more details, see chapter 4.

Table A7.2 d Identifying equation on functional form with DISTANCE (distance from business (or place of residence) to the branch in minutes) as identifying instrument
Dependent variable in (7.12): logarithm of monthly income per adult equivalent 3 in pesos of 2004 (LGINCOMEPAE3) a/
Dependent variable in (7.11): logarithm of the maximum amount of credit borrowed (LGMAXCREDIT) †

	FINCOMUN		CAME		PROMUJER	
	equation (7.11)	equation (7.12)	equation (7.11)	equation (7.12)	equation (7.11)	equation (7.12)
AVEDU	0.076	0.031	-0.317	0.001	-0.122	0.021
	(1.15)	(1.23)	(3.16)***	(0.05)	(1.50)	(1.33)
HOWNER	0.477	0.141	2.287	0.008	-0.166	0.119
	(0.77)	(0.63)	(3.12)***	(0.05)	(0.33)	(0.86)
HESTATE	0.439	-0.352	0.639	0.089	0.898	-0.088
	(0.89)	(1.78)*	(0.59)	(0.49)	(1.50)	(0.90)
TIMEBUS	0.094	0.019	-0.058	-0.012	-0.080	-0.015
	(1.41)	(1.07)	(0.84)	(0.90)	(2.13)**	(1.27)
WWORKER	-0.310	0.063	0.279	-0.018	-1.449	0.074
	(1.13)	(0.75)	(0.57)	(0.17)	(2.13)**	(0.60)
DEPENDRATIO	0.746	0.382	-1.329	0.568	3.538	0.482
	(0.82)	(1.02)	(0.75)	(1.70)*	(1.53)	(0.86)
AGE	-0.007	-0.002	-0.161	-0.014	0.053	0.003
	(0.27)	(0.16)	(3.01)***	(1.25)	(2.15)**	(0.38)
WOMAN	0.177	-0.244	0.488	-0.253		
	(0.32)	(1.12)	(0.71)	(1.34)		
MARITAL	-1.725	0.254	2.248	0.439	1.172	0.032
	(2.03)**	(0.94)	(3.21)***	(3.37)***	(1.47)	(0.24)
ROSCAS	-0.031	0.183	0.686	-0.113	0.457	-0.113
	(0.06)	(0.91)	(1.17)	(0.75)	(0.84)	(1.07)
FORMALCREDIT	0.162	0.176	-2.953	-0.010	-2.078	0.242
	(0.21)	(0.88)	(2.38)**	(0.05)	(2.74)***	(0.98)
MONEYLENDER	-0.494	-0.329	-1.048	0.297	-0.972	0.038
	(0.67)	(1.21)	(1.06)	(1.14)	(1.51)	(0.30)
DISTANCE	0.028	-0.001	0.073	0.002	0.066	-0.006
	(2.58)***	(0.18)	(2.56)**	(0.41)	(2.29)**	(1.64)
LGMAXCREDIT †		0.623		0.072		0.148
		(3.07)***		(0.46)		(0.87)
CONSTANT	-0.510	7.073	4.543	7.802	-4.477	7.552
	(0.29)	(11.66)***	(1.80)*	(13.53)***	(2.11)**	(15.14)***
Observations	55	55	46	46	47	47
Left-censored	19		18		21	
R-squared		0.3794		0.4258		0.2949
F-statistic		3.28		4.16		2.66
Prob > F		0.0016		0.0005		0.0115
Pseudo R2	0.3295		0.4962		0.4514	
Wald chi2(13)	23.13		30.83		23.59	
Prob > chi2	0.0401		0.0036		0.0231	
Log pseudolikelihood	-23.770		-15.511		-17.725	

Absolute value of t statistics in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%
† The Heckman procedure transforms LGMAXCREDIT into a dummy variable for treatment group = 1
a/ Income per adult equivalent 3 follows the OECD modified equivalence scale based on the work of Hagenarrs et. al, (1998). For more details, see chapter 4.

Table A7.3 Tobit equation with LGOPPORTCOSTPC as explanatory variable
Dependent variable: Logarithm of the maximum amount of credit borrowed (LGMAXCREDIT

	FINCOMUN	CAME	PROMUJER	Pooled sample
AVEDU	-0.043	0.081	-0.114	-0.059
	(1.06)	(1.00)	(1.38)	(1.50)
HOWNER	0.980	1.177	-0.770	0.312
	(2.37)**	(1.81)*	(1.54)	(1.07)
HESTATE	-0.113	-0.709	0.144	-0.206
	(0.34)	(0.62)	(0.25)	(0.63)
TIMEBUS	-0.040	0.131	0.002	0.018
	(1.35)	(1.58)	(0.06)	(0.75)
WWORKER	0.012	0.804	-0.919	0.069
	(0.06)	(1.87)*	(1.67)	(0.35)
DEPENDRATIO	-1.622	-0.121	5.919	-0.074
	(2.36)**	(0.10)	(2.45)**	(0.11)
AGE	0.017	-0.002	0.014	0.011
	(1.04)	(0.04)	(0.48)	(0.75)
WOMAN	-0.154	0.845		0.267
	(0.42)	(1.22)		(0.86)
MARITAL	-1.105	0.307	0.538	-0.443
	(2.94)***	(0.30)	(0.82)	(1.48)
ROSCAS	-0.091	0.376	0.015	-0.092
	(0.30)	(0.76)	(0.03)	(0.36)
FORMALCREDIT	-0.869	-0.102	-2.392	-0.238
	(1.14)	(0.10)	(1.53)	(0.38)
MONEYLENDER	0.114	-1.254	-0.164	-0.676
	(0.15)	(1.36)	(0.24)	(1.11)
LGOPPORTCOSTPC	1.614	1.716	1.514	1.656
	(21.10)***	(10.96)***	(13.51)***	(26.60)***
CONSTANT	-0.430	-4.870	-3.019	-1.717
	(0.41)	(1.68)	(1.32)	(1.77)*
Observations	55	46	47	148
Left-censored	19	18	21	58
LR Chi2(13)	175.62	131.12	117.26	386.03
Prob > chi2	0.000	0.000	0.000	0.000
Pseudo R2	0.6370	0.590	0.563	0.544

Absolute value of t statistics in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%

Table A7.4 a FINCOMUN: Least Squares estimation of the impact of credit on households' income
Dependent variable in (7.12): logarithm of monthly income per capita in pesos of 2004 (LGINCOMEPC)

	OLS (7.12)
AVEDU	0.029
	(1.06)
HOWNER	0.158
	(0.72)
HESTATE	-0.366
	(1.88)*
TIMEBUS	0.016
	(0.91)
WWORKER	0.044
	(0.52)
DEPENDRATIO	0.962
	(2.28)**
AGE	-0.001
	(0.11)
WOMAN	-0.308
	(1.35)
MARITAL	0.174
	(0.66)
ROSCAS	0.172
	(0.81)
FORMALCREDIT	0.176
	(0.90)
MONEYLENDER	-0.261
	(0.91)
LGMAXCREDIT	0.553
	(2.53)**
CONSTANT	6.310
	(11.12)***
Observations	55
R-squared	0.38
F-statistic	3.69
Prob > F	0.0007

