Inviting Husbands in Women-only Solidarity Groups: Evidence from Southern Mexico

Treb Allen*   Beatriz Armendáriz†   Dean Karlan‡   Sendhil Mullainathan§

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Abstract

This paper sheds light on the notion of women empowerment in microfinance. Based on growing concerns by microfinance practitioners that women suffer from increased intrahousehold conflict as a result of their borrowing, we conducted an experiment allowing women to invite their husbands into their microfinance borrowing group. The results were surprising: only 4.4% of women agreed to invite their husbands. In order to rationalize our results, we construct a simple noncooperative bargaining model where intrahousehold frictions from women's participation in microfinance are perceived as a tax to women's income. Inviting husbands to join as borrowers entails a tradeoff between reducing household frictions on the one hand and a loss of autonomy over borrowing decisions on the other. The low take-up rates suggest that for the vast majority of women, the value of autonomy outweighed any reductions in conflict with the husband. Higher take-up rates in groups where women were allowed to invite their female friends and increase the size of their loan, respectively, reinforce the conclusion that including husbands in microfinance borrowing groups is not perceived as an attractive option for women borrowers.

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*Yale University
†Harvard University and University College London
‡Yale University and IPA
§Harvard University and IPA

"...male exclusion can lead to negative consequences for women who join financial services. They may meet resistance from men who see their exclusive participation as unfair and threatening, their loans might be hijacked...A family whose adult members all have access to financial services is better off than one where half are ineligible."... Hugh Allen, Microfinance Forum, Beijing, 2006.

1   Introduction

Recent estimates suggest that out of the nearly 200 million microfinance borrowers, as many as seventy-one percent of them are women (Dale and Harris, 2009). A vast majority of these women live in traditional societies, are married or share a household with a male partner. How a woman's participation in a microfinance solidarity group affects the relationship she has with her husband and her own empowerment more generally is unclear. Microfinance borrowing may increase a women's autonomy by allowing her to generate income independently from her husband. However, microfinance borrowing may increase intra-household conflict, partially or fully eroding any benefit of an independent source of income. As suggested by Hugh Allen's quote, male household heads might perceive their exclusion from microfinance as unfair, and may turn themselves against their female counterparts. While the feeling of unfairness might be one source of frictions, there might be others. Our field work in southern Mexico, for example, suggests that women in microfinance may reduce the time that some women spend in household-related activities, drawing ire from their husbands. While frictions and potential conflict rooted in microfinance-related activities undertaken by women are rather well documented (see, for example, Rahman, 1999), the inefficiencies from such frictions and the potential way of resolving frictions between household heads has been analyzed neither theoretically nor empirically.

One possible way of minimizing any increased conflict as a result of microfinance borrowing is to invite the husbands into the borrowing groups. To assess the effect of including husbands, we conducted an experiment that allowed women to invite their husbands into their microfinance borrowing group. The results of the experiment were surprising: only 4.4% of women agreed to invite their husbands. In order to rationalize our results, we construct a simple noncooperative bargaining model where intra-household frictions from women's participation in microfinance are perceived as a tax to women's income. Inviting husbands to join as borrowers entails a trade-off between reducing household frictions on the one hand and a loss of autonomy over borrowing decisions on the other. The low take-up rates suggest that for the vast majority of women, the value of autonomy outweighed any reductions in conflict with the husband.

To identify the effect of including on frictions and women's bargaining power, we included two other treatments in order to disentangle two other effects. First, by inviting a husband to join a borrowing group, the size of the household loan increases. To separate this effect from the effect of the husband, we created an additional treatment group where existing women borrowers could increase the size of their loans. Second, by inviting a husband to join a borrowing group, the number of group members increases. To separate this effect, we created a treatment group where women were able to invite a female friend. Finally, in order to measure the demand for inviting husbands and friends, we offered several levels of cash incentives. Take-up rates on the three treatment groups are reported on Table 1 below.

The strikingly low take-up rates across all treatments are analyzed in this paper through the lens of the Lechene-Preston (2005) framework adapted to the case of microfinance. In the particular case of inviting husbands, our framework suggests that the low take-up rates we observe in Table 1 might be due to the fact that women are reluctant to invite their husbands if doing so does not substantially reduce household

Table 1: TAKE-UP RATES BY TREATMENT

Treatment	Overall Take-up			Take-up by Incentives		
	Offered	Accepted	Percentage	Offered	Accepted	Percentage
Invite Husband	660	29	4.39%			
No Incentive				323	11	3.41%
150 Peso Incentive				191	7	3.66%
300 Peso Incentive				146	11	7.53%
Invite Friend	317	20	6.31%			
150 Peso Incentive				149	8	5.37%
300 Peso Incentive				168	12	7.14%
Increase Credit	337	47	13.95%	337	47	13.95%
p-value: Husband > Friend						0.138
p-value: Husband > Friend for 150 and 300 Peso Incentive						0.117

The remaining 329 borrowers were assigned to the control group.

frictions, or if the additional income accruing to husbands from microfinance participation is not adequately shared by the husband. Consistent with this interpretation, we find that women who have a greater degree of autonomy in household decision making are more likely to invite a friend than a husband into the group, whereas women who have fought with their husband about the loan in the past are more likely to invite a husband than a friend into the group.

Low take-up rates from inviting additional female members suggests that the monetary incentives offered to women were not sufficient to offset the losses form increasing the size of the borrowing group (e.g. through free-riding, as in Armendáriz (1999)). Although take-up rates of larger loans are more than twice as high as those for inviting husbands or female friends, such take up rates are still surprisingly small. From our field work and framework, and contrary to the common wisdom, our interpretation of this result is that only a minority of women borrowers are credit constrained. In support of this interpretation, we find that conditional on tenure, those with larger loans (who are more likely to be credit constrained) are more likely to accept an increase in credit but no more likely to invite a friend or a husband.

Rigorous empirical studies on women's bargaining power vis-a-vis their male counterparts are, in general, scarce. Some notable exceptions include pioneering work by Chattopardhyay and Duflo (2004) on India showing that elected women in powerful parliamentary positions would favor the provision of public goods, which are particularly valued by women household heads. In the particular case of microfinance, Pitt and Khandker (1998) on Bangladesh, show that a 100 percent increase in the volume of microfinance loans contracted by women leads to a 5 percent increase in per capita household non-food expenditures, and a 1 percent increase in per capita household food expenditures; while a 100 percent increase in microfinance borrowing by men leads to just a 2 percent increase in nonfood household expenditures and a negligible change in food expenditures. As discussed by Armendáriz - Morduch (2010), policy makers tend to view women as the main brokers of health and education within the household, and thus have a tendency to deliver aid, be this in the form or grants or subsidized loans via women. The fear is that men in low income households might divert resources targeting the household members towards purchases of private goods which men value most, such as alcohol and tobacco. While our model captures this concern, it goes further in analyzing the underling frictions and bargaining between women in microfinance and their male partners.

