CSAE Working Paper WPS/2017-07

Hiding Money: Evidence from a field experiment with aspiring female entrepreneurs*

Farah Said†, Mahreen Mahmud‡, Giovanna d'Adda§ and Azam Chaudhry¶

May 3, 2017

Abstract

We investigate the role of social and intra-household norms in women's decision to hide money from their male household members through artefactual field experiments with microfinance clients receiving start-up loans and training as part of a RCT in Pakistan. We find that hiding is positively correlated with women's sense of entitlement over their own earnings and with their male household members' lack of respect over their earned property, and negatively correlated with their agency within the household. Finally, we find that this agency can be influenced by experiences outside the household, namely agency is positively impacted by being treated within the RCT.

*This project was funded by the International Growth Centre, Pakistan. The project would not have been possible without the support of Zara Murtaza and Kamran Azim at Kashf Foundation, Pakistan, and Dr Naved Hamid at the Centre for Research in Economics and Business at the Lahore School of Eonomics. We received outstanding assistance in the field from Umair Ayaz, Amar Shuja Abbas Raza, Azka Mir, Mydda Aslam, Rehma Ali and Taimoor Naseer at the Lahore School of Economics. We thank audiences at the University of Oxford, the Lahore School of Economics Annual Economics Conference, the Symposium on Economic Experiments in Developing Countries (SEEDEC) 2016, the CSAE Annual Conference 2017 and the Royal Economic Society Conference 2017.

†Lahore School of Economics (farahs@lahoreschool.edu.pk)

‡Centre for Studies of African Economies and Blavatnik School of Government, University of Oxford (mahreen.mahmud@economics.ox.ac.uk)

§Milan Politecnico (giovanna.dadda@polimi.it)

¶Lahore School of Economics (azam@lahoreschool.edu.pk)

1 Introduction

Household decisions are the result of individual members' preferences and social norms regulating appropriate behaviour, which may differ along gender or other dimensions. When there is disagreement or imperfect information sharing between household members, the efficiency of household decision-making is lower than that resulting from cooperative decision processes. A large body of empirical evidence has documented the presence of Pareto inefficiencies in household allocations and imperfect information between members (Udry, 1996; Goldstein and Udry, 1999).

Hiding is one such expression of information asymmetry that can result in Pareto inefficiencies, particularly when a person's bargaining power within the household is so low, that any resource that is known to be owned is subject to appropriation. Studies demonstrate that individuals are often willing to incur costs to maintain control over resources by not revealing them to their spouses (Castilla and Walker, 2013; Hoel, 2015). Existing literature also shows the limited impact of programs aimed at fostering female entrepreneurship[1] and suggests a link between appropriation of female resources and inefficient outcomes for businesses owned by women.[2]

In this study, we ask two main questions. First, we investigate how individual, household and social preferences and norms affect hiding within the laboratory. We conduct artefactual experiments with men and women from the same household, where we collect measures of hiding, entitlement over one's earned income, and social and intra-household norms on female agency. We combine these data with survey questions on women's decision making autonomy within the household, and examine how hiding is influenced by these experimental and survey measures of empowerment.

Second, we ask whether women's experiences can shape these preferences and norms. We exploit the fact that our sample is drawn from women who were part of a RCT on microenterprise start-ups where randomly selected women received funding and training for enterprise development.[3] We expect these experiences to have also impacted their household bargaining power and the awareness of their rights over their property. Therefore, we explore whether being treated has an effect on experimental and survey measures of empowerment.

[1] In measuring the impact of a group-lending programme in Hyderabad, India, Banerjee et al. (2015) find that fifteen to eighteen months later, profits of pre-existing businesses had increased but access to finance lead to an insignificant number of females starting their own enterprise. Similar results are found in Mexico (Angelucci et al., 2015), Mongolia (Attanasio et al., 2015), Morocco (Crepon et al., 2015), Ethiopia (Tarozzi et al., 2015) and in Bosnia and Herzegovina (Augsburg et al., 2015).

[2] de Mel et al. (2009) and de Mel et al. (2012) find that the same microenterprise support program in Sri Lanka had a lower impact on female than male-owned businesses, but that male and female business outcomes were similar in more 'cooperative' households, where the women were also involved in household decision making.

[3] In order to apply for the loan, each applicant had to present a business plan for a new enterprise where they would be largely responsible for management and production.

We find in our sample of men and women from Punjab, Pakistan that hiding of income within the laboratory by women is correlated with their level of empowerment, measured by women's feeling of entitlement over earned resources, their decision autonomy within the household and their partners' respect for their earned property. Within a sample of women who applied for and were found eligible to receive a loan, those who were randomly selected to receive funding and training for developing their business have more autonomy one year later. Instrumental variable analysis suggests this improvement to be driven by women who start a business as a result of the program. Therefore, it is seems that there is potential to change preferences and norms in a way that optimises household efficiency.

Our results are consistent with a growing literature using artefactual and field experiments to study efficiency of intra-household decision making. Beside the studies cited above, other experiments testing the prediction of Pareto-efficient allocations made by unitary and bargaining models of the household reject such predictions because they find that household members are willing to sacrifice efficiency in order to gain or maintain control over resources (Castilla, 2014; Kebede et al., 2013; Popov et al., 2008; Munro et al., 2008, 2014). Inefficiency is also correlated with individual preferences over gender-specific consumption items, such as tobacco and alcohol (Castilla, 2015). Results on information asymmetries demonstrate that spouses frequently hide resources from each other, and that hiding is correlated with individual control over household spending (Ashraf, 2009; Castilla and Walker, 2013; Castilla, 2015; Hoel, 2015), and social norms (Kebede et al., 2013). We contribute to this literature by investigating the correlation between hiding and novel measures of empowerment and social norms, as well as by showing how women's experiences, in terms of access to finance and training, affect empowerment.

We also contribute to a small literature that combines laboratory and field or natural experiments to show causal impact on preferences and norms that cannot be easily measured outside of the laboratory (Jakiela and Ozier, 2016; Burns et al., 2015; Fisman et al., 2015; Bulte et al., 2016; Garikipati, 2013; Abbink et al., 2016). In particular, (Jakiela, 2015) study how respect for earned property, measured through behavioural experiments similar to the ones we conduct in our study, is influenced by human capital. Exogenous variation in human capital within the sample is provided by treatment status in an RCT aimed at improving individuals' academic achievement. To the best of our knowledge, ours is the first study combining an RCT targeted at encouraging female microenterprise start-ups and artefactual experiments to examine causal impact of finance and training on women's tendency to hide income from their spouses.

In the remainder of the paper, we sketch a theoretical framework to think of hiding behaviour within the household (Section 2). We then describe the setting, RCT, and the design and implementation of the laboratory experiment (Section 3). We provide descriptive statistics of the sample and discuss the results in Section 4 and then conclude (Section 5).

2 Conceptual framework

We present here a simple conceptual framework underlying our analysis. We start from the standard utility model of intra-household allocation by Chiappori (1997) and the collective bargaining model tested by Castilla (2014).

Consider a two-member household, with wife f, and her husband, m.[4] Men and women earn income I_m and I_f, respectively. Under the standard assumptions, this income is known to both men and women. They consume one household public good, Q and private goods, x_i, that are non-rival in utility. Assume that prices of public and private goods have been normalised to p and 1, respectively and the individual utility function, U_i, is separable in x_i and Q such that for $i = f, m$:

$$U_i = U(Q, x_i) = u_i(x_i) + v(Q) \tag{1}$$

where $u' > 0, v' > 0, u'' < 0, v'' < 0, u'(0) = \infty$ and $v'(0) = \infty$. Suppose now that spouse f has additional endowment E that is not known to m unless f informs him about it.[5] Then according to Chiappori (1997), the Pareto-efficient outcome can be represented as the following social welfare problem:

$$\max_x \ \theta U_f(Q, x_f) + (1-\theta)U_m(Q, x_m) \text{ subject to } (x_f + x_m + pQ) = Y \equiv I_m + I_f + E \tag{2}$$

In a society where females are often the subordinate members of the household, as is the case in Pakistan, a woman's bargaining power, θ, is a function of the outside options available to her. Theoretically, her bargaining power increases if she can demand support from parents and her relatives (Bloch and Rao, 2002), if customary divorce laws are favourable to women (Dercon and Krishnan, 2000), if the distribution of income or household sharing rule is skewed towards women (Browning et al., 2006, 2013) and if there is symmetric information between household members (Chen, 2012). Browing et al. (2014) define the bargaining power of a spouse as a function of relative income and distributional factors, z, such as cultural and household norms regarding the role of the spouse:

$$\theta = \theta(I_f, I_m, z, E) \text{ for spouse } f \textit{ and} \tag{3}$$

$$(1-\theta) = (1-\theta(I_f, I_m, z, E)) \text{ for spouse } m \tag{4}$$

Then the household welfare maximisation problem in equation (2) becomes:

$$\max_{Q, x_f \geq 0} \ \theta(I_f, I_m, z, E)\{u(x_f) + v(Q)\} + (1-\theta(I_f, I_m, z, E))\{u(I_f + I_m + E - x_f - pQ) + v(Q)\} \tag{5}$$

[4] This framework can be extended to other members of the household e.g. household head and an unmarried female.