Robust t statistics in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%

Table A7.4 b FINCOMUN: Least Squares estimation of the impact of credit on households' income
Dependent variable in (7.12): logarithm of monthly income per adult equivalent 1 in pesos of 2004 (LGINCOMEPAE1) a/

	OLS (7.12)
AVEDU	0.031
	(1.14)
HOWNER	0.171
	(0.79)
HESTATE	-0.379
	(1.96)*
TIMEBUS	0.013
	(0.74)
WWORKER	0.011
	(0.14)
DEPENDRATIO	0.618
	(1.49)
AGE	0.000
	(0.02)
WOMAN	-0.281
	(1.25)
MARITAL	0.149
	(0.58)
ROSCAS	0.174
	(0.84)
FORMALCREDIT	0.173
	(0.98)
MONEYLENDER	-0.281
	(0.99)
LGMAXCREDIT	0.548
	(2.57)**
CONSTANT	6.607
	(11.99)***
Observations	55
R-squared	0.35
F-statistic	3.16
Prob > F	0.0024

Robust t statistics in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%
a/ Income per adult equivalent 1 follows the approach developed by Rothbarth (1943). For more details, see Chapter 4

Table A7.4 c FINCOMUN: Least Squares estimation of the impact of credit on households' income
Dependent variable in (7.12): logarithm of monthly income per adult equivalent 2 in pesos of 2004 (LGINCOMEPAE2) a/

	OLS (7.12)
AVEDU	0.029
	(1.13)
HOWNER	0.134
	(0.60)
HESTATE	-0.350
	(1.80)*
TIMEBUS	0.022
	(1.33)
WWORKER	0.079
	(1.05)
DEPENDRATIO	0.495
	(1.27)
AGE	-0.001
	(0.09)
WOMAN	-0.220
	(1.02)
MARITAL	0.255
	(1.06)
ROSCAS	0.183
	(0.94)
FORMALCREDIT	0.176
	(0.89)
MONEYLENDER	-0.306
	(1.15)
LGMAXCREDIT	0.605
	(2.91)***
CONSTANT	6.785
	(12.99)***
Observations	55
R-squared	0.38
F-statistic	3.63
Prob > F	0.0008

Robust t statistics in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%
a/ Income per adult equivalent 2 follows the approach developed by Wagstaff and van Doorslaer (1998). For more details, see chapter 4.

Table A7.4 d FINCOMUN: Least Squares estimation of the impact of credit on households' income
Dependent variable in (7.12): logarithm of monthly income per adult equivalent 3 in pesos of 2004 (LGINCOMEPAE3) a/

	OLS (7.12)
AVEDU	0.032
	(1.25)
HOWNER	0.128
	(0.57)
HESTATE	-0.344
	(1.76)*
TIMEBUS	0.020
	(1.22)
WWORKER	0.069
	(0.92)
DEPENDRATIO	0.399
	(1.02)
AGE	-0.001
	(0.15)
WOMAN	-0.228
	(1.05)
MARITAL	0.269
	(1.11)
ROSCAS	0.180
	(0.91)
FORMALCREDIT	0.175
	(0.91)
MONEYLENDER	-0.330
	(1.24)
LGMAXCREDIT	0.611
	(2.93)***
CONSTANT	7.014
	(13.28)***
Observations	55
R-squared	0.38
F-statistic	3.58
Prob > F	0.0009

Robust t statistics in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%
a/ Income per adult equivalent 3 follows the OECD modified equivalence scale based on the work of Hagenarrs et. al, (1998). For more details, see chapter 4.

Table A7.4 e CAME: Least Squares estimation of the impact of credit on households' income
Dependent variable in (7.12): logarithm of monthly income per capita in pesos of 2004 (LGINCOMEPC)

	OLS (7.12)
AVEDU	0.012
	(0.44)
HOWNER	-0.098
	(0.60)
HESTATE	-0.031
	(0.13)
TIMEBUS	-0.010
	(0.61)
WWORKER	-0.035
	(0.30)
DEPENDRATIO	1.091
	(2.91)***
AGE	-0.012
	(1.07)
WOMAN	-0.279
	(1.47)
MARITAL	0.456
	(3.12)***
ROSCAS	-0.089
	(0.57)
FORMALCREDIT	0.006
	(0.03)
MONEYLENDER	0.256
	(0.90)
LGMAXCREDIT	0.126
	(0.81)
CONSTANT	6.990
	(11.56)***
Observations	46
R-squared	0.48
F-statistic	4.07
Prob > F	0.0006

Robust t statistics in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%

Table A7.4 f CAME: Least Squares estimation of the impact of credit on households' income
Dependent variable in (7.12): logarithm of monthly income per adult equivalent 1 in pesos of 2004 (LGINCOMEPAE1) a/

	OLS (7.12)
AVEDU	0.016
	(0.56)
HOWNER	-0.070
	(0.43)
HESTATE	-0.103
	(0.43)
TIMEBUS	-0.008
	(0.51)
WWORKER	-0.035
	(0.29)
DEPENDRATIO	0.788
	(2.07)**
AGE	-0.011
	(1.02)
WOMAN	-0.278
	(1.43)
MARITAL	0.451
	(3.16)***
ROSCAS	-0.077
	(0.49)
FORMALCREDIT	-0.015
	(0.07)
MONEYLENDER	0.243
	(0.81)
LGMAXCREDIT	0.140
	(0.91)
CONSTANT	7.289
	(11.97)***
Observations	46
R-squared	0.41
F-statistic	3.23
Prob > F	0.0035

Robust t statistics in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%
a/ Income per adult equivalent 1 follows the approach developed by Rothbarth (1943). For more details, see Chapter 4

Table A7.4 g CAME: Least Squares estimation of the impact of credit on households' income
Dependent variable in (7.12): logarithm of monthly income per adult equivalent 2 in pesos of 2004 (LGINCOMEPAE2) a/

	OLS (7.12)
AVEDU	0.006
	(0.22)
HOWNER	-0.023
	(0.15)
HESTATE	0.073
	(0.39)
TIMEBUS	-0.010
	(0.74)
WWORKER	0.005
	(0.05)
DEPENDRATIO	0.705
	(2.05)**
AGE	-0.012
	(1.21)
WOMAN	-0.267
	(1.55)
MARITAL	0.406
	(3.40)***
ROSCAS	-0.106
	(0.75)
FORMALCREDIT	0.028
	(0.16)
MONEYLENDER	0.295
	(1.10)
LGMAXCREDIT	0.109
	(0.80)
CONSTANT	7.559
	(13.43)***
Observations	46
R-squared	0.44
F-statistic	4.56
Prob > F	0.0002

Robust t statistics in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%
a/ Income per adult equivalent 2 follows the approach developed by Wagstaff and van Doorslaer (1998). For more details, see chapter 4.