Even less is known about the effect of microlending on women's empowerment and household bargaining power. Some studies have shown that the use of contraceptives is widespread among microfinance clients wanting to have less children as opportunity costs increase (see, for example, Chowdhry et al, 1994, and

Rahman et al, 1998 on Asia). Other studies, also on Asia, show that higher income from microfinance can empower women whose decisions over resource allocation might ultimately prevail, but at the cost of violence and abuse by their husbands whose main role as the main breadwinners within the household is threatened (Rahman, 1999). Evidence from Africa suggests that women are being used by their husbands as conduits for accessing subsidized loans, which husbands will ultimately control from beginning to end (Mayoux, 1999). Aside from the study on contraceptives, it does seem as though women's enhanced bargaining power from microfinance participation are lower than what is often suggested by practitioners and aid agencies. Our results contribute to the literature by suggesting that involving husbands in microfinance is not likely to be an adequate tool for decreasing househld frictions and increasing women's bargaining power.

The reminder of this paper is structured as follows. Section 2 describes the stylized facts and the experiment. Section 3 delivers a simple noncooperative bargaining model inspired by the work of Lechene and Preston (2005). Section 4 describes the data gathered from southern Mexico. Section 5 delivers the results obtained from our randomized trial and explains our interpretation of the results. Section 6 spells out some concluding remarks and new avenues for further research on alternative devices for enhancing women empowerment in microfinance.

2 The experiment

2.1 Stylized facts

Our partner organization, Grameen Trust Chiapas (GTC), is a microfinance non-governmental organization (NGO) operating in the highlands of southern Mexico. Chiapas is one of the poorest states hosting the highest proportion of indigenous population from Mayan descent. GTC slowly started accepting men and clients' husbands into women-only solidarity groups in 2003. Taking advantage of the existing initiative, in 2007 we carried out an experiment intended to measure the impact on women's bargaining power when men, and, in particular, husbands, were invited into a pool of (solidarity) women-only groups.[1]

There were three main reasons why GTC branch managers were interested in inviting men into women-only solidarity groups.[2] First, informational asymmetries between household-heads were detected. Even if repayments are publicly known in women-only groups, men tend to overestimate the amount of money that their wives are handling. Men therefore decide to contribute less to overall household expenditures, which often creates frictions within the household. Such frictions have perverse effects. In many instances women no longer use their loans for investment only. They divert part of their loans for consumption, and, in particular, for expenditures in food, health and education so as to make up for the shortfall created from reduced contributions by their husbands. Inviting some men to join otherwise women-only solidarity groups allows for husbands to have a more accurate estimate of their wives' true return realizations. Informational asymmetries are reduced with more accurate information by husbands, and men no longer overestimate the size of their wives' net returns. And husbands are in turn less likely to reduce their contributions to

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[1] We requested our partner organization to stop mixing groups in July 2004, but have no evidence that our request was followed. It might be possible that between the four years that passed between the time our partner organization decided to accept husbands and other male members as clients and the time our experiment was carried out, some solidarity groups had already become mixed. The intervention might then have involved a large majority of women that had already self-selected themselves out from mixed-group pool. Informal conversations with loan officers suggest that the number of mixed groups prior to the experiment was not very large. The administrative data reinforce this finding: at the time of randomization only 18 borrowing groups (of 2,157) had two members that shared the same last name, were of a different sex, were living together, and were within 12 years of age as each other.

[2] The anecdotal evidence described below borrows from Armendáriz and Roome (2008).

household expenditures, which reduces frictions, and increases household expenditures in consumption from microloans. Relative to women-only groups, in those groups that became mixed informational asymmetries were decreased, and repayment rates by both men and women have increased.

Second, there are work-load externalities, which emerge from having women as the only recipients of loans within the household. Relative to women who self-selected themselves out of a lending program, women in microfinance become busier, the argument goes, and the services that women traditionally provide to the household such as meal preparation, and household chores, decreases in quantity and/or quality. This irritates men, again creating frictions. These frictions in turn cause women to default more often and/or prevent them from making repayments on time. In contrast, when men are invited to join solidarity groups, they seem to more easily internalize such negative work-load externalities and in some instances, husbands help their overburdened wives by becoming more active in household-related work. The inclusion of men in turn reduced frictions, increased household expenditures, and boosted repayment rates.

Third, there are no secure hiding places around the house to save daily return realizations.[3] Typically, microloans are repaid weekly or bi-weekly. Women involved in income-generation activities such as petty trade generate return realizations daily, and often have to hide those return realizations from the grabbing hands of male household members in general, and from their husbands in particular.[4] Men steal the money saved in hiding places around the house for consumption, loan officers have explained. Again, this has led to frictions between household heads. When men are invited to join a solidarity group, men are jointly responsible for the loan contracted by women, and therefore are directly and negatively affected if the loan weekly/bi-weekly installments are not met. Frictions between household heads are reduced, and previously stolen money for men's private consumption is used for making frequent repayment of outstanding loans.

2.2 Design of the experiment

The principal objective of the experiment was to try to isolate the effect of including husbands in the borrowing group on frictions, decision-making process, intra-household allocation, and loan outcomes. Inviting a husband in a borrowing group, however, also affects the income of the household and the size of the borrowing group. In order to disentangle the income effect of having more credit in the household from the effect of inviting a husband, we created an additional treatment group where women borrowers were allowed to increase the size of their loan without inviting their husbands. The size of the borrowing group likely affects outcomes as well, as larger groups may be better able to risk share on the one hand and can create greater moral hazard incentives or free-riding problems on the other. [5] To disentangle the effect of including a husband in a borrowing group from the effect of increasing group size, we created an additional treatment group where women were allowed to invite a female friend.[6]

Finally, we offered varying degrees of cash incentives for taking up the offer. Those choosing to invite a female friend were randomly given either 150 or 300 pesos, while those choosing to invite husbands were

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[3]In short, women face saving constraints. A similar argument has been made in the context ROSCAs in Africa by, for example, Anderson and Baland (2002). See, also, Ashraf, Karlan and Yin (2006) on savings in the Philippines, and Armendáriz and Morduch (2010) for a more general discussion on saving constraints.

[4]Transaction costs from the standpoint of commercial banks are much too high, and women's daily savings cannot find secure venues for making their way into weekly repayments of microloans. See, Collins et al (2009) for a comprehensive discussion on this issue.

[5]For more on the trade off between risk diversification and free riding from enlarging solidarity groups by including new members, see, Armendáriz (1999).