[5] We also assume that m does not incur monitoring costs to find out about such endowments.

Based on household and cultural factors, represented by z, the subordinate spouse, f, may face pressures from household members to share E with the rest of the household, i.e. funds may be captured and spent on investment or consumption that benefits the household or individual members, rather than on items that reflect the woman's preferences, such as investment in her own business. For example, if a husband finds out that his wife has extra financial resources, he can veto the wife's decision to use them as she wants, expropriate them or direct them to use by the household. The threat of capture can explain why the female hides her extra resources (Ashraf, 2009).

In terms of the bargaining model shown in equation (5), hiding additional endowment E in response to potential capture is more likely for women who lack sufficient bargaining power at home. Castilla (2014) posits the existence of a threshold change in bargaining power, $\Delta\bar{\theta}$ such that for any $\frac{\partial\theta}{\partial E} < \Delta\bar{\theta}$, the marginal utility from from hiding E exceed the marginal utility from revealing E. Conversely, if E is revealed to the household then the marginal utility from revealing exceeds the marginal utility to be had from hiding E and the following holds:

$$\begin{aligned} \frac{\partial x_f}{\partial E} &> 0 \\ \frac{\partial x_m}{\partial E} &< 0 \\ \frac{\partial Q}{\partial E} &> 0 \end{aligned} \tag{6}$$

In contrast, when E is kept private from the household:

$$\begin{aligned} \frac{\partial x_f}{\partial E} &> 0 \\ \frac{\partial x_m}{\partial E} &= 0 \\ \frac{\partial Q}{\partial E} &= 0 \end{aligned} \tag{7}$$

Equation (7) shows that hiding in itself may lead to inefficient outcomes - the consumption of public good is unambiguously lower when E is hidden.[6] Moreover, captured funds may be directed to other more profitable businesses owned by the household (Kazianga and Wahhaj, 2015), so that total household income may increase as a result of capture. Hiding

[6] We assume that θ is an increasing function of E. If E increases when it is revealed, then for the increase in relative bargaining power of the female and the decreasing bargaining power of the male translates into and increase in x_f and a decrease in x_m. This is not the case when the male can expropriate E. However, equation (6) only discusses the case when marginal utility from revealing exceeds that from hiding. In addition, by construction, when E is hidden, it cannot be used on goods for household consumption that are by definition observable and therefore Q is unaffected by E. In this case, the household consists of just the male and his spouse, but we can extend this to include more members, for instance, children. Q includes observable spending on children and such expenditures will not made out of E if the female wishes to hide this additional endowment.

prevents this from happening and can strictly benefit the woman and not necessarily the household through public goods.

We hypothesize that individuals who lack bargaining power are more likely to fear capture and, therefore, more likely to hide additional resources. Women whose resources are frequently captured by other household members are thus more likely to hide their resources or spend them in ways that are not as easy to monitor. We measure hiding by comparing the share of endowment participants allocate to self when the allocation is revealed to a household member and when the allocation is kept private or anonymous. In the context of this study, we expect women who are less empowered to be more likely to hide their experimental earnings.

Furthermore, we use data from artefactual experiments and survey questions to generate indicators of female and household preferences, intra-household and social norms that we expect to be correlated with hiding. These include awareness of one's right over one's own earned resources, decision autonomy within the household, and a surrounding social and cultural environment favourable to female agency. We discuss each of these in turn next.

First, we expect participants to exhibit greater entitlement over an income that they have earned (EI) than over unearned money (UEI) that has been provided to them. Fahr and Irlenbusch (2000) call this the 'earned property rights' effects. Although women may feel entitled to have greater control over their earned resources, they may nevertheless not be granted control by their household members. In such situations, women may have a pent-up demand for agency and resentment over not being given decision power that they may wish to express within the relatively safe and innocuous setting of the experiment. These women would also be more likely to hide to be able to exercise control over resources that would otherwise be captured. On the other hand, women may have internalised their lack of agency, and not feel entitled to their earnings. If this were the case, then we would expect women who are more aware of their rights, i.e. more likely to exert control over their earnings within the experiment to be also less fearful of capture, and thus less likely to hide. We cannot predict *a priori*, and thus we test, whether pent-up demand for agency or internalised lack of agency drive the sign of the correlation between hiding and entitlement over earned property. We define entitlement as the difference in share of an endowment that participants allocate to self (s_i) when the endowment has been earned by them and when it is a windfall. That is, we define entitlement over earned property as:

$$Entitled = I_E = \begin{cases} 1 & s_{EI,i} - s_{UEI,i} > 0 \\ 0 & otherwise \end{cases}$$

Second, we expect that vulnerability to capture will result in higher rates of hiding. We assume that individuals who face capture in intra-household decisions will face it in the context of the experiment as well, and thus construct a variable to proxy an individual's respect for his or her partner's earned property. Namely, we compute the difference between the amount partner s_j allocates to self from partner's earnings (EH) versus his or her own

earning (EI):

$$Low\ respect = I_{LR} = \begin{cases} 1 & s_{EH,j} - s_{EI,j} > 0 \\ 0 & otherwise \end{cases}$$

We interpret allocating more to self when taking than giving as a sign of low respect for the partner's earned property and expect this to be positively correlated with hiding by individual i.

Third, we expect hiding to be negatively correlated with an individual's agency within the household. The more a woman has a say over household outcomes and control over her life, the less likely she is to fear capture and thus feel the need for hiding. We measure agency by combining two pieces of information. First, survey questions on the autonomy granted to a woman when making a series of decisions, ranging from choices over small purchases, social visits or healthcare, to the decision to make an investment or get a loan. We count the number of decisions, which the woman reports taking on her own, with no need for consultation with or permission from other household members. Second, we exploit questions on whether women are getting an education or seeking employment outside the home and the reasons why they are not. We generate an indicator variable for women who claim they are not seeking employment outside the home because they are not allowed to by the household head. We construct an index from these two variables, and test in the analysis its correlation with hiding.

Fourth, we expect hiding to be also affected by the social perception of independent decision making by women, both within and outside the household. If, for instance, a woman knows that she will face disapproval, criticism and possibly sanctions if she takes decisions without consulting her spouse or other household members, she may be more reluctant to disclose any resources she wants to control. Even if retaliation is not a possibility, individuals may choose to give up or forbid agency if they feel society regards this as socially inappropriate.[7] We capture social norms using the methodology introduced by Krupka and Weber (2013). This entails asking subjects how socially appropriate it would be for a woman to make an autonomous decision concerning her own business, and incentivising subjects to match the answer of another person. Intra-household and social norms are elicited by incentivising subjects to match the spouse or a stranger's answer, respectively.

Finally, it is possible that hiding behaviour is also affected by more general preferences for risk. In order to control for risk loving behaviour within the experiment, we elicit risk aversion and control for it when analysing results.

All the factors discussed above, which we expect to be correlated with hiding, are likely

[7] It is also possible that individuals have no desire for agency at all. This may be because they have no desire for the responsibility that comes with taking such decisions. We do not explicitly measure if the lack of agency within the experiment stems from low demand for it or from a fear of retaliation if agency is exhibited, but we recognize the importance of this distinction.

to be influenced by access to finance and business training. Having access to resources and information on successful business practices may increase women's awareness of their rights over their earned property, increase women's bargaining power within the household and thus their decision autonomy. This may as a result reduce the tendency of other household members to appropriate a woman's resources and relax negative perceptions of social norms on female agency. In the analysis, we will thus also examine the effect of treatment on the different measures of empowerment identified here as correlated with hiding behaviour.

This section has sketched a framework to structure our thoughts on hiding and on its potential determinants. Next, we describe in more detail the experimental protocol that we used to elicit them.

3 Experiment setting and design

3.1 Setting and implementation

The research was conducted in Pakistan - an ideal setting to study how gender-specific norms and preferences affect intra-household decisions. Labour market data gives us a sense of the limiting role that gender norms may be playing in limiting female economic participation. In a country with already low labour force participation,[8] female participation rates are one-third that of males at 22%. In the informal sector, gender ratios are more equitable (albeit low) at 38% for females and 42% for males. This may be explained by the fact that informal businesses typically consist of home-based production, a more socially acceptable and easier to monitor income generating activity for women than employment outside the home (Zaman et al., 2006). Abuse and violence against women within the domain of the household is not unheard of due to cultural norms and legal oversight (Bari and Pal, 2000; Rabbani et al., 2008; Ali and Gavino, 2008). Norms of behaviour, enforced by peer pressure or fear of condemnation or through internalized shame over a broken social rule, are hypothesised to limit the discretion females have, for instance, over taking loans or investing resources in a business activity (Ginè et al., 2011). As a result, women in this setting can be discouraged from pursuing ownership of resources when they cannot be protected from appropriation.

The experiment sample was drawn from a pool of women participating in a RCT that involved providing loans to women for setting up a new business. The loan size varied between PKR 10,000 and 30,000 ($1,000 - $3,000), to be repaid over a 12 month period.

[8] Pakistan has had a long-standing trend of low labour participation rate - the national rate of active labour participation stands at a little less than 46%. All figures here are from the Labour Force Survey (LFS) 2013 - 14 Annual Report, prepared by the Pakistan Bureau of Statistics.