Table A7.4 h CAME: Least Squares estimation of the impact of credit on households' income
Dependent variable in (7.12): logarithm of monthly income per adult equivalent 3 in pesos of 2004 (LGINCOMEPAE3) a/

	OLS (7.12)
AVEDU	0.004
	(0.17)
HOWNER	-0.003
	(0.02)
HESTATE	0.095
	(0.53)
TIMEBUS	-0.011
	(0.82)
WWORKER	-0.001
	(0.01)
DEPENDRATIO	0.570
	(1.63)
AGE	-0.013
	(1.28)
WOMAN	-0.241
	(1.42)
MARITAL	0.416
	(3.49)***
ROSCAS	-0.109
	(0.76)
FORMALCREDIT	0.034
	(0.19)
MONEYLENDER	0.304
	(1.14)
LGMAXCREDIT	0.095
	(0.71)
CONSTANT	7.795
	(13.93)***
Observations	46
R-squared	0.42
F-statistic	4.71
Prob > F	0.0002

Robust t statistics in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%
a/ Income per adult equivalent 3 follows the OECD modified equivalence scale based on the work of Hagenarrs et. al, (1998). For more details, see chapter 4.

Table A7.4 i PROMUJER: Least Squares estimation of the impact of credit on households' income
Dependent variable in (7.12): logarithm of monthly income per capita in pesos of 2004 (LGINCOMEPC)

	OLS (7.12)
AVEDU	0.035
	(2.12)**
HOWNER	0.101
	(0.70)
HESTATE	-0.064
	(0.48)
TIMEBUS	-0.019
	(1.63)
WWORKER	0.071
	(0.55)
DEPENDRATIO	0.834
	(1.42)
AGE	0.008
	(0.98)
MARITAL	-0.013
	(0.09)
ROSCAS	-0.150
	(1.32)
FORMALCREDIT	0.225
	(0.93)
MONEYLENDER	0.120
	(0.92)
LGMAXCREDIT	0.110
	(0.73)
CONSTANT	6.333
	(13.90)***
Observations	47
R-squared	0.33
F-statistic	4.56
Prob > F	0.0002

Robust t statistics in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%

Table A7.4 j PROMUJER: Least Squares estimation of the impact of credit on households' income
Dependent variable in (7.12): logarithm of monthly income per adult equivalent 1 in pesos of 2004 (LGINCOMEPAE1) a/

	OLS (7.12)
AVEDU	0.031
	(2.01)*
HOWNER	0.115
	(0.79)
HESTATE	-0.031
	(0.23)
TIMEBUS	-0.019
	(1.61)
WWORKER	0.050
	(0.38)
DEPENDRATIO	0.592
	(1.00)
AGE	0.008
	(0.99)
MARITAL	0.007
	(0.05)
ROSCAS	-0.158
	(1.39)
FORMALCREDIT	0.223
	(0.96)
MONEYLENDER	0.093
	(0.71)
MFI	0.102
	(0.67)
CONSTANT	6.623
	(14.60)***
Observations	47
R-squared	0.28
F-statistic	3.05
Prob > F	0.0053

Robust t statistics in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%
a/ Income per adult equivalent 1 follows the approach developed by Rothbarth (1943), and it has been used by the Mexican government to identify poverty lines at national level. For more details, see Chapter 4

Table A7.4 k PROMUJER: Least Squares estimation of the impact of credit on households' income
Dependent variable in (7.12): logarithm of monthly income per adult equivalent 2 in pesos of 2004 (LGINCOMEPAE2) a/

	OLS (7.12)
AVEDU	0.026
	(1.68)
HOWNER	0.137
	(1.00)
HESTATE	-0.048
	(0.40)
TIMEBUS	-0.017
	(1.46)
WWORKER	0.075
	(0.60)
DEPENDRATIO	0.558
	(0.97)
AGE	0.006
	(0.78)
MARITAL	0.053
	(0.40)
ROSCAS	-0.125
	(1.15)
FORMALCREDIT	0.217
	(0.91)
MONEYLENDER	0.063
	(0.53)
LGMAXCREDIT	0.067
	(0.44)
CONSTANT	6.981
	(16.24)***
Observations	47
R-squared	0.26
F-statistic	3.13
Prob > F	0.0044

Robust t statistics in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%
a/ Income per adult equivalent 2 follows the approach developed by Wagstaff and van Doorslaer (1998). For more details, see chapter 4.

Table A7.4 l PROMUJER: Least Squares estimation of the impact of credit on households' income
Dependent variable in (7.12): logarithm of monthly income per adult equivalent 3 in pesos of 2004 (LGINCOMEPAE3) a/

	OLS (7.12)
AVEDU	0.025
	(1.67)
HOWNER	0.135
	(0.97)
HESTATE	-0.040
	(0.33)
TIMEBUS	-0.017
	(1.44)
WWORKER	0.073
	(0.58)
DEPENDRATIO	0.458
	(0.79)
AGE	0.006
	(0.73)
MARITAL	0.063
	(0.47)
ROSCAS	-0.122
	(1.12)
FORMALCREDIT	0.219
	(0.93)
MONEYLENDER	0.048
	(0.40)
LGMAXCREDIT	0.065
	(0.43)
CONSTANT	7.224
	(16.75)***
Observations	47
R-squared	0.24
F-statistic	2.58
Prob > F	0.0148

Robust t statistics in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%
a/ Income per adult equivalent 3 follows the OECD modified equivalence scale based on the work of Hagenarrs et. al, (1998). For more details, see chapter 4.

Table A7.5 Identifying instruments for the Tobit selection equation
Dependent variable in (7.22): Logarithm of the maximum amount of credit borrowed (LGMAXCREDIT)
Dependent variable in (7.23): Logarithm of monthly income per adult equivalent 1 in pesos of 2004