[6]The hope was that the inclusion of husbands and female friends would have a similar network effects on the borrowing group. Since women were able to choose the friend to invite from the set of all their friends (whereas they only had one husband to choose from), it is likely that their "best" friend would have better network effects than their husband. This caveat should be kept in mind when interpreting the results below.

randomly given 0, 150, or 300 pesos, i.e., $0, $12 or $24 US dollars approximately.[7] The cash incentives served two purposes. First, we wanted to estimate the demand for inviting friends and husbands. Second, we wanted to examine how those who accepted to include new members with larger cash incentives (who were more likely to be on the margin between inviting and not inviting) differed from those who accepted with smaller cash incentives. Unfortunately, due to low take-up rates, comparisons across cash incentives of those who accepted a particular treatment was not feasible.

3   A Simple Household Bargaining Model

In this section, we develop a simple household bargaining model based on the work of Lechene and Preston (2005). We then use this model to interpret the decision of whether or not accept an increase in credit, invite a husband, or invite a friend.

3.1   Basic Setup

Assume a nuclear or extended household where daily expenses are paid for with income earned by two household heads (henceforth HHs).[8] Income earned by each HH is used for purchasing private and public goods. Utility is derived from both types of goods. Unlike utility from private goods, utility from public goods depends on both HHs contributions. Formally, let there be two HHs: the wife, f, and her husband/partner, m. Each household member earns income $\{Y^i\}_{i \in \{f,m\}}$, with which she or he purchases private goods $\{q^i\}_{i \in \{f,m\}}$ and public goods $\{Q^i\}_{i \in \{f,m\}}$. Utility of HH i, $\{U^i\}_{i \in \{f,m\}}$ is assumed to be a function of i's private good and both HHs' public good contributions. Let p and P be the price of private and public goods, respectively. For simplicity, we assume that utility functions take the following form:

$$
\begin{aligned}
U^f \left(q^f, Q^f, Q^m \right) &= \alpha \log q^f + (1 - \alpha) \log \left(Q^f + \gamma Q^m \right) & \text{(1a)} \\
U^m \left(q^m, Q^f, Q^m \right) &= \beta \log q^m + (1 - \beta) \log \left(Q^m + \gamma Q^f \right) & \text{(1b)}
\end{aligned}
$$

Parameters α, β, and γ are between 0 and 1. α and β represent the relative valuation of private and public goods for the wife and husband, respectively, while γ represents the "discount" that each member of the household places on the public good purchased by the other member of the household; $\gamma < 1$ indicates that each HH attaches more value to her/his own public good purchases. This assumption seems reasonable; for example, it could arise from differences in preferences regarding what type of food the household consumes. Following Lechene and Preston (2005), we focus on a Nash equilibrium where both household members optimally choose the amount of public and private goods to purchase given the other's choices. In what follows we focus on the wife's decisions (the husband's are similar). The wife's optimization problem is:

$$
\max_{q^f, Q^f} U^f \left(q^f, Q^f, Q^m \right) \text{ s.t. } pq^f + PQ^f \leq Y^f (1 - F) \tag{2}
$$

where $F \in [0, 1]$ captures the level of frictions between the husband and the wife, which we model as the

[7]Since borrowing groups could always invite an additional female friend, there was no need to have a treatment group offering the opportunity to invite a female friend without any cash incentive. Inviting husbands, on the other hand, was restricted to randomly assigned groups.

[8]In an extended family, income is typically earned by several members. To simplify matters, however, we will restrict our analysis to just two income earners, i.e., a nuclear household. A vast majority of the clients of our partner organization belong to nuclear households.

fraction of wife's income that is lost due to intra-household strife.[9] The greater the intra-household strife, the less able the wife is to realize the full potential of her income. This might be due to her husband's negative interference in the wife's investment efforts, time lost arguing, and/or fear of reprisal.[10]

First order conditions imply:

$$(1 - \alpha) \, p q^f = \alpha P \left(Q^f + \gamma Q^m \right)$$

which along with her budget constraint implies:

$$q^f = \frac{\alpha}{p} \left(Y^f (1 - F) + \gamma P Q^m \right) \tag{4a}$$

$$Q^f = \frac{1}{P} (1 - \alpha) \, Y^f (1 - F) - \alpha \gamma Q^m \tag{4b}$$

The Nash Equilibrium where both wife and husband play a best response to each other's choice of public good implies that:

$$Q^f (1 - \alpha \beta \gamma^2) = \frac{1}{p} [(1 - \alpha) Y^f (1 - F) - \alpha \gamma (1 - \beta) Y^m] \tag{5}$$

So that total utility of the wife is:

$$U^f \left(Y^f, Y^m, F \right) = C + \log \left(\left(1 - \beta \gamma^2 \right) Y^f (1 - F) + \gamma \left(1 - \beta \right) Y^m \right) \tag{6}$$

where $C \equiv \alpha \log \left(\frac{\alpha}{p(1 - \alpha \beta \gamma^2)} \right) + (1 - \alpha) \log \left(\frac{1}{P} \frac{(1 - \alpha)}{(1 - \alpha \beta \gamma^2)} \right)$. Hence, the wife's utility decreases with frictions, F, and the prices of both goods, but it increases with her and her spouse's income, albeit at different rates. In particular, if $F < F^*$, a wife's utility increases more with her own income relative to her husband's income (and vice versa if $F > F^*$).[11] This highly stylized model hence yields the prediction that in households where levels of conflict are high, a wife would prefer her husband to be the primary breadwinner because her own earnings are eroded by frictions.

3.2 Interventions

In what follows, consider a wife who generates her own income using a microfinance loan. Suppose that her income from the loan $Y^f (N, L)$ is a function of group size, N, and the amount of her loan, L.[12] Since the wife's utility increases with her own income, in the absence of the intervention, she will optimally choose her group size and loan amount to maximize her income subject to the constraints of the microfinance organization. In our empirical context, our partner organization did not constrain group size, but did constrain that the loan amount had to be less than some amount $\overline{L}$. Hence, we know that $Y^f (N, L) \geq Y^f \left(\tilde{N}, \tilde{L} \right)$ for all $\tilde{N}$ and for all $\tilde{L} \leq \overline{L}$.

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[9] An alternative model could have F denote the fraction of the wife's income that the husband steals. Since the wife attaches a lower value to the contributions that her husband makes to the provision of household public goods, such a modeling device would yield the same qualitative predictions.

[10] Husbands might also lose income because of time spent arguing with their wives. However, men are not only likely to have several sources of income, but generally enjoy higher income. Thus, the loss of income from arguing has a higher marginal disutility for women than for men. For simplicity we are making the implicit assumption here that that the income loss from arguing is negligible for men. Our results will however hold for as long as we assume an income asymmetry in favor of husbands.

[11] $F^* \equiv \frac{1 - \beta \gamma^2 - \gamma (1 - \beta)}{(1 - \beta \gamma^2)}$

[12] For simplicity, the following extension of our basic set-up abstracts from numerous considerations including non-monetary effects of inviting new members (e.g. issues of pride as in Bénabou and Tirole, 2009), and, also from the possibility that different invitees may have different impacts on the income derived from the microfinance loan (e.g. group dynamics). Our conjecture, however, is that by including such considerations our results would not be qualitatively altered.