To be eligible for the loan, applicants had to present a plan for a business that would be run and managed by themselves. Out of a total RCT sample of 689 women, 353 were assigned to the treated group. Every member of the treatment group was provided a three hour long training consisted of planning, finance and marketing in the month of loan disbursement. Both treatment and control groups members were surveyed approximately one-year after the product. It was at the time of this survey that we also conducted the lab-in-field experiments.

The RCT was conducted in peri-urban areas of three districts of Punjab - Bahawalpur, Gujrat and Sialkot. The district of Bahawalpur, located in the south of Punjab, is one of the poorest performing districts in the province in terms of educational attainment (access, gender parity and enrollment). It is ranked 31^{st} out of 36 districts in Punjab (Memon et al., 2014) in terms of educational attainment. Gujrat and Sialkot, located in the north of the province, perform relatively better in terms of educational attainment, ranked 19^{th} and 13^{th}, respectively (Memon et al., 2014). Average monthly household income in Gujrat, Bahawalpur and Sialkot are PKR 51,854 ($520), PKR 30,294 ($300) and PKR 29,110 ($290), respectively.[9]

Our experiment sample consisted of 267 couples (female respondent plus a male member of the household) randomly selected from the RCT sample. Married respondents were invited along with their husbands. In case the respondent was unmarried or the husband did not live with the respondent (e.g. separated, migrant worker) we invited the main male decision maker in the household.[10] 70.5% of the participants attended the sessions with their husband and 29.5% of the respondents attended with other male members of the household.

Invited respondents were guaranteed PKR 1,000 ($10) if they participated in all activities in the session. In addition, each participant could earn up to PKR 1,000 from his or her decisions in the activities. In keeping with the local norms as well as to avoid couples influencing each other, male and female sessions were held in separate rooms. Activities were run simultaneously and no interaction was allowed between participants until a session was completed. Experiments were implemented using pen, paper and tokens representing currency notes. Participation fee and activity earnings were privately and individually paid at the end of each session.

The experimental data is complemented by survey data. We consider two main measures of empowerment constructed from survey questions, as mentioned in section 2: the decision autonomy measure and the *not allowed to work outside the house* indicator. In the analysis, we construct an index of agency within the household from these two variables using principal component analysis [11]

[9] Inflation adjusted estimates from PSLM 2010-11.

[10] This individual was identified during the survey and invited at the same time as the female respondent.

[11] Appendix C shows the full list of empowerment questions asked in the survey and describes how each proxy of empowerment used in the analysis is constructed.

3.2 Experimental design

Participants played a series of tasks: a public and a private round of the dictator game, a taking and a dictator game with earned endowments, a norm elicitation and a risk preferences elicitation task. Apart from the norm elicitation activity, which was always conducted last, the order of tasks and rounds within each task was randomised.[12] At the end of the session, a random draw determined which task would determine subjects' earnings.[13]

Participants were paired with an individual of the opposite gender for the dictator and taking activities. We used standard protocols, adapted to the local context, for these activities. Half of the participants in the session were randomly selected to be paired with their household member; the remainder were paired with a stranger. The difference of decisions made in household member and stranger pairings is a measure of whether, on average, gender differences in behaviour are driven by intra-household norms or by more general social norms.

In the dictator activity, we provided each individual in a pair with an endowment of PKR 1000 and asked him or her to divide the money between him/herself and the partner. Either the subject or the partner's decision could be randomly selected to be implemented. Participants made this decision twice: in one case, subjects were informed before making the decision that their allocation would be revealed to their partner at the end of the session (public round); in the other case, subjects knew that their partner would not find out the exact share of the endowment allocated to each other (private round). To keep earnings hidden in the private round, we introduced uncertainty that would allow each participant to *plausibly deny* the exact amount allocated to the partner(as in Hoel (2015)) if confronted by their partner after the session.[14] Piloting reassured us that participants would consider this protocol sufficient for concealing the exact allocation made.

We used standard protocols, adapted to the local context, for taking and dictator activities with earned endowments. Each individual conducted a simple sorting activity according to which he/she could earn an endowment of up to PKR 1000. The activity involved sorting black chickpeas from white chickpeas for two minutes.[15] In the taking game, participants decided how to divide their partners' earnings between themselves and the partners, while in the dictator game the decision concerned how much to give to the partners of their own

[12] The norms activity was always conducted last because it had the potential to reveal the goal of the experiment, and could influence decisions in other activities if conducted earlier.

[13] The script is available on request and Appendix B provides a time line of the experiment sessions.

[14] Participants were informed that depending on the outcome of a coin toss, the experimenter would either add or subtract an unspecified amount to the allocation they made to their partner.

[15] Pre-testing of this activity provided us with the upper bound for chickpeas sorted. The endowment assigned to this upper bound was 1000 PKR, to ensure comparability with the tasks with unearned endowments. Then, we assigned a payoff to each possible range of outcomes: 0 PKR for output below 20 black chikpeas, 100 PKR for output between 20 and 35, 200 PKR for output between 35 and 50, and so on.

earned endowments (List, 2007).[16]

The last activity of the session followed Krupka and Weber (2013)'s norms elicitation procedure. Specifically, respondents were told of a hypothetical situation where a female entrepreneur re-invests profits from her business without consulting her husband. Participants were asked to rank the appropriateness of this decision from 1 - 'very socially inappropriate' to 4 - 'very socially appropriate'. Participants were paired with a partner and earned PKR 300 ($3) each time their answer matched that of their counterpart in that round.Participants were paired once with their household member, once with a stranger of the opposite gender and once with a stranger of the same gender. This allowed us to elicit perceptions of *social* rather than personal norms.

We also obtain measures of risk aversion using the standard Binswanger (1980) lottery game design (based on options given in Barr et al. (2008) and Cameron and Shah (2015)). This activity involved presenting participants with 6 different options that represent 'low' or 'high' earnings events[17]. A randomly drawn coloured ball ('red' or 'yellow') determined if low or high earning were realized.[18] Under this design, the selection of an option with a greater standard deviation represents lower levels of risk aversion (lower coefficient of relative risk aversion).

In the next section, we provide summary statistics for the survey and experimental variables described here, before discussing the main results.

4 Results

4.1 Descriptive statistics

Table 1 shows descriptive statistics for the female and male samples. Men are slightly younger than women: 16.5% of women who come with their sons and a lower share of men than women is married. Due to our recruitment strategy for the experiments, that is,

[16] The strategy method was used in both the taking and dictator rounds here: out of every possible sum earned through the sorting task - 0, 100, 200, up to 1000 PKR, subjects were asked how much they would take from, or give to, the partner in the taking and dictator game respectively.

[17] The events were equally likely to occur (with 50% probability) under each option; however, the options were increasing in expected value and deviation between possible earnings. See Table A1 for a list of the options provided.

[18] Given the literacy level and the cultural norms, the Binswanger (1980) design involves event probabilities that can be easily understood. Further, keeping religious norms in mind, we were able to avoid references to chance or gambling: for instance, drawing balls out of a bag, as opposed to tossing a coin, helped in removing association with gambling. None of the options involved a personal loss that could be incurred by participants.

randomly selecting RCT participants to take part in the experiments, the RCT and experiment samples are balanced on observables. Appendix Table A2 reports summary statistics of the RCT sample.

Table 1: Descriptive statistics of the experiment sample

	Male		Female		Total		*p-value*
	Mean	Sd	Mean	Sd	Mean	Sd	
Age	36.32	(11.91)	37.20	(9.328)	36.76	(10.69)	0.341
Married	0.801	(0.400)	0.865	(0.342)	0.833	(0.373)	0.046
Education							
Illiterate	0.303	(0.461)	0.513	(0.501)	0.408	(0.492)	0.000
Primary	0.270	(0.445)	0.210	(0.408)	0.240	(0.427)	0.108
More than primary	0.225	(0.418)	0.210	(0.408)	0.217	(0.413)	0.664
Occupation							
Housewife	0.0112	(0.106)	0.479	(0.501)	0.245	(0.431)	0.000
Self-employed	0.0936	(0.292)	0.356	(0.480)	0.225	(0.418)	0.000
Labourer	0.539	(0.499)	0.0974	(0.297)	0.318	(0.466)	0.000
Empowerment							
Decide alone			4.85	(3.042)			
Not allowed work			0.165	(0.372)			

Respondents are married and 37 year old on average. Around 40% of participants are illiterate, 51.3% of women and 30.3% of men. As a result of using the RCT sample to recruit for the experiment, we obtain a sample where self employed women (36%) outnumber self employed men (9%) and the proportion of self employed women in the sample is higher than the national average (as discussed in the introduction). On the other hand, the gender imbalance in paid employment is biased towards males: 53.9% of them are employed as daily labourers, against only 9.7% of women.

Table 1 also reports summary statistics for the two measures of empowerment constructed from survey answers described above. Out of nine types of decisions featured in the survey, women on average report to decide alone on average in 4.85 cases. 16.5% of women in the sample are forbidden by their spouse or household head to seek employment outside the home. In the analysis, we will take the principal component from these two indicators as our main proxy of female agency within the household, but will show that the results are robust to using the two variables independently in Appendix A.