	FINCOMUN		CAME		PROMUJER		Pooled sample	
	Eq. (7.22)	Eq. (7.23)	Eq. (7.22)	Eq. (7.23)	Eq. (7.22)	Eq. (7.23)	Eq. (7.22)	Eq. (7.23)
AVEDU	0.080	0.029	-0.242	0.009	-0.153	0.018	-0.144	0.035
	(0.51)	(1.11)	(1.43)	(0.30)	(1.61)	(1.24)	(1.33)	(2.48)**
HOWNER	-0.813	0.183	1.661	-0.054	-0.813	0.069	-0.568	0.053
	(0.53)	(0.90)	(1.25)	(0.30)	(1.32)	(0.48)	(0.71)	(0.59)
HESTATE	0.326	-0.369	1.555	-0.099	0.006	-0.108	0.385	-0.220
	(0.26)	(1.95)*	(0.62)	(0.40)	(0.01)	(1.11)	(0.42)	(2.29)**
TIMEBUS	0.082	0.010	0.245	-0.009	-0.160	-0.023	0.019	-0.001
	(0.70)	(0.57)	(1.39)	(0.55)	(2.68)**	(1.90)*	(0.29)	(0.13)
WWORKER	-0.912	0.009	2.659	-0.057	-3.495	-0.049	-0.263	0.016
	(1.23)	(0.10)	(2.76)***	(0.39)	(4.21)***	(0.39)	(0.48)	(0.26)
DEPENDRATIO	2.511	0.617	-1.626	0.776	7.946	0.894	1.147	0.712
	(1.02)	(1.56)	(0.63)	(2.11)**	(2.81)***	(1.58)	(0.64)	(3.20)***
AGE	-0.065	0.001	-0.296	-0.014	-0.031	0.004	-0.100	-0.003
	(1.12)	(0.07)	(3.35)***	(1.08)	(0.79)	(0.49)	(2.43)**	(0.50)
WOMAN	-0.334	-0.285	-1.516	-0.323			-0.767	-0.208
	(0.24)	(1.25)	(1.07)	(1.44)			(0.90)	(1.92)*
MARITAL	-1.094	0.160	1.103	0.483	3.276	0.080	-1.032	0.130
	(0.72)	(0.60)	(0.59)	(2.70)**	(3.56)***	(0.60)	(1.21)	(1.27)
ROSCAS	-0.022	0.185	-0.470	-0.097	-0.309	-0.141	-0.343	-0.000
	(0.02)	(0.87)	(0.41)	(0.59)	(0.52)	(1.36)	(0.48)	(0.00)
FORMALCREDIT	-1.058	0.187	-1.172	-0.098	-0.185	0.195	-1.240	-0.011
	(0.41)	(1.00)	(0.53)	(0.37)	(0.12)	(0.74)	(0.75)	(0.09)
MONEYLENDER	-1.344	-0.268	-0.331	0.231	-0.917	0.037	-3.287	0.023
	(0.58)	(0.94)	(0.18)	(0.80)	(1.11)	(0.27)	(2.29)**	(0.14)
MEMBERSHIP	2.235	-0.024	2.074	0.019	5.488	0.376	2.289	-0.021
	(6.80)***	(0.19)	(6.78)***	(0.29)	(10.36)***	(0.89)	(11.50)***	(0.45)
DISTANCE	0.060	-0.002	0.058	0.005	0.042	-0.004	0.073	-0.001
	(2.60)**	(0.41)	(1.76)*	(0.88)	(2.84)***	(1.35)	(4.54)***	(0.42)
LGMAXCREDIT		0.075		0.002		-0.057		0.046
		(1.56)		(0.06)		(1.29)		(2.50)**
CONSTANT	1.380	6.583	8.633	7.358	-2.611	7.023	4.517	6.973
	(0.35)	(10.18)***	(1.67)	(11.68)***	(1.01)	(15.42)***	(1.68)*	(20.97)***
Observations	55	55	46	46	47	47	148	148
Pseudo R2 / R2	0.21	0.38	0.30	0.43	0.50	0.39	0.19	0.23
LR chi2 / F statistic	59.52	3.27	68.02	2.61	106.23	3.14	138.42	3.10
Prob > chi2 / Prob >F	0.000	0.001	0.000	0.012	0.000	0.003	0.000	0.000

Absolute value of t statistics in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%

Appendix to Chapter 8

Table A8.1 a FINCOMUN: The impact of credit on the level of profitability
Dependent variable: logarithm of households profits per month (LGPROFITSPM)
Explanatory variable in equation (8.2): logarithm of the maximum amount of credit borrowed (LGMAXCREDIT); in equation (8.3) LGMAXCREDIT is transformed into a dummy variable for treatment groups = 1 if $I_i > 0$

	Equation (8.2)		Equation (8.3)	
	Tobit	OLS	Tobit	OLS
AVEDU	0.070	0.069	0.068	0.067
	(1.69)*	(1.35)	(1.63)	(1.31)
HOWNER	-0.435	-0.433	-0.393	-0.391
	(1.08)	(1.30)	(0.98)	(1.19)
HESTATE	-0.352	-0.347	-0.419	-0.414
	(1.09)	(1.17)	(1.29)	(1.37)
TIMEBUS	0.034	0.034	0.032	0.032
	(1.03)	(1.03)	(0.98)	(0.99)
LABOUR	0.300	0.298	0.298	0.295
	(1.89)*	(1.75)*	(1.86)*	(1.71)*
DEPENDRATIO	0.441	0.419	0.314	0.293
	(0.66)	(0.48)	(0.47)	(0.34)
AGE	-0.012	-0.012	-0.012	-0.012
	(0.76)	(1.10)	(0.77)	(1.06)
WOMAN	-0.981	-0.969	-1.027	-1.014
	(2.83)***	(2.14)**	(2.95)***	(2.22)**
MARITAL	-0.006	0.000	-0.069	-0.062
	(0.01)	(0.00)	(0.17)	(0.18)
ROSCAS	-0.066	-0.059	-0.082	-0.076
	(0.23)	(0.18)	(0.29)	(0.23)
FORMALCREDIT	0.347	0.338	0.333	0.325
	(0.55)	(0.84)	(0.52)	(0.85)
MONEYLENDER	0.143	0.140	0.148	0.145
	(0.24)	(0.50)	(0.25)	(0.53)
LGMAXCREDIT	0.171	0.170	1.591	1.586
	(4.76)***	(4.64)***	(4.63)***	(4.60)***
CONSTANT	7.254	7.263	7.457	7.467
	(7.43)***	(9.84)***	(7.64)***	(10.23)***
Observations	55	55	55	55
Pseudo R-squared / R-squared	0.24	0.60	0.23	0.59
LR chi2 / F statistic	49.29	3.94	48.46	3.69
Prob > chi2 / Prob > F	0.0000	0.0004	0.0000	0.0007

Absolute value of t statistics in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%

Table A8.1 b CAME: The impact of credit on the level of profitability
Dependent variable: logarithm of households profits per month (LGPROFITSPM)
Explanatory variable in (8.2): logarithm of the maximum amount of credit borrowed (LGMAXCREDIT); in (8.3) LGMAXCREDIT is transformed into a dummy variable for treatment groups = 1 if $I_i > 0$

	Equation (8.2)		Equation (8.3)	
	Tobit	OLS	Tobit	OLS
AVEDU	0.191	0.169	0.184	0.164
	(1.75)*	(1.40)	(1.67)	(1.37)
HOWNER	1.029	0.841	1.057	0.862
	(1.24)	(1.30)	(1.28)	(1.37)
HESTATE	0.230	0.157	0.272	0.187
	(0.15)	(0.20)	(0.18)	(0.23)
TIMEBUS	0.283	0.245	0.281	0.243
	(3.40)***	(3.39)***	(3.37)***	(3.36)***
LABOUR	1.711	1.512	1.706	1.508
	(5.79)***	(4.74)***	(5.78)***	(4.72)***
DEPENDRATIO	-4.830	-3.937	-4.868	-3.960
	(2.75)***	(2.36)**	(2.76)***	(2.38)**
AGE	0.060	0.046	0.057	0.044
	(1.17)	(1.14)	(1.13)	(1.11)
WOMAN	-0.416	-0.462	-0.392	-0.444
	(0.48)	(0.55)	(0.46)	(0.52)
MARITAL	0.546	0.443	0.583	0.474
	(0.56)	(0.61)	(0.60)	(0.65)
ROSCAS	0.827	0.670	0.832	0.674
	(1.19)	(0.88)	(1.19)	(0.89)
FORMALCREDIT	3.795	3.244	3.794	3.239
	(2.87)***	(3.31)***	(2.88)***	(3.32)***
MONEYLENDER	0.678	0.626	0.659	0.612
	(0.64)	(1.08)	(0.63)	(1.06)
LGMAXCREDIT	0.018	0.011	0.272	0.191
	(0.21)	(0.18)	(0.35)	(0.34)
CONSTANT	-0.544	0.831	-0.396	0.952
	(0.16)	(0.31)	(0.12)	(0.36)
Observations	46	46	46	46
Pseudo R-squared / R-squared	0.20	0.64	0.20	0.64
LR chi2 / F statistic	45.58	4.64	45.66	4.66
Prob > chi2 / Prob > F	0.0000	0.0002	0.0000	0.0002