3.2.1 Increase the loan size?

Recall from the design of our experiment described above that a treatment group was created to disentangle the "income effect" from having a husband contributing more to the household via a loan from the microfinance organization. We now model the choice that a married woman is facing via a simple extension of our basic set up. In particular, suppose wives are offered to increase their loan size and this increased loan size has no effect on household friction, F. A wife is given the opportunity to increase her loan size from L to $L + x$. Since utility is increasing in income, we know that she will take-up the intervention if $Y^f (N, L + x) > Y^f (N, L)$. By revealed preference, we know that she will certainly not take-up the promotion if $L + x \leq \overline{L}$; i.e. the only wives to take-up the "increased-credit" promotion will be those for whom the intervention relaxes their credit constraints. If we assume further that $\frac{\partial}{\partial L} Y^f (N, L)$ is monotonic, then $(1 - F)Y^f (N, L + x) > (1 - F)Y^f (N, L)$ only if $L = \overline{L}$.[13] In other words, the only women who may take-up such a promotion will be those that are already borrowing the maximum amount they can prior to the intervention. This suggests that those who had larger loan amounts before the intervention (who are more likely to be constrained by the maximum loan amount) should be more likely to accept an offer of increased credit.

3.2.2 To Invite or Not to Invite?

We now turn to the treatment group where wives in solidarity groups can add new members. Again, recall from the design of our experiment that married women in a particular treatment group were given the opportunity to invite female friends to join as clients against a monetary incentive. This treatment can potentially capture the effect (positive or negative) on household outcomes of a more extended or larger group size, that is, the "network effect". More formally, assume that a wife is given the opportunity to invite a female friend into the group for some cash incentive I, and that inviting a female friend has no effect on household frictions, F. Since the wife was unconstrained in her decision of how to form a group, it must be that $Y^f(N + 1, L) \leq Y^f (N, L)$. Hence, a wife will choose to invite a friend if and only if $U^f \left(Y^f(N + 1, L) + I, Y^m\right) \geq U^f \left(Y^f (N, L), Y^m\right)$, which from equation [6] is equivalent to $I \geq Y^f(N, L) - Y^f(N + 1, L)$; That is, a wife will choose to invite a friend if and only if the cash incentive is greater than the efficiency loss from having one too many group members. Such loss of efficiency might arise from a potential free-riding effect as in Armendáriz (1999).

Suppose instead a wife was offered an incentive I to invite her husband into her borrowing group. The direct advantage of having a husband join a borrowing group is that the total household income will increase; the disadvantage is the indirect loss of bargaining power. That is, the amount of income that is under the wife's control may decrease, which will negatively affect her utility. In addition, inviting a husband into a group may affect how the husband and the wife get along, i.e. household frictions, F. One could imagine that inviting a husband into a borrowing group may mitigate household frictions by giving the husband more information concerning the wife's activities or exacerbate frictions by reducing the wife's independence. We model the trade-off between higher household income and loss of control of the wife's income as follows. Let's $\delta \in (0, 1)$ denote the fraction of control that the wife may have over the two microfinance loans. If the total value of the household loan is $2Y (N + 1, L)$ then the wife's new income would be $\delta 2Y (N + 1, L) + I$, and the husband's new income will be $W^m + (1 - \delta) 2Y (N + 1, L)]$, where for simplicity we are assuming that the husband's alternative sources of income, W^m is unchanged (e.g. W^m captures labor income which

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[13] The monotonicity of $\frac{\partial}{\partial L} Y^f (N, L)$ guarantees both a unique optimal loan size and that those with an optimal loan size greater than $\bar{L}$ will choose loan size $\bar{L}$.

is not derived from his wife allowing him access to potential return realizations from a microfinance loan).[14] At the same time, assume that inviting a husband changes household frictions from F to $\tilde{F}$. A wife will prefer to invite her friend if and only if:

$$\underbrace{\frac{2\gamma(1-\beta)(1-\delta)}{1-\beta\gamma^2}Y(N+1,L)}_{\text{gain from husband's income}} + \underbrace{\left(1-\tilde{F}\right)I}_{\text{cash incentive}} + \underbrace{(1-F)\left(Y(N,L)-\tilde{F}2\delta Y(N+1,L)\right)}_{\text{gain from reducing frictions}} \geq \underbrace{(1-F)Y(N,L)-(1-\tilde{F})2\delta Y(N+1}_{\text{loss in control and efficiency}}$$

$$(7)$$

A wife will choose to invite her husband if the combination of the increase in her husband's income, the cash incentive, and the reduction in frictions outweighs the loss in control over her own loan and the loss in efficiency from having one too many members. The comparative statics are intuitive: the more household frictions decline, the more willing a wife is to invite her husband. Similarly, the greater the husband's contributions to the public good, β, and/or the greater the value that the wife attaches to her partner's contributions, γ, the more likely it becomes that a wife will choose to invite her husband. On the other hand, for a given γ and β, as δ becomes larger the wife is clearly more likely to be willing to invite her husband because a larger δ means that she enjoys greater control over household resources.

Now, even though our experiment by design does not allow for any particular women in a treatment group to chose between inviting a husband or a female friend, the data we have enables us to find out whether a wife would be more prone to invite her husband or a female friend for a given incentive I. This comparison is important, because if there are positive payoffs from enlarging solidarity group membership, we would wish to know whether a wife values more enlarging the size of the group via inviting her husband or via inviting a female friend. In particular, we ask the following question: when will a wife prefer to invite a friend rather than invite her husband for a given cash incentive? For a given incentive I, wives preferred to invite their female friends over their husbands if and only if:

$$\frac{\left(1-\beta\gamma^2\right)\left((1-F)-2\delta\left(1-\tilde{F}\right)\right)-2\gamma(1-\beta)(1-\delta)}{\left(1-\beta\gamma^2\right)} \geq \frac{I}{Y(N+1,L)}\left(F-\tilde{F}\right) \qquad (8)$$

Clearly, the more inviting one's husband reduces frictions, the more that a wife would be willing to invite her husband rather than inviting a friend. Note that if there is no change in frictions, then the expression simplifies to:

$$\left(1-\beta\gamma^2\right)(1-2\delta) \geq 2\gamma(1-\beta)(1-\delta) \qquad (9)$$

For this equality to hold it must be the case that both $\delta < \frac{1}{2}$ *and* either β is sufficiently close to 1 or γ is low. That is, when household frictions are unchanged, a married woman will prefer to invite a female friend when either her husband spends most of his money on his own private goods or when the wife's valuation of the husband's purchased of public goods is low relative to her own. The intuition behind this result is exceedingly simple: in order for more women to prefer to invite their female friends into the group than their husbands, it must be that the husband would capture more than half the income from the two loans and that the wives have a low valuation of their husband's spending.