Table 2 presents summary statistics for decisions in each of the dictator and taking tasks, and indices constructed from these choices that will be used in the analysis. The first

six columns of the table show the mean and standard deviation of each variable for men, women and the overall sample. In the last column, we report p-values of the female dummy's coefficient from a regression of each variable on gender and session fixed effects. For each variable, the rows report the overall means of the amounts kept for self and the standard deviation. These are then broken down by matching treatment to give a sense of differences in behaviour in these tasks when subjects were matched with a stranger or with a household member.

In the public dictator game (*Public DG*), subjects on average keep just below half of the unearned endowment. The amount kept is higher when matched with strangers. Women keep more on average, and the difference between men and women is largest in the partner matching, due to men keeping on average less than 400 PKR. A similar overall allocation pattern can be observed in the private dictator game (*Private DG*). This gender difference in behaviour is consistent with results from similar lab-in-the-field experiments in the literature (Castilla, 2015; Hoel, 2015), where women are found to transfer less to their spouses than men.[19] In spite of these differences in amounts given across the two genders, the same share of men and women (22.8%) hide earnings, by keeping more in the private than in the public dictator game (*Hide*). It thus appears that women hide as much as men on the extensive margin, but less on the intensive one.

When the endowment is earned (*Earned DG*), the overall pattern is similar to that of the dictator game with unearned endowment: subjects keep on average about 50% of the endowment, more when matched with strangers and less when matched with household members. Here as well, women keep on average significantly more than men. Overall, subjects keep a larger share of earned than unearned endowments. On the extensive margin, the share of subjects who keep more on average when the endowment is earned than unearned (*Entitled*) is 29.4% overall. A larger share of men than women feel entitled to keep earned more than unearned endowment, although this difference is not statistically significant. We also observe higher entitlement over earnings in the household than stranger matching treatment for both men and women.

When the decision is that of taking part of the partner's earned endowment (*Earned TG*), subjects on average assign to themselves a smaller share than the one kept in the earned endowment dictator game, although not significantly so ($p = 0.1462$). As with dictator games, subjects take more from strangers ($p = 0.2601$), and women take significantly more than men ($p = 0.0000$). Women tend to take less than they keep with respect to men, although the difference between men and women is never statistically significant. Consistent with this, the share of subjects who take more than what they keep from themselves (*Low respect*), equal to 24.7% overall, is lower among women than men, especially in the household matching treatment.

Table 3 reports summary statistics for the other experimental tasks, namely the norms and

[19] In Castilla (2015), the amount sent to spouses in a trust game is found to be negatively correlated with women's control over household expenses and prior non-cooperative behaviour of husbands.

Table 2: Summary statistics of game behaviour

		Male		Female		Total		*p-value*
		Mean	Sd	Mean	Sd	Mean	Sd	
Public DG	*All*	433.0	(222.0)	543.4	(189.3)	488.2	(213.4)	0.000
	Stranger	474.8	(225.4)	580.2	(183.3)	527.5	(211.7)	0.000
	HH	392.6	(211.7)	508.1	(189.0)	450.4	(208.5)	0.000
Private DG	*All*	456.9	(223.9)	530.7	(191.2)	493.8	(211.3)	0.000
	Stranger	483.2	(226.7)	576.3	(190.5)	529.8	(214.1)	0.000
	HH	431.6	(219.0)	486.8	(182.1)	459.2	(202.9)	0.025
Earned DG	*All*	45.43	(17.40)	52.91	(10.32)	49.17	(14.77)	0.000
	Stranger	47.87	(16.36)	55.00	(10.43)	51.43	(14.15)	0.000
	HH	43.08	(18.11)	50.89	(9.819)	46.99	(15.05)	0.000
Earned TG	*All*	44.88	(16.07)	51.64	(12.14)	48.26	(14.63)	0.000
	Stranger	44.51	(15.20)	53.46	(10.75)	48.99	(13.89)	0.000
	HH	45.24	(16.92)	49.88	(13.14)	47.56	(15.30)	0.012
Hide	*All*	0.228	(0.421)	0.228	(0.421)	0.228	(0.420)	1.000
	Stranger	0.206	(0.406)	0.244	(0.431)	0.225	(0.419)	0.461
	HH	0.250	(0.435)	0.213	(0.411)	0.232	(0.423)	0.477
Entitled	*All*	0.322	(0.468)	0.266	(0.443)	0.294	(0.456)	0.155
	Stranger	0.305	(0.462)	0.267	(0.444)	0.286	(0.453)	0.496
	HH	0.338	(0.475)	0.265	(0.443)	0.301	(0.460)	0.188
Low respect	*All*	0.281	(0.450)	0.213	(0.411)	0.247	(0.432)	0.071
	Stranger	0.244	(0.431)	0.214	(0.412)	0.229	(0.421)	0.558
	HH	0.316	(0.467)	0.213	(0.411)	0.265	(0.442)	0.054

Note: *Stranger* refers to the sub-group paired with a stranger of the opposite gender. *HH* refers to the sub-group paired with the household member. All amounts refer to the amount that the participant keeps for self when allocating endowment or earnings. 'DG' are allocations in the dictator games. *Earned DG* is the share of own earnings allocated to self (over amount PKR 0 - 1000) on average in the dictator game, *Earned TG* is the share of partner's earning taken for self on average in the taking game. *Hide* is a dummy variable that is 1 if the participant keeps more for self in the private round than in the public rounds of the dictator game, and 0 otherwise; *Entitled* is the difference in the share of an endowment that participants allocate to self when the endowment has been earned by them and when it is a windfall; and finally, *Low respect* is a dummy variable that is 1 when the participant allocates more to self when taking from the partner's earning than when giving from own earning, and 0 otherwise.

Table 3: Summary statistics of risk and norms elicitation activities

	Male		Female		Total		*p-value*
	Mean	Sd	Mean	Sd	Mean	Sd	
Risk preferences	3.700	(1.312)	3.558	(1.346)	3.629	(1.330)	0.216
Perceived appropriateness when matched with:							
Household member	0.742	(0.439)	0.610	(0.489)	0.676	(0.468)	0.001
Stranger, same gender	0.745	(0.437)	0.622	(0.486)	0.684	(0.466)	0.002
Stranger, opposite gender	0.730	(0.445)	0.633	(0.483)	0.682	(0.466)	0.015
Observations	267		267		534		

Note: We code response as *appropriate* if the response is either 'Appropriate' or 'Very appropriate'.

risk elicitation. The risk elicitation activity was conducted without a partner and we find risk aversion is on average 3.63, on a scale from 1 to 6, where lower values denote higher aversion to risk. Men and women do not display significantly different risk preferences.

On average, 67.6% of subjects think that their household partner finds a woman taking economic decisions independently appropriate. This share is significantly larger among men than women (74.2 versus 61%), meaning that men are perceived to be more conservative by women.[20] A similar pattern can be observed for norms outside the household where women perceive strangers of either gender to be more conservative than the men do. Using an indicator of whether female agency is rated as socially appropriate, we find that both women and men perceive norms as more conservative outside than within the household ($p = 0.004$ and $p = 0.001$, respectively). This is consistent with findings from another study conducted in Pakistan, where women are shown to be less willing to exert agency when facing a male stranger than a household member, thus suggesting the existence of more binding social norms outside the household (Afzal et al., 2016). Overall, the discrepancy between average male and female responses suggests that there is little consensus on norms between men and women. Indoctrination would imply that social and household norms have been ingrained in women (and men) and are, therefore, similar. However, this does not seem to be the case here.

[20] We interpret answers to the norm elicitation questions as reflecting the beliefs subjects hold of their counterpart's normative views on what is socially appropriate or not. An alternative interpretation of these answers, as reflecting subjects' own normative judgement, relies on lack of understanding of the experimental instructions, which we don't believe took place in our study.

4.2 Correlates of hiding in the experiment

We begin by looking at our measure of hiding as laid out in Section 2. This means investigating how the amount kept for oneself differs if the allocation can be kept hidden from one's partner. Table 4 shows the results from linear regressions of *Hide* on a set of individual and household preference measures and their interaction with the matching treatment: the *Entitled* dummy; the index representing agency in the household; indicators for whether the woman thinks her household member and men in general find female agency appropriate; the partner's '*Low respect*' dummy; an indicator for whether the woman's relative perceives strangers as thinking that female agency is appropriate; and the woman's risk preferences.

We also use interactions of household matching dummy with these indicators of individual, household and social preferences. The underlying hypothesis is that variables that capture a woman's status within the household, such as her feeling of entitlement or her agency within the household, should matter only when the woman's partner is a household member. On the other hand, social norms should have influence on hiding when the woman is matched with a male stranger. Column 1 of Table 4 focuses on the individual and intra-household variables, column 2 on social norms, while column 3 pools all the independent variables together. Since these regressions involve multiple interaction terms, we address the issue of multiple comparisons by adjusting the p-values for the false discovery rate (Anderson, 2012), the outcome of this procedure are sharpened q-values, reported in brackets. All regressions control for individual characteristics - age, marital status, education, occupation and household assets- and include session fixed effects.

We find that feeling entitled to keep one's earnings increases the likelihood of hiding by 19.5 percentage points when matched with a stranger, while no other female characteristic, such as her level of agency or her risk preferences, nor her household member's view on female agency or tendency to take from her earnings, are significantly correlated with hiding in the stranger matching. The coefficients on the woman and her relative's perceptions of social norms are also statistically insignificant when the woman is matched with a stranger.