Absolute value of t statistics in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%

Table A8.1 c PROMUJER: The impact of credit on the level of profitability
Dependent variable: logarithm of households profits per month (LGPROFITSPM)
Explanatory variable in (8.2): logarithm of the maximum amount of credit borrowed (LGMAXCREDIT); in (8.3) LGMAXCREDIT is transformed into a dummy variable for treatment groups = 1 if $I_i > 0$

	Equation (8.2)		Equation (8.3)	
	Tobit	OLS	Tobit	OLS
AVEDU	0.004	0.005	0.002	0.002
	(0.04)	(0.05)	(0.02)	(0.02)
HOWNER	0.374	0.369	0.375	0.370
	(0.55)	(0.49)	(0.55)	(0.48)
HESTATE	-0.033	-0.053	-0.019	-0.040
	(0.04)	(0.06)	(0.03)	(0.05)
TIMEBUS	0.002	0.003	0.002	0.003
	(0.05)	(0.08)	(0.04)	(0.07)
LABOUR	1.523	1.421	1.518	1.416
	(3.52)***	(2.85)***	(3.50)***	(2.83)***
DEPENDRATIO	-2.318	-2.331	-2.309	-2.322
	(1.00)	(0.92)	(0.99)	(0.91)
AGE	0.035	0.030	0.036	0.030
	(0.92)	(0.78)	(0.93)	(0.79)
MARITAL	-0.144	-0.159	-0.149	-0.163
	(0.19)	(0.22)	(0.19)	(0.23)
ROSCAS	-0.337	-0.321	-0.341	-0.324
	(0.54)	(0.56)	(0.54)	(0.56)
FORMALCREDIT	1.411	1.403	1.379	1.373
	(1.05)	(1.52)	(1.02)	(1.49)
MONEYLENDER	-0.731	-0.634	-0.736	-0.639
	(0.86)	(0.62)	(0.86)	(0.62)
LGMAXCREDIT	0.166	0.156	1.291	1.211
	(2.03)*	(2.24)**	(1.94)*	(2.17)**
CONSTANT	3.868	4.330	3.894	4.356
	(1.43)	(1.69)	(1.44)	(1.70)*
Observations	47	47	47	47
Pseudo R-squared / R-squared	0.11	0.40	0.11	0.39
LR chi2 / F statistic	23.66	1.48	23.33	1.45
Prob > chi2 / Prob > F	0.0226	0.0814	0.0251	0.0934

Absolute value of t statistics in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%

Table A8.1 d Pooled sample: The impact of credit on the level of profitability
Dependent variable: logarithm of households profits per month (LGPROFITSPM)
Explanatory variable in (8.2): logarithm of the maximum amount of credit borrowed (LGMAXCREDIT); in (8.3) LGMAXCREDIT is transformed into a dummy variable for treatment groups = 1 if $I_i > 0$

	Equation (8.2)		Equation (8.3)	
	Tobit	OLS	Tobit	OLS
AVEDU	0.067	0.064	0.068	0.065
	(1.27)	(1.31)	(1.29)	(1.34)
HOWNER	0.514	0.470	0.530	0.486
	(1.35)	(1.28)	(1.40)	(1.34)
HESTATE	-0.522	-0.488	-0.531	-0.496
	(1.25)	(1.45)	(1.27)	(1.48)
TIMEBUS	0.063	0.059	0.064	0.059
	(2.02)**	(2.50)**	(2.02)**	(2.49)**
LABOUR	1.158	1.093	1.161	1.096
	(6.95)***	(5.42)***	(6.99)***	(5.45)***
DEPENDRATIO	-1.670	-1.589	-1.676	-1.596
	(1.93)*	(1.82)*	(1.94)*	(1.84)*
AGE	0.027	0.024	0.027	0.024
	(1.36)	(1.38)	(1.37)	(1.39)
WOMAN	-0.958	-0.932	-0.982	-0.956
	(2.43)**	(2.71)***	(2.49)**	(2.76)***
MARITAL	-0.206	-0.192	-0.205	-0.192
	(0.51)	(0.49)	(0.51)	(0.49)
ROSCAS	0.007	0.009	0.002	0.004
	(0.02)	(0.03)	(0.00)	(0.01)
FORMALCREDIT	1.631	1.523	1.626	1.517
	(2.19)**	(3.83)***	(2.18)**	(3.79)***
MONEYLENDER	-0.041	-0.020	-0.017	0.003
	(0.07)	(0.03)	(0.03)	(0.00)
LGMAXCREDIT	0.064	0.064	0.609	0.605
	(1.67)*	(1.68)*	(1.70)*	(1.73)*
CONSTANT	4.737	5.016	4.716	4.998
	(3.71)***	(4.33)***	(3.70)***	(4.33)***
Observations	148	148	148	148
Pseudo R-squared / R-squared	0.11	0.40	0.11	0.40
LR chi2 / F statistic	73.44	4.48	73.66	4.37
Prob > chi2 / Prob > F	0.0000	0.0000	0.0000	0.0000

Absolute value of t statistics in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%

Table A8.2 a Probit estimation FINCOMUN: The effect of programme participation on business assets
Dependent variable: dummy variable = 1 if household *i* has bought tools, machinery, and other business assets
Explanatory variable in (8.1): logarithm of the maximum amount of credit borrowed (LGMAXCREDIT)
Explanatory variable in (8.2): dummy variable =1 for treatment household (LGMAXCREDIT†)