This latter result sheds light on the empirical results, which we describe in greater detail in the following:

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[14] Modelling the invitation of the husband as generating $2Y(N+1,C)$ income for the household rather than $Y(N+1,2C)$ income seems to accord well with field researchers' conversations with both women clients and loan officers.

4 Data

The experiment was conducted in 5 different bank branches, covering both rural and urban areas in distant geographical areas in the southern tip of the mountainous state of Chiapas, Mexico. [15] Randomization occurred in 2007. At this point in time there were $5,673$ active borrowers in $2,157$ borrowing groups, but 50 borrowers in 18 borrowing groups were ineligible because they had already invited a husband into the borrowing group.[16] Of the eligible borrowing groups, 775 (comprising $2,215$ individual borrowers) were randomized into the control group or one of the treatment groups.[17] Of these, a baseline survey collecting data on household characteristics, including measures of household decision making and conflict was carried out on $1,532$ (69.2%) of the married women clients of our partner organization, GTC.

Treatment began on April 2007. Between randomization and the start of treatment, 3 of the randomized borrowing groups (comprised of 13 individual borrowers) had had a man join the group and hence were dropped from the experiment. We were therefore left with $2,202$ women borrowers (in 771 solidarity groups), of which $1,643$ (74.6%) in 707 solidarity groups were married under civil law or living with a male partner and hence eligible for the treatment. Of these $1,643$ borrowers, a baseline survey was conducted for $1,299$ (79.1%), which we used to see how household decision making and conflict affected the decision of whether or not to accept the different treatments. In addition, $1,420$ of the $1,643$ (86.4%) had completed a loan with our partner organization prior to the beginning of the treatment, giving us information on their baseline loan characteristics. $1,231$ of the $1,643$ (74.9%) of the borrowers took out at least one additional loan after treatment had begun, which in turn allowed us to examine the effects of treatment on loan outcomes. Finally, 196 of the $1,643$ borrowers in the sample were randomly selected (the randomization was stratified by treatment) to have of a follow-up interview in the summer of 2008 on household decision making and conflict to assess the effect of treatment on these variables; of these, 148 (75.5%) interviews were successfully conducted, which allowed us to see if the treatments had any affect on these variables.

Administrative data were made available from GTC on all its loans during this period, which included information on the characteristics of the loan (amount, interest rate, length, and whether or not the loan was repaid); in addition, the administrative data included the age of the borrower and whether or not she was married. Using this data, we can see how our sample of analysis compares to the rest of the active borrowers. Table 2 compares the means of observable variables.

As can be seen, the married (or living with a male partner) women in our sample tended to have smaller loans over shorter periods of time with relatively higher interest rates and belonged to relatively larger groups. This suggests that women in our sample may have been poorer than the average borrower at GTC.[18] Borrowers in our sample also tended to have been clients with GTC for a longer period of time, and a smaller fraction were new clients (i.e. their current loan was their first loan with GTC). This suggests

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[15] Externalities or spillovers from learning and imitation leading to biased estimates are ruled out in this particular experiment since the chosen branches of our partner organization have sparsely populated clients, and geographical distance across branches is large. Moreover, the entire area is montainous, which makes access to information about what is happening in other branches and across clients within the same branch difficult. For more on biased estimates resulting from externalities, see, Duflo, Glennester, and Kremer (2006).

[16] Since we do not observe directly if two members of the same group were married, we classify those as married if they are living at the same address, share a last name, are of different sexes, and their ages are within 12 years of each other. By this measure, however, there were still 16 individuals in addition to these 50 that the loan officers deemed were eligible for the experiment and were given a randomized treatment. Regardless, the small fraction of overall groups that had already invited husbands suggests that selection occuring prior to the experiment is not a serious problem.

[17] There were an additional 360 borrowers who entered groups and received treatment after randomization occured; because their entrance may have been in response to the experiment itself, we have excluded them from the analysis.

[18] Small average loan size, in particular, is often used as a proxy for poverty. See, for example, Cull, Deimirgüç-Kunt, and Morduch (2008).

Table 2: Comparison of Borrowers in Sample to Borrowers not in Sample

	In Sample			Not in Sample			Difference in Means	
	Mean	Std Dev	N	Mean	Std Dev	N	t-test	p-value
Loan Amount (pesos)	8,583.02	7,133.35	1,420	9,047.44	9,215.61	3,002	1.68	0.09
Interest Rate	0.47	0.05	1,420	0.46	0.05	3,002	-5.33	0.00
Loan Length (days)	189.62	23.14	1,420	201.59	52.62	3,002	8.21	0.00
Group Size	4.09	2.55	1,420	3.58	2.27	3,002	-6.67	0.00
Tenure with GTC (days)	301.16	145.09	1,643	262.37	158.51	4,030	-8.56	0.00
Age	38.94	10.66	1,643	38.47	12.01	4,030	-1.37	0.17
Fraction Married	1.00	0.00	1,643	0.61	0.49	4,030	-32.60	0.00
New Client	0.14	0.34	1,643	0.26	0.44	4,030	9.92	0.00

Loan variables reported on last loan ending prior to treatment on April 16, 2007. New clients did not have a previous loan so do not have baseline loan variables. All other variables reported as of randomization on February 1, 2007.

that (solidarity-group) women in our sample had already developed strong ties among themselves and with loan officers working for our partner organization, and that in such groups the presence of new members (be these female friends or husbands) might not have been welcome to begin with. In addition, we can compare those women in our sample for whom a baseline survey was conducted versus those for whom no baseline survey was conducted. Table 7 in the appendix compares these means. Those given the baseline survey had been with GTC for a longer period of time, were less likely to be new clients, and had larger loans. Such differences should be kept in mind when interpreting the results below.

Table 8 in the appendix examines if there were any differences in the mean of various observables across treatment and control groups. Across 10 observables, we can reject (at the 10% level) that the baseline characteristics between treatment and control were the same twice: for abuse (p-value 0.01) and for age (p-value 0.09). These appear to be driven by those women who were asked if they would like to invite their husband, who were 1.7 years younger and had 1.9 percentage points greater incidence of abuse than the control group. Given that we are conducting 10 different tests, the fact that there are only 2 statistically significant differences between treatments and control (and only 1 at the 5% level) suggests that randomization of treatment and control groups was carried out correctly.