When matched with a household member, women who feel entitled to keep their earnings are more likely to hide by an additional 30.2 percentage points. This result suggests that the *entitled* dummy captures pent-up demand for agency on the part of women who feel they are entitled to it, and potentially express their resentment for not being granted control over their resources through their decisions in the experiments. Consistent with this, women who have more agency within the household hide significantly less when matched with a household member. Also in line with this story is the sign on the variable representing low respect by the partner: women whose relative shows low respect for their earned property within the lab-in-the-field experiments are also more likely to hide, although this result is statistically significant only when focusing on intra-household determinants of hiding (column 1). Social norms do not significantly affect behaviour in the household member matching treatment either (column 2).

Table 4: Regression of hiding on individual and social preferences and norms

	(1)	(2)	(3)
Dependent variable: Hide			
Dummy: partner is a household member	0.214	0.213	0.315
	(0.175)	(0.159)	(0.194)
Dummy: Entitled	0.195**		0.194**
	(0.0947)		(0.0953)
Agency in household (index)	0.0497		0.0479
	(0.0307)		(0.0307)
Dummy: household member thinks female agency is appropriate	-0.0582		-0.0453
	(0.0821)		(0.0897)
Dummy: Partner has low respect	-0.0670		-0.0629
	(0.0914)		(0.0900)
Preference for risk	0.0137		0.0141
	(0.0288)		(0.0293)
Dummy: Opp. gender stranger thinks female agency is appropriate		-0.0248	-0.0325
		(0.0879)	(0.0958)
Dummy: Partner thinks strangers find female agency is appropriate		0.0787	0.0402
		(0.0785)	(0.0768)
Dummy: Partner is a household member and participant feels entitled	0.302**		0.315**
	(0.125)		(0.125)
	[0.034]		[0.039]
Agency in household index and partner is a household member	-0.134***		-0.133***
	(0.0433)		(0.0436)
	[0.012]		[0.019]
Preference for risk and partner is a household member	-0.0564		-0.0593
	(0.0357)		(0.0362)
	[0.096]		[0.169]
Dummy: household member thinks female agency is appropriate and partner is a household member	0.0795		0.0918
	(0.101)		(0.114)
	[0.17]		[0.269]
Dummy: Partner has low respect and is a household member	0.206*		0.185
	(0.118)		(0.117)
	[0.09]		[0.169]
Dummy: Opp. gender stranger thinks female agency is appropriate and partner is a household member		-0.0514	-0.0257
		(0.113)	(0.120)
		[1]	[0.312]
Dummy: Partner thinks female agency is appropriate and is a household member		-0.119	-0.134
		(0.110)	(0.0958)
		[1]	[0.194]
Session F.Es.	Y	Y	Y
Observations	267	267	267
R^2	0.254	0.042	0.263

Note: All regressions include controls for age, marital status, education, occupation and household assets. Robust standard errors are in parentheses and sharpened q-values in square brackets for interaction terms only. $***p < 0.01, **p < 0.05, *p < 0.1$.

When we pool all independent variables together (in column 3), we still find that feeling of entitlement over earnings and agency within the household correlate with hiding at standard levels of statistical significance, when the woman's partner is a household member. This coefficient is still significantly different from zero when looking at FDR-adjusted q-values. These results are not driven by husband and wife pairs: regressions including only women matched with other male relatives show qualitatively the same patterns, although statistical significance is reduced due to the smaller sample size.[21] We find qualitatively similar results when we replace dummy variables for *hide* and *entitled* dummies with differences in allocations between private and public, and between earned and unearned dictator games.[22]

Overall, these results suggest that women who live in households where they are granted decision power and whose ownership of their earned resources is respected are less likely to hide resources from their partners. It is possible that experiences of the women and their households affect these measures of preferences and empowerment. We explore this possibility next.

4.3 Sources of empowerment and demand for agency

Does having access to finance, working outside the home or having to make decisions over one's own earnings and business affect a woman's empowerment and preferences? Since the decision to become an entrepreneur or to get a loan are endogenous to women's preferences and normative environment, we address this question by taking advantage of the fact that women in our sample were part of an RCT for micro-enterprise start-up.[23] Namely, we examine whether being randomly selected to receive a loan and business training influences a woman's decision autonomy within the household and her feeling of entitlement over her own earnings.

Recall that all the women in the sample applied to receive a loan and, as part of the application, submitted a proposal for a business start-up. Women who, on the basis of their proposals, were deemed eligible to get a loan, form our sample. Thus, for this self-selected sample of aspiring business entrepreneurs, we investigate the effect actually receiving the funding (and training) that they applied for has on women's empowerment. Of course, we do not know if women applied for a loan because of a genuine aspiration to start their own business, or because they were pushed by other household members, who would then use the funds for their own activities. The low share of business start-ups resulting from the

[21] Results available upon request.

[22] The main difference is in the effect of entitlement, which is not statistically significant in the household matching. The results are reported in Appendix Table A3.

[23] We also run random effects regressions of amount kept for self on indicators for private decision and earned endowment and heterogeneity by female occupation. Self-employed women hide lower amounts of resources in the lab experiments and keep for themselves more of an earned than of an unearned endowment, relative to housewives (see Appendix A Tables A4 and A5 for these results).

treatment suggests that some diversion of the funds is likely to have taken place. For this reason, we look at *intention-to-treat* (ITT) estimates in the present analysis.[24]

Table 5 shows these results. The dependent variable in column (1) is the *entitled* dummy, capturing feelings of ownership over one's earned income. The second dependent variable is the household agency dummy, which we interpret as indicator of decision power in the family (column (2)[25]. That is, we consider the effect of treatment on the two variables that we find to be significantly correlated with hiding in Table 4. Finally, to address the issue of multiple testing, we follow Anderson (2012) and construct an index of empowerment combining *entitled* and *agency in household*.[26] Regressions where the outcome was collected through behavioural experiments include session fixed effects, replaced by branch fixed effects when the outcome is constructed from survey questions.

Regression results show that, in general, average treatment effect (ATE) on empowerment is positive, which is statistically significant when we use agency in the household as a proxy: the index increases by almost 0.32, on a scale from -2.7 to 1.9. When looking at the aggregate weighted index of empowerment, the positive effect of having access to finance and training is confirmed (statistically significant at the 5% level). Overall, while the effects are limited and imprecisely measured, as one would expect from a treatment that consisted in three hours of training and a small loan, it is striking that these effects are positive and detectable one year after the treatment. Providing women with funding and training makes them more empowered within their household, by increasing their decision autonomy and work possibilities.[27]

For null results, given the sample size we cannot say whether there is no effect of treatment or that we are under-powered to detect them. In order to determine which are true null results and which potentially failed to reach significance, we compute the minimum detectable effect (MDE) size. This is the ex post effect size that would have been detected at 5 percent significance level and 80 percent power for our sample size (Duflo et al., 2008; Haushofer and Shapiro, 2016). We find that the null results for entitled (and for hiding in Table A8) are possibly because we are underpowered to detect an effect.

Next, we test whether these results are due to the experience of having successfully started a business one year after the treatment, by finding the local average treatment effect (LATE)

[24] Note that there was no difference in the household agency index at baseline between the treatment and the control group (p-value of 0.806) and the two groups were balanced across other characteristics as well (at 5% level of significance. See Appendix A Table A6).

[25] We also considered separately decision power related only to financial matters but found no significant difference between the two groups.

[26] Besides its robustness to over-testing, the index has other advantages. First, it provides a statistical test for whether the treatment has a general effect on a set of outcomes: in this case the two dependent variables capture different aspects of a woman's empowerment, defined as desiring and exercising agency. Second, the index may be more powerful than its individual components, reaching statistical significance where each single variable does not.These arguments are made extensively in Anderson (2012).

[27] These results are robust to replacing the index for female's agency in the household with the two variables composing it, decision autonomy and being allowed to work, as Appendix Table A7 shows.

Table 5: Effect of finance and business training on empowerment

Dependent variable:	(1) *Entitled*	(2) *Agency in* household (index)	(3) *Weighted index*
Dummy: ITT	0.0265	0.324**	0.256**
	(0.0540)	(0.128)	(0.123)
	[0.263]	[0.038]	[0.040]
Constant	0.429***	-1.091**	-0.416
	(0.165)	(0.427)	(0.363)
MDE	0.153	0.378	0.347
Session F.Es.	Y	N	Y
Branch F.Es.	N	Y	N
Observations	267	267	267
R^2	0.066	0.241	0.117

Note: The dependent variable in column (3) is a weighted index of the entitled and HH agency indicators, based on Anderson, 2012. ITT is a dummy equal to one if the respondent was part of the RCT treatment group. All regression include controls for age, marital status, indicator variables for whether the respondent was a housewife and literate, and an asset index. MDE is the ex post minimum detectable effect size at a significance level of 0.05 and power of 80 percent. Robust standard errors in parentheses and sharpened q values in square brackets. $***p < 0.01, **p < 0.05, *p < 0.1$.

on the entitled dummy, the household agency index and the index of empowerment constructed from them. The first stage shows that treatment increases the likelihood that a woman starts a business over the year, since she was deemed eligible to receive a loan, by 12 percentage points (F = 18.64). Qualitatively, the effect of having started a business, instrumented by treatment, is the same as that of treatment status in the reduced-form regression (Table 6).[28] However, only the effect on household agency is significantly different from zero. Taken together, the results seem to suggest that success in starting a business affects the ability of the treatment to influence female agency.