	Equation 8.1		Equation 8.2	
	Coef	$\frac{\partial \Phi}{\partial X}$	Coef	$\frac{\partial \Phi}{\partial X}$
AVEDU	-0.004	-0.001	-0.004	-0.001
	(0.06)	(0.06)	(0.06)	(0.06)
HOWNER	-0.109	-0.018	-0.070	-0.012
	(0.20)	(0.20)	(0.13)	(0.13)
HESTATE	-0.498	-0.075	-0.534	-0.081
	(1.17)	(1.17)	(1.28)	(1.28)
TIMEBUS	0.063	0.011	0.071	0.012
	(1.29)	(1.29)	(1.41)	(1.41)
WWORKER	-0.302	-0.052	-0.315	-0.055
	(1.46)	(1.46)	(1.53)	(1.53)
DEPENDRATIO	3.644	0.626	3.500	0.612
	(2.38)**	(2.38)**	(2.32)**	(2.32)**
AGE	-0.041	-0.007	-0.042	-0.007
	(1.87)*	(1.87)*	(1.87)*	(1.87)*
WOMAN	-0.404	-0.070	-0.371	-0.065
	(0.71)	(0.71)	(0.64)	(0.64)
MARITAL	-0.142	-0.023	-0.240	-0.039
	(0.17)	(0.17)	(0.29)	(0.29)
ROSCAS	1.598	0.313	1.556	0.308
	(2.24)**	(2.24)**	(2.23)**	(2.23)**
FORMALCREDIT	-0.106	-0.019	-0.029	-0.005
	(0.10)	(0.10)	(0.03)	(0.03)
MONEYLENDER	-0.348	-0.072	-0.366	-0.077
	(0.32)	(0.32)	(0.33)	(0.33)
LGMAXCREDIT	0.231	0.040		
	(2.60)***	(2.60)***		
LGMAXCREDIT†			2.062	0.503
			(2.55)**	(2.55)**
CONSTANT	-0.443		-0.262	
	(0.24)		(0.14)	
Observations	55	55	55	55
LR Chi-squared	26.36	26.36	25.14	25.14
Pseudo R-squared	0.51	0.51	0.50	0.50
Log likelihood	-15.42	-15.42	-15.74	-15.74

Robust z statistics in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%

Table A8.2 b Probit estimation CAME: The effect of programme participation on business assets
Dependent variable: dummy variable = 1 if household *i* has bought tools, machinery, and other business assets
Explanatory variable in (8.1): logarithm of the maximum amount of credit borrowed (LGMAXCREDIT)
Explanatory variable in (8.2): dummy variable =1 for treatment household (LGMAXCREDIT†)

	Equation 8.1		Equation 8.2	
	Coef	$\frac{\partial \Phi}{\partial X}$	Coef	$\frac{\partial \Phi}{\partial X}$
AVEDU	-0.141	-0.046	-0.118	-0.040
	(1.28)	(1.28)	(1.15)	(1.15)
HOWNER	0.522	0.173	0.557	0.191
	(0.66)	(0.66)	(0.72)	(0.72)
HESTATE	-4.570	-0.365	-4.168	-0.378
	(2.50)**	(2.50)**	(2.49)**	(2.49)**
TIMEBUS	-0.045	-0.015	-0.039	-0.013
	(0.58)	(0.58)	(0.52)	(0.52)
WWORKER	-2.024	-0.657	-1.800	-0.606
	(2.12)**	(2.12)**	(1.97)**	(1.97)**
DEPENDRATIO	4.482	1.455	4.156	1.399
	(1.99)**	(1.99)**	(1.88)*	(1.88)*
AGE	-0.074	-0.024	-0.067	-0.023
	(1.36)	(1.36)	(1.31)	(1.31)
WOMAN	-2.650	-0.515	-2.341	-0.501
	(2.44)**	(2.44)**	(2.37)**	(2.37)**
MARITAL	-2.353	-0.384	-2.125	-0.389
	(2.66)***	(2.66)***	(2.65)***	(2.65)***
ROSCAS	1.423	0.392	1.372	0.396
	(2.38)**	(2.38)**	(2.30)**	(2.30)**
FORMALCREDIT	-1.918	-0.657	-1.947	-0.658
	(1.71)*	(1.71)*	(1.88)*	(1.88)*
MONEYLENDER	-2.388	-0.748	-2.063	-0.686
	(1.91)*	(1.91)*	(1.91)*	(1.91)*
LGMAXCREDIT	0.275	0.089		
	(2.42)**	(2.42)**		
LGMAXCREDIT†			2.275	0.718
			(2.33)**	(2.33)**
CONSTANT	10.108		8.929	
	(2.32)**		(2.31)**	
Observations	46	46	46	46
LR Chi-squared	16.25	16.25	15.71	15.71
Pseudo R-squared	0.41	0.41	0.40	0.40
Log likelihood	-18.29	-18.29	-18.77	-18.77

Robust z statistics in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%

Table A8.2 c Probit estimation PROMUJER: The effect of programme participation on business assets

Dependent variable: dummy variable = 1 if household *i* has bought tools, machinery, and other business assets

Explanatory variable in (8.1): logarithm of the maximum amount of credit borrowed (LGMAXCREDIT)

Explanatory variable in (8.2): dummy variable =1 for treatment household (LGMAXCREDIT†)

	Equation 8.1		Equation 8.2	
	Coef	$\frac{\partial \Phi}{\partial X}$	Coef	$\frac{\partial \Phi}{\partial X}$
AVEDU	-0.253	-0.055	-0.262	-0.057
	(1.77)*	(1.77)*	(1.77)*	(1.77)*
HOWNER	-2.457	-0.432	-2.466	-0.436
	(2.44)**	(2.44)**	(2.47)**	(2.47)**
HESTATE	0.306	0.072	0.342	0.082
	(0.43)	(0.43)	(0.48)	(0.48)
TIMEBUS	-0.100	-0.022	-0.099	-0.022
	(2.04)**	(2.04)**	(2.03)**	(2.03)**
WWORKER	-0.003	-0.001	0.025	0.005
	(0.01)	(0.01)	(0.04)	(0.04)
DEPENDRATIO	10.518	2.290	10.275	2.254
	(2.99)***	(2.99)***	(3.12)***	(3.12)***
AGE	-0.070	-0.015	-0.068	-0.015
	(2.23)**	(2.23)**	(2.13)**	(2.13)**
MARITAL	1.645	0.466	1.604	0.455
	(2.21)**	(2.21)**	(2.15)**	(2.15)**
ROSCAS	1.804	0.353	1.802	0.355
	(2.05)**	(2.05)**	(2.02)**	(2.02)**
FORMALCREDIT	-2.473	-0.784	-2.470	-0.783
	(1.97)**	(1.97)**	(1.99)**	(1.99)**
MONEYLENDER	-1.338	-0.412	-1.260	-0.385
	(1.53)	(1.53)	(1.44)	(1.44)
LGMAXCREDIT	0.474	0.103		
	(5.22)***	(5.22)***		
LGMAXCREDIT†			3.781	0.838
			(5.22)***	(5.22)***
CONSTANT	-1.071		-0.969	
	(0.45)		(0.39)	
Observations	47	47	47	47
LR Chi-squared	43.71	43.71	43.64	43.64
Pseudo R-squared	0.67	0.67	0.66	0.66
Log likelihood	-10.43	-10.43	-10.57	-10.57

Robust z statistics in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

Table A8.2 d Probit estimation using the Pooled sample: The effect of programme participation on business assets
Dependent variable: dummy variable = 1 if household *i* has bought tools, machinery, and other business assets
Explanatory variable in (8.1): logarithm of the maximum amount of credit borrowed (LGMAXCREDIT)
Explanatory variable in (8.2): dummy variable =1 for treatment household (LGMAXCREDIT†)