5   Results

5.1   Take-up of Treatment

Table 1 in the introduction depicts the take-up rates by treatment. As can be seen, take-up was low across *all* treatment types. Of the 317 borrowers offered to invite friends, only 20 (6.3%) agreed. Take-up rates were even lower for offers to invite a husband; in total, only 29 of 660 borrowers (4.4%) accepted the offer. The low take-up rates for inviting friends and husbands may have a variety of causes. First, it may be that the the women who would prefer to have had their husbands join their borrowing group had already invited their husbands prior to the start of the experiment, so that the experiment was only conducted on the self-selected group of women who did not want to invite their husbands. This explanation seems unlikely, as only a very small number of borrowing groups included husbands prior to the start of the experiment (see footnote 2 above). Second, invited husbands and friends might have refused their wives invitation because microfinance loans are small relative to what the size of the loans they can contract elsewhere, or because microfinance organizations in the area are generally associated with loans which are tailor-made for women, and participation might have been perceived as shameful. The model developed above suggests that the women in our treatment group might not have viewed the inclusion of their husbands into their financial

affairs as a worthwhile mechanism for reducing intra-household frictions. Third, the cash incentives were paltry compared to the negative impact on the borrowing group from inviting another member, husband or female friends. Even when offered to have a larger loan, only 47 of 337 clients (14.0%) accepted. From the theoretical model above, this suggests that a large majority of clients were not constrained by the GTC credit ceilings.

To see if there is evidence that borrowers were reticent to invite friends and husbands because of negative free-rider-style effects or other type of group dynamics, we can compare take-up rates between treatments based on observables. In particular, we might expect that the longer a borrower has been with GTC, the less the negative effect of introducing another group member is (since groups have been together longer). On the other hand, groups that have been together for a long period of time might be reluctant to admit new participants for fear of destroying well-established group dynamics and support among incumbent members.

Take-up may vary depending on the size of the loan as well. If those with larger loans are more likely to be credit constrained, then we should see a positive relationship between loan sizes and take-up rates. Conversely, if those with larger loans have more to lose by inviting another group member, we should expect that borrowers with larger loans are less willing to invite friends or husbands. We can test this conjecture by regressing whether or not a client took up the promotion by the type of treatment, the size of their last loan prior to treatment, and a term interacting the loan size and the type of treatment.

Table 3: TAKE-UP RATES AND GROUP CHARACTERISTICS

	(1)	(2)	(3)	(4)
Invite Husband	0.015	0.097	0.020	0.079
	(0.029)	(0.079)	(0.023)	(0.074)
Invite Friend	0.020	0.102	0.049**	0.089
	(0.047)	(0.079)	(0.023)	(0.068)
Increase Credit	0.043	0.148*	0.047	0.116
	(0.061)	(0.089)	(0.036)	(0.084)
Tenure*Husband	-0.066	-0.046		
	(0.066)	(0.063)		
Tenure*Friend	-0.043	-0.051		
	(0.082)	(0.080)		
Amount*Husband			-0.007	-0.007
			(0.005)	(0.005)
Amount*Friend			-0.008	-0.008*
			(0.005)	(0.005)
Tenure with MFI	0.090	0.057		0.024
(years)	(0.059)	(0.055)		(0.022)
Loan Amount (000s of		0.003*	0.009**	0.008**
pesos)		(0.002)	(0.004)	(0.004)
Controls	No	Yes	No	Yes
Branch Fixed Effects	No	Yes	No	Yes
Observations	1138	1123	1138	1123
R-squared	0.104	0.145	0.121	0.153

The dependent variable is an indicator variable equal to one if the client accepted the promotion. Each observation is a single borrower. The sample includes all borrowers offered a promotion (it does not include those in the control group). There is no constant in the regression since we do not omit any treatment dummy. Controls include a measure of the pre-treatment decision making of the borrower, whether the borrower is living with her spouse, the length of the marriage, the borrower's education level, the number of adults and children in the household, measures of conflicts and abuse prior to treatment, the cash incentive of the treatment, the interest rate of the last loan prior to treatment, the size of the group prior to treatment, the length of the last loan prior to treatment, and the age of the borrower. Standard errors clustered at the borrowing group level are reported in parentheses. Stars indicate statistical significance: * p<.10 ** p<.05 *** p<.01.

Table 3 presents the results of these two tests. In column 1, we see that those with an additional year of tenure with GTC are 9.0% more likely to accept an increase in credit, but are only 2.4% $(0.090 - 0.066)$ more likely to invite a husband and 4.7% $(0.090 - 0.043)$ more likely to invite a friend, neither of which are statistically significantly different from 0. When controls and branch fixed effects are included (column

2), those with greater tenure are still more likely to increase their credit but now are no more likely to invite friends or increase husbands (although inviting friends and husbands are not statistically significantly different from 0). Hence, the results suggest that borrowers who had been borrowing with GTC for longer were more likely to accept more credit, but no more likely to invite friends or husbands (although these results are statistically insignificant). Column 3 depicts a similar story for loan amounts; increasing the amount of the loan by $1,000$ pesos (or approximately \$84 US dollars) increases the probability of accepting an increase in credit by about 1%, but only increases the probability of inviting a friend by 0.2% and a husband by 0.3%. Column 4 demonstrates that the effect is robust to the inclusion of controls (including controlling for the size of the loan).

From Table 1 in the introduction, we can reject that the take-up rate to invite husbands is greater than the take-up rate to invite friends with a p-value of 0.138. Disaggregating by the cash incentives offered, we find that increasing the cash incentive boosts take-up rates, albeit modestly. We find that take-up rates were greater for inviting female friends (5.4%) than inviting husbands (3.7%) with an incentive of 150 pesos, whereas the take-up rates are similar for an incentive of 300 pesos (7.1% and 7.5%, respectively) . We can reject that the take-up rates for inviting husbands are greater at all cash incentives than the take-up rates for inviting friends with a p-value of 0.117. The results suggest that for a given cash incentive, borrowers slightly prefered to invite a female friend rather than invite a husband. The household bargaining model developed above suggests that such a result could be because the potential increase in household income and/or reduction in household frictions when a husband is invited is dominated by the loss of the wife's control over her loan. If this were the case, then we would expect to see that those households where the possible reduction in household frictions is greatest should be more likely to invite husbands relative to inviting friends. To test this prediction, we constrain our unit of analysis to borrowers who either were asked to invite friends or husbands and see if there is a difference in the probability of take-up based on a wide variety of observables that may be correlated with household frictions and household bargaining.

The results are presented in Table 4. The greater the decision making of the wife in the household, the more likely she is to invite a friend (moving from no input in any household decision from input in all household decisions increases the probability of inviting a friend by 12.4 percentage points), she is only slightly more likely to invite her husband. In contrast, if the wife and husband have fought over the loan in the past is 8 percentage points less likely to invite a friend, but 1.2 percentage points more likely to invite a husband. In both cases, the difference between inviting friends and husbands is significant at the 5% level. No statistically significant differences effects of abuse, who has the last word, the education of the wife, or the number of children on the relative likelihood of take-up for inviting friends and husbands exist. These results suggest that the wives who are most likely to reduce household frictions – those who have the least control over household decision making or who have fought with their husband in the past over the loan – are more likely to invite their husbands relative to inviting their friends.