Table 6: IV regression of starting a business on empowerment

	(1)	(2)	(3)
Dependent variable	*Entitled*	*Agency in* household (index)	*Weighted index*
Dummy: Respondent starts a business	0.120	2.624*	1.851
	(0.459)	(1.396)	(1.207)
	[1]	[0.077]	[0.144]
Constant	0.411	-2.468**	-1.391
	(0.376)	(1.144)	(0.989)
First stage F-stat	18.64	18.64	18.64
Session F.Es.	Y	Y	Y
Observations	240	240	240
R^2	0.060	.	.

Note: The dependent variable in column 3 is a weighted index of the entitled and HH agency indicators, based on Anderson, 2012. Business is the instrumented value for effect of RCT treatment (getting a loan and training) on the likelihood of starting a business. All regressions include controls for age, marital status, indicator variables for whether the respondent was a housewife and literate, and an asset index. Robust standard errors in parentheses and sharpened q values in square brackets. $***p < 0.01, **p < 0.05, *p < 0.1$.

Note that the ATE and LATE on the individual proxies of empowerment in Table 5 and Table 6, respectively, is statistically significant only for measure of agency household constructed from survey answers, and not on the measure of entitlement generated in the laboratory. It is possible that the decision environment between the laboratory and the field make the link between the former and the latter less than direct. As List (2009) points out, the laboratory differs from the field in crucial dimensions - the size of the stakes, the time horizon, the available choices and the extent of scrutiny - that prevent generalizability from laboratory to field behaviour. Consistent with this, when we regress hiding on being treated in the RCT, as well as when we instrument the empowerment index with treatment and regress hiding on instrumented empowerment, we do not find any statistically significant

[28] The magnitude of all the coefficients on instrumented business activity are larger than those on the treatment dummy in the reduced-form regression.

effects (Table A8 in Appendix A shows the regression results).

The lack of overall significant effects of treatment on game behaviour may be also due to the difference that the treatment has on norms perceptions by men and women. Figure 1 shows these and the only difference that is marginally significant (p-value: 0.090) is for women's perception of household partner's norms on business investment. One explanation for this result is that women who receive funding and training actually experience situations where norms against female agency and enterprise play a role, for instance in influencing their ability to purchase supplies, rent a space for their business, or find customers. These real world experiences may negatively affect women's perceptions of norms on independent business decisions made by women.[29]

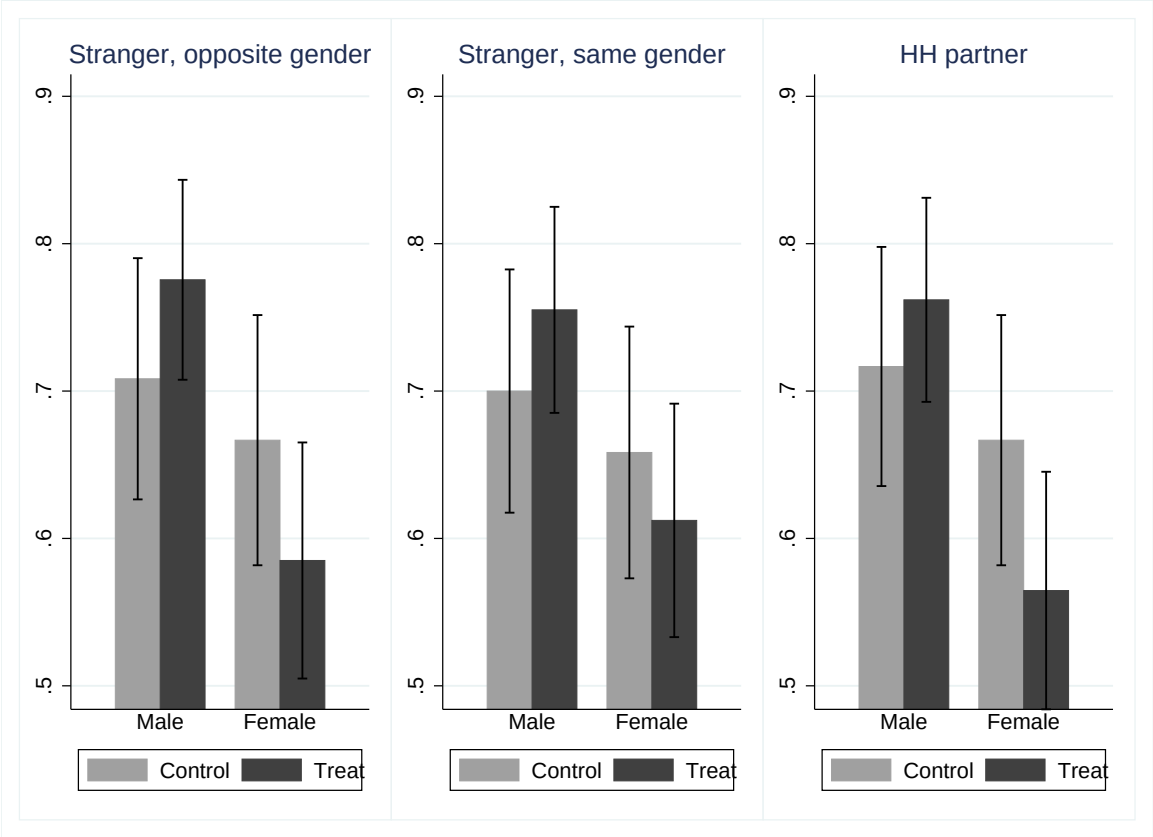
Overall, the results from the combination of laboratory and field evidence suggest that hiding income among women within the lab-in-the-field experiments is negatively correlated with measures of household members' norms and preferences, and female agency within the family. These preferences and norms are, in turn, positively influenced by women's access to finance and training to set up their own business. We show suggestive evidence that this effect may be driven by women who actually start a business as a result of the treatment. However, we don't find evidence of a direct link from the RCT treatment to hiding, and we observe heterogeneous effects of treatment on perceived norms on agency between men and women.

5 Conclusions

In this paper, we attempt to explicitly measure social and household norms that can affect the decisions women make about money, specifically the choice to hide money from their spouses or household members. We use a sample of women who participated in a microenterprise loan RCT in Punjab, Pakistan. We investigate the correlates of hiding within laboratory experiments, one year after the provision of the loan by conducting a standard dictator activity with public and private rounds; dictator and reverse-dictator (or taking) activities with earned endowments; a norms elicitation activity; and a risk preference elicitation activity. We test if hiding is correlated with women's feeling of entitlement over their own resources and decision autonomy within the household, with their spouses' tendency to appropriate their earned resources and perception of social norms on female agency outside the household, and with women's perceived social norms. Finally, we look at if these dimensions of empowerment are influenced by women's experiences, namely access to finance and training.

[29] We regress women's perception of spouse's norms on having started a business, instrumented by treatment, and find, as we did with in Table 6, that the magnitude of the effect is larger for treated women who started a business than for treated women in general, but we lose statistical significance. Results available upon request.

Figure 1: RCT treatment effect on the share of 'socially appropriate' answers, by gender and partner type



Note: *Stranger, opposite gender* refers to response that is matched to a stranger of the opposite gender; *Stranger, same gender* refers to response that is matched to that of a stranger of the same gender; and *HH partner* is response matched to that of the household member.

We find that hiding within laboratory experiments is positively correlated with women's sense of entitlement over their own earnings, a sign of pent-up demand for agency among women, and with their household members' lack of respect over their earned property; and negatively correlated with their agency within the household. On the other hand, there is no significant correlation with perceived norms of both women and their spouses. Women who were randomly selected to receive funding and training as part of the RCT, have more agency within the household one year later. This effect is likely to be driven by the actual experience of starting a business. A limitation of our findings is that given the small and heterogeneous sample, we do not find a significant effect of the RCT on our experiment measures. MDE size calculations show that the null effects we find may possibly be due to the study being underpowered to detect a significant effect. Finally, while the perception of how socially appropriate it is for women to exercise agency is improved among men, the opposite holds for women, suggesting that the actual experience of setting up a

business exposes women to, and thus makes them more aware of, norms unfavourable to their independent decision making. Given the small number of women within the treated group who set up a business, it may be worth exploring if in addition to the financial and business knowledge constraints that the present RCT targeted, these constraints also need to be addressed.

Our results are consistent with those of the literature on the effect of asymmetric information on intra-household decision making, showing how women's hiding behaviour is linked to decision making power within the household. We contribute to this literature by showing similar decision patterns using novel measures of female empowerment and social norms, and by showing how women's experiences shape empowerment.

The particular nature of our sample, made by women who self-selected into applying for a loan to start their own business, leaves open the question of how these results generalise to a more representative population of women. This is an interesting avenue for further research. However, our results are still pertinent to policy makers and microfinance institutions alike that, by virtue of their own agenda, often attempt to promote enterprise and empowerment amongst women through access to finance.

References

Abbink, K., Islam, A., and Nguyen, C. (2016). Whose voice matters? an experimental examination of women empowerment in microfinance. *GDRI Working Paper*.