	Equation 8.1		Equation 8.2	
	Coef	$\frac{\partial \Phi}{\partial X}$	Coef	$\frac{\partial \Phi}{\partial X}$
AVEDU	-0.060	-0.020	-0.054	-0.018
	(1.36)	(1.36)	(1.25)	(1.25)
HOWNER	0.179	0.061	0.207	0.071
	(0.64)	(0.64)	(0.74)	(0.74)
HESTATE	-0.284	-0.090	-0.309	-0.098
	(0.93)	(0.93)	(1.01)	(1.01)
TIMEBUS	-0.003	-0.001	-0.002	-0.001
	(0.13)	(0.13)	(0.09)	(0.09)
WWORKER	-0.350	-0.117	-0.346	-0.116
	(1.71)*	(1.71)*	(1.68)*	(1.68)*
DEPENDRATIO	1.475	0.494	1.498	0.501
	(2.20)**	(2.20)**	(2.25)**	(2.25)**
AGE	-0.027	-0.009	-0.026	-0.009
	(1.76)*	(1.76)*	(1.72)*	(1.72)*
WOMAN	-0.389	-0.123	-0.429	-0.134
	(1.28)	(1.28)	(1.41)	(1.41)
MARITAL	-0.458	-0.141	-0.471	-0.145
	(1.56)	(1.56)	(1.60)	(1.60)
ROSCAS	0.879	0.281	0.887	0.284
	(3.10)***	(3.10)***	(3.13)***	(3.13)***
FORMALCREDIT	-0.487	-0.180	-0.500	-0.185
	(0.96)	(0.96)	(0.98)	(0.98)
MONEYLENDER	-0.662	-0.246	-0.600	-0.222
	(1.40)	(1.40)	(1.30)	(1.30)
LGMAXCREDIT	0.157	0.053		
	(5.39)***	(5.39)***		
LGMAXCREDIT†			1.452	0.492
			(5.65)***	(5.65)***
CONSTANT	1.178		1.089	
	(1.15)		(1.08)	
Observations	148	148	148	148
LR Chi-squared	46.97	46.97	49.35	49.35
Pseudo R-squared	0.33	0.33	0.33	0.33
Log likelihood	-63.97	-63.97	-63.69	-63.69

Robust z statistics in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%

Table A8.3 Probit estimation: the determinants of housing improvements
Dependent variable: Dummy variable = 1 if household *i* has invested in housing improvements (IMPROVESTATE)

	FINCOMUN		CAME		PROMUJER		Pooled sample	
	Coef	$\frac{\partial\Phi}{\partial X}$	Coef	$\frac{\partial\Phi}{\partial X}$	Coef	$\frac{\partial\Phi}{\partial X}$	Coef	$\frac{\partial\Phi}{\partial X}$
AVEDU	0.084	0.031	0.479	0.184	-0.079	-0.026	0.057	0.021
	(1.26)	(1.26)	(1.41)	(1.41)	(0.94)	(0.94)	(1.57)	(1.57)
HOWNER	0.809	0.254	1.911	0.655	0.734	0.221	0.552	0.196
	(1.16)	(1.16)	(1.57)	(1.57)	(1.35)	(1.35)	(2.03)**	(2.03)**
HESTATE	0.084	0.031			1.752	0.395	0.882	0.285
	(0.17)	(0.17)			(2.40)**	(2.40)**	(2.73)***	(2.73)***
TIMEBUS	0.019	0.007	-0.159	-0.061	0.046	0.015	0.017	0.006
	(0.45)	(0.45)	(0.96)	(0.96)	(1.07)	(1.07)	(0.78)	(0.78)
WWORKER	-0.257	-0.095	-0.154	-0.059	0.655	0.212	0.216	0.081
	(0.79)	(0.79)	(0.22)	(0.22)	(1.22)	(1.22)	(1.21)	(1.21)
DEPENDRATIO	-2.701	-0.998	-1.108	-0.426	-4.765	-1.541	-1.295	-0.484
	(2.41)**	(2.41)**	(0.45)	(0.45)	(1.84)*	(1.84)*	(2.13)**	(2.13)**
AGE	0.039	0.014	0.123	0.047	0.005	0.001	0.006	0.002
	(1.39)	(1.39)	(1.27)	(1.27)	(0.15)	(0.15)	(0.41)	(0.41)
WOMAN	-0.264	-0.097	-2.125	-0.591			-0.365	-0.139
	(0.54)	(0.54)	(1.58)	(1.58)			(1.33)	(1.33)
MARITAL	-0.510	-0.194	0.800	0.311	-0.902	-0.315	-0.024	-0.009
	(0.85)	(0.85)	(0.55)	(0.55)	(1.22)	(1.22)	(0.08)	(0.08)
ROSCAS	0.415	0.151	-1.065	-0.402	1.131	0.371	0.311	0.116
	(0.94)	(0.94)	(1.29)	(1.29)	(2.20)**	(2.20)**	(1.29)	(1.29)
FORMALCREDIT	0.510	0.199	1.474	0.383	0.936	0.351	-0.375	-0.129
	(0.49)	(0.49)	(0.95)	(0.95)	(0.81)	(0.81)	(0.67)	(0.67)
MEMBERSHIP	0.115	0.043	1.013	0.390	0.106	0.034	0.229	0.086
	(0.97)	(0.97)	(1.98)**	(1.98)**	(0.34)	(0.34)	(3.55)***	(3.55)***
MONEYLENDER			-3.077	-0.705	-0.830	-0.215	-0.950	-0.282
			(0.79)	(0.79)	(1.23)	(1.23)	(1.89)*	(1.89)*
CONSTANT	-1.971		-9.084		-0.247		-1.777	
	(1.18)		(1.32)		(0.11)		(2.04)**	
Observations	51	51	43	43	47	47	148	148
LR Chi-squared	15.92	15.92	40.50	40.50	17.39	17.39	42.83	42.83
Pseudo R-squared	0.23	0.23	0.68	0.68	0.30	0.30	0.22	0.22
Log likelihood	-26.19	-26.19	-9.45	-9.45	-20.74	-20.74	-77.68	-77.68

Absolute value of z statistics in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%

Table A8.4. Probit estimation: the propensity of purchasing household's assets per length of memebership
Dependent variable: Dummy variable = 1 if household *i* has purchased electrical appliances after joining the microfinance organisation (ELECTRICAL)