5.2 Effects of Treatment

To assess the effect of the treatments on loan and household decision making outcomes, we regress the outcome of interest on the various treatments, controlling for the observed baseline level. Specifically we regress:

$$y_{i,1} = \beta_1 hsbnd_i + \beta_2 frnd_i + \beta_3 credit_i + \gamma y_{i,0} + \delta X_i + \varepsilon_{i,1} \tag{10}$$

13

Table 4: INVITING FRIENDS VERSUS INVITING HUSBANDS

	(1)	(2)	(3)	(4)	(5)	(6)
Invite Husband	0.118**	0.106**	0.114**	0.113**	0.075	0.092*
	(0.054)	(0.051)	(0.055)	(0.055)	(0.049)	(0.051)
Invite Friend	0.117**	0.044	0.122**	0.122**	0.067	0.051
	(0.048)	(0.045)	(0.050)	(0.050)	(0.049)	(0.041)
Husband*Abuse	-0.230					
	(0.203)					
Abuse (dummy)	0.168					
	(0.200)					
Husband*Decision making		-0.106**				
		(0.044)				
Decision Making of wife		0.124***				
		(0.037)				
Husband*Conflicts over loan			0.112**			
			(0.056)			
Arguments over loan (dummy)			-0.080***			
			(0.028)			
Husband*Last Word				0.032		
				(0.046)		
Husband has last word (dummy)				-0.009		
				(0.031)		
Husband*Education					-0.003	
					(0.005)	
Education of the borrower (years)					0.006	
					(0.004)	
Husband*Number of Children						-0.036
						(0.022)
Number of children						0.047**
						(0.020)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Branch Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	834	832	834	834	826	831
R-squared	0.088	0.098	0.085	0.085	0.091	0.107

The dependent variable is an indicator variable equal to one if the client accepted the promotion. Each observation is a single borrower. The sample includes all borrowers offered to invite a friend or husband. There is no constant in the regression since we do not omit any treatment dummy. Decision making of wife is the fraction of household decisions that the wife gets to decide. Controls include the cash incentive of the treatment, the interest rate of the last loan prior to treatment, the size of the group prior to treatment, the length of the last loan prior to treatment, and the age of the borrower. Standard errors clustered at the borrowing group level are reported in parentheses. Stars indicate statistical significance: * p<.10 ** p<.05 *** p<.01.

where $y_{i,t}$ is the observed variable of interest of individual i in time t, $t = 0$ refers to prior to the treatment and $t = 1$ refers to after the treatment and $hsbnd_i$, $frnd_i$, and $credit_i$ refer to the assigned treatment groups.[19] In this specification, the β's give the effect of the treatment on y_i, conditional on the baseline level of y_i and the controls X_i (for each observable, we run the regression without controls and with a series of controls and branch fixed effects). Table 5 presents the results of regression [10] for two loan outcomes and two household decision making outcomes.

Table 5: TREATMENT EFFECTS (INTENT-TO-TREAT)

	Group Size		Loan Amount		Abuse		Decision Making	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Invite Husband	.0671	.0219	-655	-1142	-.355**	-.402**	-.094	-.0906*
	(.118)	(.133)	(681)	(727)	(.169)	(.188)	(.0576)	(.0535)
Invite Friend	-.0419	-.189	-917	-2027*	-.307*	-.422*	-.123**	-.126*
	(.119)	(.183)	(704)	(1072)	(.181)	(.214)	(.061)	(.0652)
Increase Credit	-.172	-.169	-53.7	-730	-.238	-.273	-.154**	-.112*
	(.118)	(.116)	(913)	(910)	(.176)	(.182)	(.06)	(.0582)
Baseline group size	.685***	.648***						
	(.0507)	(.048)						
Baseline loan amount			.714***	.617***				
			(.121)	(.125)				
Baseline abuse					.239	.143		
					(.266)	(.302)		
Baseline decision making							.252***	.257***
							(.0695)	(.0637)
Constant	.355**	.704***	4217***	4457***	.75***	1.08***	.723***	.84***
	(.151)	(.259)	(677)	(1570)	(.156)	(.29)	(.0727)	(.0902)
Controls	No	Yes	No	Yes	No	Yes	No	Yes
Branch Fixed Effects	No	Yes	No	Yes	No	Yes	No	Yes
Observations	838	838	1078	1078	134	134	124	124
R-squared	0.686	0.704	0.340	0.375	0.033	0.112	0.151	0.333

Each observation is a single borrower. Because defaulted loans are not linked to a borrowing group, there are fewer observations for group size than for loan amount. Abuse and decision making only include borrowers for whom a followup survey was conducted and who answered the questions about decision making and abuse, respectively. Controls include the cash incentive of the treatment, the tenure of the borrower with GTC, her age and education at the time of randomization, the number of children and adults in the household at the time of randomization, whether the borrower's first loan was treated, and dummies for missing follow-up, baseline surveys, or responses on other control variables. Standard errors clustered at the borrowing group level are reported in parentheses. Stars indicate statistical significance: * p<.10 ** p<.05 *** p<.01.

Columns 1 and 2 show that none of the treatments had a statistically significant increase in group size. This is not that surprising given the extremely low take-up of the promotions. In columns 3 and 4, we find that, if anything, the treatments had a negative effect on the size of the loan (although this effect is only statistically significant for inviting friends when controls are included). This is somewhat surprising given that we would expect that inviting husbands or friends should increase the group size and increasing credit should increase the loan amount. Examination of the raw data reveals that the control group experienced a large increase in average loan sizes (from $8,153$ pesos before the treatment to $9,806$ pesos after treatment), an increase that was roughly comparable to the increase in the mean loan amounts in the credit group (from $9,173$ to $10,726$ pesos) but much larger than the increase in the invite friend or invite husband treatment groups. Interviews with the loan officers suggest that the normal procedure was to increase the loan amount (up to twice the amount of the current loan) of any borrower in good standing who requests an increase. It hence appears that the treatment to increase credit was not substantially different from the status quo, a finding consistent with the low observed take-up.

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[19] For variables concerning household decision making and conflict, $y_{i,0}$ comes from the baseline survey and $y_{i,1}$ comes from the follow-up survey. For variables concerning the loan, $y_{i,0}$ comes from the last loan beginning prior to randomization and $y_{i,1}$ comes from the last loan observed after randomization (our data set ends in June 2008).

Interestingly, we find that all three types of treatment are associated both with lower incidents of abuse (columns 5 and 6) and lower levels of wife's decision making (columns 7 and 8). How both of these can occur concurrently is puzzling to us, although it should be emphasized that these results are driven from the relatively few borrowers for whom a follow-up survey was conducted.