Afzal, U., d'Adda, G., Fafchamps, M., and Said, F. (2016). Gender and agency within the household: Experimental evidence from pakistan. *CEPR Discussion Paper*.

Ali, P. A. and Gavino, M. I. B. (2008). Violence against women in Pakistan: A framework for analysis. *Journal of Pakistan Medical Association*, 54:198 – 203.

Anderson, M. L. (2012). Multiple inference and gender differences in the effects of early intervention: A reevaluation of the abecedarian, perry preschool, and early training projects. *Journal of the American statistical Association*.

Angelucci, M., Karlan, D., and Zinman, J. (2015). Microcredit impacts: Evidence from a randomized microcredit program placement experiment by Compartamos Banco. *American Economic Journal: Applied Economics*, 7(1):151–182.

Ashraf, N. (2009). Spousal control and intra-household decision making: An experimental study in the Philippines. *American Economic Review*, 99(4):1245–1277.

Attanasio, O., Augsburg, B., Haas, R. D., Fitzsimons, E., and Harmgart, H. (2015). The impacts of microfinance: Evidence from joint-liability lending in Mongolia. *American Economic Journal: Applied Economics*, 7(1):90–122.

Augsburg, B., Haas, D., R., H., H., and Meghir, C. (2015). The impacts of microcredit: Evidence from Bosnia and Herzegovina. *American Economic Journal: Applied Economics*, 7(1):183–202.

Banerjee, A., Duflo, E., Glennerster, R., and Kinnan, C. (2015). The miracle of microfinance? Evidence from a randomized evaluation. *American Economic Journal: Applied Economics*, 7(1):22–53.

Bari, F. and Pal, M. S. (2000). Women in Pakistan. Technical Report July, Asian Development Bank Programs Department and the Office of Envrionment and Social Development.

Barr, A., , and Genicot, G. (2008). Risk sharing, commitment, and information: An experimental analysis. *Journal of the European Economic Association*, 6(6):1151–1185.

Binswanger, H. P. (1980). Attitudes toward risk: Experimental measurement in rural India. *American Journal of Agricultural Economics*, 62(3):395–407.

Bloch, F. and Rao, V. (2002). Terror as a bargaining instrument: A case study of dowry violence in rural India. *American Economic Review*, 92:1029 – 1043.

Browing, M., Chiappori, P.-A., and Weiss, Y. (2014). *Economics of the Family*. Cambridge University Press.

Browning, M., Chiappori, P., and Lechene, V. (2006). Distributional effects in household models: Separate spheres and income pooling. *University of Oxford, Department of Economics Discussion Paper Series No. 293*.

Browning, M., Chiappori, P. A., and Lewbel, A. (2013). Estimating consumption economies of scale, adult equivalence scales, and household bargaining power. *Review of Economic Studies*, 80(4):1267–1303.

Bulte, E., Lensink, R., and Vu, N. (2016). Gender training and female empowerment: Experimental evidence from vietnam. *Economics Letters*.

Burns, J., Lucia, C., and Eliana, L. (2015). Interaction, prejudice and performance. evidence from south africa. *BREAD Working Paper*.

Cameron, L. and Shah, M. (2015). Risk-taking behavior in the wake of natural disasters. *Journal of Human Resources*, 50(2):484–515.

Castilla, C. (2014). *What's yours is mine, and what's mine is mine: Bargaining power and income concealing between spouses in India*. Unpublished Manuscript.

Castilla, C. (2015). Trust and reciprocity between spouses in india. *The American Economic Review*, 105(5):621–624.

Castilla, C. and Walker, T. (2013). Is ignorance bliss? Gender differences in the effect of asymmetric information on intrahousehold allocation. *American Economic Review: Papers and Proceedings*, 103(3):263–268.

Chen, J. J. (2012). Identifying non-cooperative behavior among spouses: Child outcomes in migrant-sending households. *Journal of Development Economics*, 100(1):1–18.

Chiappori, P. A. (1997). Introducing household production in collective models of labor supply. *Journal of Political Economy*, 105(1):191–209.

Crepon, B., Devoto, F., Duflo, E., and Parientè, W. (2015). Estimating the impact of microcredit on those who take it up: Evidence from a randomized experiment in morocco. *American Economic Journal: Applied Economics*, 7(1):123–150.

de Mel, S., M., D., and Woodruff, C. (2009). Are women more credit constrained? Experimental evidence on gender and microenterprise returns. *American Economic Journal: Applied Economics*, 1(3):1–32.

de Mel, S., M., D., and Woodruff, C. (2012). One-time transfers of cash or capital have long-lasting effects on microenterprises in Sri Lanka. *Science*, 335:962–966.

Dercon, S. and Krishnan, P. (2000). In sickness and in health...risk-sharing within households in rural Ethiopia. *Journal of Political Economy*, 108(4):688–727.

Duflo, E., Glennerster, R., and Kremer, M. (2008). *Using Randomization in Development Economics Research: A Toolkit*, volume 4. North Holland, Amsterdam and New York. This file is the version posted by the Centre for Economic Policy Research, CEPR Discussion Papers: 6059, 2007.

Fahr, R. and Irlenbusch, B. (2000). Fairness as a constraint on trust in reciprocity: Earned property rights in a reciprocal exchange experiment. *Economic Letters*, 66(3):275 – 282.

Fisman, R., Jakiela, P., and Kariv, S. (2015). How did distributional preferences change during the great recession? *Journal of Public Economics*, 128:84–95.

Garikipati, S. (2013). Microcredit and women's empowerment: Have we been looking at the wrong indicators? *Oxford Development Studies*, 41(sup1):S53–S75.

Ginè, X., Bank, W., Mansuri, G., and Jel, C. (2011). *Money or IdeasâĂŕ? A Field Experiment on Constraints to Entrepreneurship in Rural Pakistan*. The World Bank Policy Research Working Paper Series, (September).

Goldstein, M. and Udry, C. (1999). *Gender and land resource management in southern Ghana*. University of California.

Haushofer, J. and Shapiro, J. (2016). The short-term impact of unconditional cash transfers to the poor: Experimental evidence from Kenya. *The Quarterly Journal of Economics*, 131(4):1973–2042.

Hoel, J. B. (2015). Heterogeneous households: A within-subject test of asymmetric information between spouses in Kenya. *Journal of Economic Behavior and Organization*, 118:123–135.

Jakiela, P. (2015). How fair shares compare: Experimental evidence from two cultures. *Journal of Economic Behavior and Organisation*, 118(October):40–54.

Jakiela, P. and Ozier, O. (2016). Does Africa need a rotten kin theorem? experimental evidence from village economies. *The Review of Economic Studies*.

Kazianga, H. and Wahhaj, Z. (2015). Norms of allocation within nuclear and extended family households. *2015 AAEA and WAEA Joint Annual Meeting, Paper No. 205534*.

Kebede, B., Tarazona, M., Munro, A., and Verschoor, A. (2013). Intra-household efficiency: An experimental study from ethiopia. *Journal of African Economies*, page ejt019.

Krupka, E. L. and Weber, R. A. (2013). Identifying social norms using coordination games: Why does dictator game sharing vary? *Journal of the European Economic Association*, 11:495 – 524.

List, J. A. (2007). On the interpretation of giving in dictator games. *Journal of Political Economy*, 115:482–493.

List, J. A. (2009). Social preferences: Some thoughts from the field. *Annu. Rev. Econ.*, 1(1):563–579.

Memon, A. S., Naz, S., Abass, H., Zahid, J., Tabbasum, R., and Zeshan, M. (2014). Alif Ailaan Pakistan District Education Rankings. Technical report, Alif Ailaan in collaboration with Social Development Policy Institute.

Munro, A., Bateman, I. J., and McNally, T. (2008). The family under the microscope: An experiment testing economic models of household choice. *MPRA Paper No. 8974*.

Munro, A., Kebede, B., Tarazona-Gomez, M., and Verschoor, A. (2014). Autonomy and efficiency. an experiment on household decisions in two regions of india. *Journal of the Japanese and International Economies*, 33:114–133.

Popov, D., McNally, T., and Munro, A. (2008). Taking it in turn: An experimental test of theories of the household. *Available at SSRN 1125264*.

Rabbani, F., Qureshi, F., and Rizvi, N. (2008). Perspectives on domestic violence: Case study from Karachi, Pakistan. *East Mediterranean Health Journal*, 14:415 – 426.

Tarozzi, A., Desai, J., and Johnson, K. (2015). The impacts of microcredit: Evidence from Ethiopia. *American Economic Journal: Applied Economics*, 7(1):54–89.

Udry, C. (1996). Gender, agricultural production, and the theory of the household. *Journal of Political Economy*, 104(5):1010–1046.

Zaman, R. M., Stewart, S. M., and Zaman, T. R. (2006). Pakistan: culture, community, and familial obligations in a Muslim society. In Georgas, J., Berry, J. W., De Vijver, F. R. V., Kagitcibasi, C., and Poortinga, Y. H., editors, *Families a cross cultures: A 30 nation psychological study*, pages 427–434. Cambridge University Press, Cambridge.

Appendix A Tables

Table A1 provides a list of the options provided in the risk elicitation task.