	FINCOMUN		CAME		PROMUJER		Pooled sample	
	Coef	$\frac{\partial\Phi}{\partial X}$	Coef	$\frac{\partial\Phi}{\partial X}$	Coef	$\frac{\partial\Phi}{\partial X}$	Coef	$\frac{\partial\Phi}{\partial X}$
AVEDU	0.322	0.047	-0.036	-0.010	0.117	0.027	0.070	0.020
	(3.08)***	(3.08)***	(0.48)	(0.48)	(1.26)	(1.26)	(2.00)**	(2.00)**
HESTATE	-0.333	-0.053	-2.131	-0.711	-0.449	-0.114	-0.072	-0.021
	(0.49)	(0.49)	(2.17)**	(2.17)**	(0.77)	(0.77)	(0.24)	(0.24)
TIMEBUS	0.107	0.016	-0.068	-0.019	-0.141	-0.032	-0.003	-0.001
	(1.87)*	(1.87)*	(0.76)	(0.76)	(2.00)**	(2.00)**	(0.13)	(0.13)
WWORKER	-0.190	-0.028	-0.058	-0.016	0.862	0.196	0.562	0.163
	(0.50)	(0.50)	(0.13)	(0.13)	(1.86)*	(1.86)*	(3.19)***	(3.19)***
DEPENDRATIO	-1.873	-0.274	3.231	0.919	-0.457	-0.104	-0.109	-0.032
	(1.53)	(1.53)	(2.63)***	(2.63)***	(0.19)	(0.19)	(0.18)	(0.18)
AGE	0.127	0.019	-0.094	-0.027	0.044	0.010	0.001	0.000
	(3.19)***	(3.19)***	(2.55)**	(2.55)**	(1.58)	(1.58)	(0.11)	(0.11)
WOMAN	1.167	0.177	-2.020	-0.660			-0.087	-0.026
	(2.30)**	(2.30)**	(2.87)***	(2.87)***			(0.31)	(0.31)
MARITAL	-0.365	-0.060	0.163	0.044	0.050	0.011	-0.321	-0.099
	(0.41)	(0.41)	(0.21)	(0.21)	(0.07)	(0.07)	(1.16)	(1.16)
ROSCAS	1.373	0.194	0.271	0.075	0.716	0.172	0.274	0.080
	(2.43)**	(2.43)**	(0.54)	(0.54)	(1.51)	(1.51)	(1.10)	(1.10)
MEMBERSHIP	0.096	0.014	0.353	0.100	0.824	0.187	0.137	0.040
	(0.56)	(0.56)	(2.55)**	(2.55)**	(2.29)**	(2.29)**	(2.17)**	(2.17)**
HOWNER			-0.858	-0.255	0.523	0.111	-0.105	-0.031
			(1.19)	(1.19)	(1.11)	(1.11)	(0.39)	(0.39)
FORMALCREDIT			-0.001	-0.000	1.237	0.411	-0.042	-0.012
			(0.00)	(0.00)	(1.55)	(1.55)	(0.08)	(0.08)
MONEYLENDER			0.271	0.084	0.187	0.045	-0.318	-0.082
			(0.40)	(0.40)	(0.31)	(0.31)	(0.68)	(0.68)
CONSTANT	-9.243		5.262		-4.449		-1.486	
	(4.15)***		(2.27)**		(1.95)*		(1.88)*	
Observations	41	41	46	46	47	47	148	148
LR Chi-squared	28.42	28.42	22.07	22.07	14.73	14.73	23.20	23.20
Pseudo R-squared	0.48	0.48	0.34	0.34	0.26	0.26	0.13	0.13
Log likelihood	-11.23	-11.23	-19.30	-19.30	-19.86	-19.86	-71.52	-71.52

Robust z statistics in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%

Table A8.5 Probit estimation: the propensity of children's dropouts
Dependent variable: Dummy variable = 1 if household *i* has stopped sending children to school (SCHOOLING)

	FINCOMUN		CAME		PROMUJER		Pooled sample	
	Coef	$\frac{\partial\Phi}{\partial X}$	Coef	$\frac{\partial\Phi}{\partial X}$	Coef	$\frac{\partial\Phi}{\partial X}$	Coef	$\frac{\partial\Phi}{\partial X}$
AVEDU	-0.285	-0.011	-0.025	-0.009	-0.055	-0.016	-0.055	-0.016
	(2.19)**	(2.19)**	(0.31)	(0.31)	(0.67)	(0.67)	(1.39)	(1.39)
HOWNER	-0.717	-0.048	-1.149	-0.403	0.045	0.013	-0.269	-0.082
	(0.72)	(0.72)	(1.48)	(1.48)	(0.10)	(0.10)	(0.97)	(0.97)
HESTATE	-0.042	-0.002	1.227	0.286	0.160	0.044	0.276	0.076
	(0.05)	(0.05)	(1.65)*	(1.65)*	(0.29)	(0.29)	(0.90)	(0.90)
TIMEBUS	0.025	0.001	0.013	0.005	0.119	0.034	0.026	0.008
	(0.79)	(0.79)	(0.23)	(0.23)	(2.86)***	(2.86)***	(1.29)	(1.29)
WWORKER	1.787	0.071	-0.081	-0.028	0.758	0.215	0.445	0.130
	(3.00)***	(3.00)***	(0.24)	(0.24)	(1.89)*	(1.89)*	(2.55)**	(2.55)**
DEPENDRATIO	-4.543	-0.179	2.704	0.949	-0.456	-0.129	0.244	0.071
	(2.01)**	(2.01)**	(2.24)**	(2.24)**	(0.24)	(0.24)	(0.40)	(0.40)
AGE	0.075	0.003	0.108	0.038	-0.018	-0.005	0.029	0.009
	(2.29)**	(2.29)**	(2.28)**	(2.28)**	(0.78)	(0.78)	(1.99)**	(1.99)**
WOMAN	0.633	0.027	-0.601	-0.222			0.327	0.090
	(0.94)	(0.94)	(1.15)	(1.15)			(1.12)	(1.12)
MARITAL	-2.328	-0.321	-2.755	-0.789	-1.754	-0.568	-1.065	-0.360
	(3.12)***	(3.12)***	(3.05)***	(3.05)***	(3.09)***	(3.09)***	(3.79)***	(3.79)***
ROSCAS	0.035	0.001	-0.060	-0.021	-0.370	-0.102	0.039	0.011
	(0.07)	(0.07)	(0.09)	(0.09)	(0.80)	(0.80)	(0.15)	(0.15)
FORMALCREDIT	3.634	0.891	-1.151	-0.282	-0.985	-0.182	0.211	0.066
	(3.96)***	(3.96)***	(1.65)*	(1.65)*	(1.14)	(1.14)	(0.51)	(0.51)
MONEYLENDER	0.458	0.028	1.406	0.518	1.318	0.459	1.075	0.387
	(0.64)	(0.64)	(2.26)**	(2.26)**	(2.27)**	(2.27)**	(2.90)***	(2.90)***
MEMBERSHIP	-0.324	-0.013	-0.101	-0.035	-0.505	-0.143	-0.135	-0.040
	(1.65)*	(1.65)*	(0.95)	(0.95)	(1.60)	(1.60)	(1.88)*	(1.88)*
CONSTANT	0.089		-3.903		0.857		-1.506	
	(0.05)		(1.45)		(0.56)		(1.55)	
Observations	55	55	46	46	47	47	148	148
LR Chi-squared	32.42	32.42	34.27	34.27	31.08	31.08	37.28	37.28
Pseudo R-squared	0.67	0.67	0.52	0.52	0.40	0.40	0.26	0.26
Log likelihood	-8.70	-8.70	-14.46	-14.46	-16.65	-16.65	-64.20	-64.20

Robust z statistics in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%