Table 6: Treatment Effects (Intent-to-Treat)

	Default		Staying with GTC	
	(1)	(2)	(3)	(4)
Invite Husband	-0.069	-0.037	-0.071	-0.074
	(0.045)	(0.047)	(0.043)	(0.047)
Invite Friend	-0.011	0.035	-0.055	-0.071
	(0.056)	(0.065)	(0.049)	(0.068)
Increase Credit	-0.056	-0.043	-0.099**	-0.129***
	(0.050)	(0.048)	(0.050)	(0.049)
Constant	0.222***	0.142	0.805***	0.873***
	(0.039)	(0.092)	(0.035)	(0.093)
Controls	No	Yes	No	Yes
Branch Fixed Effects	No	Yes	No	Yes
Observations	1643	1643	1643	1643
R-squared	0.006	0.067	0.006	0.061

Each observation is a single borrower. Default is a dummy variable equal to one if the last loan of a client had been defaulted upon and/or the client was classified as being in default in June 2008. Staying with GTC is a dummy variable equal to one if the client took out at least one additional loan after randomization. Controls include the cash incentive of the treatment, the tenure of the borrower with GTC, her age and education at the time of randomization, the number of children and adults in the household at the time of randomization, whether the borrower's first loan was treated, and dummies for missing follow-up, baseline surveys, or responses on other control variables. Standard errors clustered at the borrowing group level are reported in parentheses. Stars indicate statistical significance: * p<.10 ** p<.05 *** p<.01.

There are two loan outcomes for which a baseline could not be controlled: default rates and whether or not a client takes out an additional loan after the experiment. Table 6 compares these outcomes across assigned treatment groups. There is no statistically significant effect of any of the treatments on default rates, although across all three treatments we find evidence that clients are substantially less likely to continue to borrow with GTC relative to the control group. The fall in the probability of continuing to borrow with GTC is greatest for those who were offered an increase in credit: while 80.5% of borrowers in the control group took at least one additional loan with GTC after the experiment began, whereas only 70.6% did in the group offered an increase in credit.

6   Concluding Remarks

Our experiment suggests that the inclusion of husbands in microfinance solidarity groups is not a promising method of improving women's empowerment; when given the choice (and in many cases a cash incentive), the vast majority of women preferred to keep their husbandsout at bay. This reluctance to change the status quo, however, was not unique to inviting husbands; take-up rates for inviting friends and increasing credit were also strikingly low. We interpret these findings through the lens of a theoretical framework developed. Our results suggest that the majority of borrowers were not credit constrained and are concerned about the pernicious effects of increasing their group sizes.

While absolute take-up rates were low, comparisons of the relative take-up rates across treatments yield several insights. Consistent with credit constraints, those with larger loans prior to treatment were more likely to accept an increase in credit but were no more likely to invite a friend or a husband. We also find evidence that women who seem to gain the most from inviting their husbands – those who had fought with their husbands in the past over loans and who had the least say in household decision making – were

most likely to invite their husbands relative to inviting their friends. This suggests that the possibility of mitigating household conflict may influence a wife's decision of whether to invite her husband on the margin; however, the low absolute take-up rates suggest that this concern did not sufficiently outweigh the costs of including husbands.

Many questions, however, remain unanswered. Are women unwilling to increase their level of indebtedness because of fear of increased intra-household frictions or because they cannot cope with larger-scale businesses due to their low levels of human capital relative to those of their male counterparts? Are women fearful of suffering from free-riding from additional female friends or are already having to endure frictions among incumbent female members and therefore fearful of exacerbating such frictions by including new female borrowers? Is the ongoing trend towards individual lending destroying social capital or on the contrary a device for preserving friendships, which under group lending methodologies might have been spoiled? These are critical questions which definitely deserve further attention in future research.

7   Tables

Table 7: COMPARISON OF BORROWERS IN SAMPLE THAT WERE SURVEYED TO THOSE IN SAMPLE THAT WERE NOT

	Surveyed			Not Surveyed			Difference in Means	
	Mean	Std Dev	N	Mean	Std Dev	N	t-test	p-value
Loan Amount (pesos)	8,894.24	7,235.69	1,148	7,269.49	6,534.99	272	-3.39	0.00
Interest Rate	0.47	0.04	1,148	0.48	0.06	272	1.29	0.20
Loan Length (days)	189.32	21.54	1,148	190.89	28.93	272	1.00	0.32
Group Size	4.07	2.63	1,148	4.16	2.13	272	0.54	0.59
Tenure with GTC (days)	306.25	141.11	1,299	281.94	157.98	344	-2.77	0.01
Age	38.53	10.29	1,299	40.47	11.86	344	3.00	0.00
New Client	0.12	0.32	1,299	0.21	0.41	344	4.51	0.00

Loan variables reported on last loan ending prior to treatment on April 16, 2007. New clients did not have a previous loan so do not have baseline loan variables. All other variables reported as of randomization on February 1, 2007.

Table 8: ORTHAGONALITY TESTS OF TREATMENT

	(1) Loan Amount	(2) Tenure	(3) Group Size	(4) Loan Length	(5) Age	(6) Abuse	(7) Decision Making	(8) Education	(9) No Baseline	(10) New Client
Invite Husband	0.444	0.031	0.324	3.979*	-1.703**	0.019*	0.001	-0.034	-0.011	0.036
	(0.759)	(0.041)	(0.334)	(2.258)	(0.800)	(0.010)	(0.019)	(0.357)	(0.035)	(0.040)
Invite Friend	0.188	0.030	0.046	0.511	0.038	0.012	0.012	-0.343	-0.008	0.089*
	(0.904)	(0.051)	(0.440)	(1.585)	(0.979)	(0.012)	(0.020)	(0.406)	(0.041)	(0.052)
Increase Credit	1.021	0.020	-0.045	2.213	-0.656	-0.008	0.023	0.570	-0.002	-0.011
	(0.935)	(0.046)	(0.255)	(1.766)	(0.868)	(0.008)	(0.019)	(0.376)	(0.037)	(0.039)
Constant	8.153***	0.900***	2.969***	187.469***	40.464***	0.012*	0.760***	7.422***	0.216***	0.106***
	(0.593)	(0.032)	(0.204)	(0.874)	(0.640)	(0.007)	(0.015)	(0.278)	(0.028)	(0.030)
Observations	1420	1420	1420	1420	1420	1299	1299	1299	1643	1643
R-squared	0.002	0.001	0.007	0.005	0.005	0.006	0.002	0.006	0.000	0.010
F-test: All Treatments=0	0.731	0.883	0.683	0.256	0.093	0.011	0.549	0.108	0.988	0.167

Each observation is a single borrower. Standard errors clustered at the borrowing group level are reported in parentheses. Stars indicate statistical significance: * p<.10 ** p<.05 *** p<.01.

(to be completed)

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