Table A1: Options provided to participants in the risk aversion elicitation experiment

Choice	Low (PKR)	High (PKR)	Expected value	Deviation	CRRA
1	250	250	250	0	(7.51, ∞)
2	225	475	350	50	(1.74, 7.51)
3	200	600	400	80	(0.81, 1.74)
4	150	750	450	120	(0.32, 0.81)
5	50	950	500	180	(0, 0.32)
6	0	1000	500	200	(- ∞, 0)

Table A2 provides sample statistics for the RCT and experiment samples. Since RCT participants were randomly invited to participate in the lab-in-the-field experiments, the two samples are well-balances on key observables. On average, RCT and experiment participants are 37 years old. Almost 87% are married and about have are literate (can read or write). Almost one - third of the RCT sample was self-employed at the time of the endline survey, a large proportion were housewives. There was a slightly larger, yet not statistically different, proportion of women who were self-employed in the experiment sample. Correspondingly, a lower proportion of experiment participants were housewives. The two sample are also statistically similar on average empowerment levels as measured by the endline survey.

Table A2: Descriptive statistics of the RCT and experiment samples (females only)

	RCT		Experiment		p-value
	Mean	Sd	Mean	Sd	
Age	37.076	(9.071)	37.202	(9.328)	0.849
Married	0.871	(0.336)	0.865	(0.342)	0.816
Education					
Illiterate	0.456	(0.498)	0.513	(0.501)	0.111
Primary	0.235	(0.424)	0.210	(0.408)	0.402
More than primary	0.221	(0.415)	0.210	(0.408)	0.715
Occupation					
Housewife	0.525	(0.499)	0.479	(0.501)	0.202
Self-employed	0.319	(0.467)	0.356	(0.480)	0.281
Laborer	0.084	(0.278)	0.0974	(0.297)	0.518
Empowerment					
Decide alone	5.16	(3.017)	4.85	(3.042)	0.150
Not allowed work	.161	(.368)	0.165	(0.372)	0.890
Observations	689		267		

Table A3 shows the regressions in Table 4, with the dummy variables for hide and entitled replaced with differences in allocations between private and public, and between earned and unearned dictator games, respectively. The main difference is in the effect of entitlement (represented here by *Allocation to self in earned DG - unearned DG*), which is not statistically significant in the household matching (*Allocation to self in earned DG - unearned and partner is a household member*). Other results are qualitatively and quantitatively similar to those represented in the regressions in Table 4.

Table A3: Regression of amount hidden on individual and social preferences and norms

	(1)	(2)	(3)
Dependent variable: Difference in allocation to self in private DG - public DG			
Dummy: Partner is a household member	127.2*	117.2	117.2
	(72.10)	(72.38)	(72.38)
Allocation to self in earned DG - unearned DG	0.282***	0.283***	0.283***
	(0.0843)	(0.0841)	(0.0841)
Agency in household (index)	9.714	10.75	10.75
	(11.50)	(11.76)	(11.76)
Dummy: household member thinks female agency is appropriate	-29.21	-20.95	-20.95
	(27.18)	(31.51)	(31.51)
Dummy: Partner takes more than he gives	-0.612	-0.724	-0.724
	(0.765)	(0.724)	(0.724)
Dummy: Opp. gender stranger thinks female agency is appropriate		-23.85	-23.85
		(30.69)	(30.69)
Dummy: Partner thinks strangers find female agency appropriate		-19.16	-19.16
		(27.43)	(27.43)
Preference for risk	-0.448	-0.703	-0.703
	(9.346)	(9.276)	(9.276)
Dummy: Allocation to self in earned DG - unearned *and* partner is a household member	0.00439	0.00750	0.00750
	(0.119)	(0.120)	(0.120)
Dummy: Agency in household (index) and partner is a household member	-38.28**	-39.71**	-39.71**
	(15.06)	(15.34)	(15.34)
Dummy: Preference for risk and partner is a household member	-15.03	-15.74	-15.74
	(13.68)	(13.64)	(13.64)
Dummy: Household member thinks female agency is appropriate and partner is household member	57.41	35.05	35.05
	(40.57)	(52.40)	(52.40)
Dummy: Partner takes more than he gives and partner is a household member	0.395	0.526	0.526
	(1.274)	(1.268)	(1.268)
Dummy: Opp. gender stranger thinks female agency is appropriate and partner is a household member		43.01	43.01
		(47.94)	(47.94)
Dummy: Partner thinks female agency is appropriate and is a household member		-1.921	-1.921
		(36.48)	(36.48)
Session F.Es.	Y	Y	Y
Observations	267	267	267
R^2	0.273	0.279	0.279

Note: All regressions include controls for age, marital status, education, occupation and household assets. Robust standard errors are in parentheses and sharpened q-values in square brackets for interaction terms only. $***p < 0.01, **p < 0.05, *p < 0.1$.

Table A4: Participant response to public and private treatments of the dictator activity

	Overall	Women	Women, paired w/ hh member		Men, paired w/	
			(Housewives)	(Self-employed)	Paired w/ houswife	(Paired w/) (self employed)
	(1)	(2)	(3)	(4)	(5)	(6)
Private	5.618	-12.734	-42.187**	-4.167	65.625***	31.250
round	(7.187)	(10.972)	(17.445)	(18.472)	(21.967)	(31.833)
Constant	488.202***	543.446***	521.875***	472.917***	371.875***	402.083***
	(11.413)	(17.320)	(20.435)	(22.881)	(29.060)	(40.581)
Obs	1068	534	128	96	128	96

Columns (3) - (6) are regressions for participants paired with household members .
Standard errors in parenthesis. $***p < 0.01, **p < 0.05, *p < 0.1$.

Table A5 shows if allocations made to self out of windfall are different from those made out of earnings. We find that self employed women paired with their household members (column 4) and men whose wives are housewives (column 5) tend to keep more of the money they have earned than they do of money that is a windfall. Similarly men who are typically the earners in the housewife pairing tend to keep a greater share of their activity earnings for themselves. Other groups do not exhibit this sense of greater entitlement over earnings.

Table A5: Participant response to earned and unearned endowments in dictator activity

	Overall	Women	Women, paired w/ hh member		Men, paired w/	
			(Housewives)	(Self-employed)	Paired w/ houswife	(Paired w/) (self employed)
	(1)	(2)	(3)	(4)	(5)	(6)
Earned	15.768	2.247	10.156	43.750*	58.594**	44.167
endowment	(11.809)	(16.668)	(29.944)	(24.172)	(24.121)	(43.132)
Constant	488.202***	543.446***	521.875***	472.917***	371.875***	402.083***
	(11.413)	(17.320)	(20.435)	(22.881)	(29.060)	(40.581)
Obs	1068	534	128	96	128	96

Columns (3) - (6) are regressions for participants paired with household members
Standard errors in parenthesis. $***p < 0.01, **p < 0.05, *p < 0.1$.

The control and treatment groups are balanced on key, observable characteristics such as age, literacy, marital status and measures of empowerment. A little under third of the sample were housewives at the time of the baseline and about 10% were daily labourers. 27% of the control group had an existing business (and classified themselves as self-employed) compared to 18% of the treated group that was provided the enterprise loan. This difference is significant at the 10% level.

Table A6: Descriptive statistics of RCT treated and control groups at baseline (females only)

	Treated		Control		Total		p-value
	Mean	Sd	Mean	Sd	Mean	Sd	
Age	36.685	(10.135)	38.172	(10.072)	37.351	(10.114)	0.240
Married	0.878	(0.329)	0.858	(0.350)	0.869	(0.338)	0.645
Education							
Illiterate	0.483	(0.501)	0.525	(0.501)	0.501	(0.501)	0.497
Primary	0.231	(0.423)	0.225	(0.419)	0.228	(0.421)	0.904
More than primary	0.197	(0.399)	0.167	(0.374)	0.184	(0.388)	0.522
Occupation							
Housewife	0.252	(0.435)	0.283	(0.452)	0.266	(0.443)	0.562
Self-employed	0.177	(0.382)	0.267	(0.444)	0.217	(0.413)	0.072*
Labourer	0.115	(0.321)	0.092	(0.290)	0.105	(0.307)	0.527
Empowerment							
Decide alone	0.293	(1.351)	0.292	(1.33)	0.292	(1.34)	0.996
Not allowed work	0.007	(0.082)	0.017	(0.129)	0.011	(0.106)	0.449
Observations	147		120		267		

Being exposed to the treatment has a positive effect on empowerment. Table A7 shows that the treatment product improves the female role in household decision making positively and decreases the likelihood of her now being allowed to work by the household members - both of these effects are significant. Women feel more entitled as well, however, this result is insignificant. Providing women with funding and training makes them more empowered within their household - these results are confirmed when we use a weighted index.

Table A7: Effect of finance and business training on empowerment (replacing agency index with its components)

	(1)	(2)	(3)	(4)
Dependent variable	*Entitled*	*HH decide*	*Not allowed work*	*Weighted index*
Dummy: ITT	0.0265	0.593*	-0.0979**	0.280**
	(0.054)	(0.327)	(0.046)	(0.124)
Constant	0.429***	1.218	0.294**	-0.526
	(0.165)	(1.291)	(0.132)	(0.367)
Session F.Es.	Y	N	N	Y
Branch F.Es. N	Y	Y	N	
Observations	267	267	267	267
R^2	0.066	0.328	0.173	0.122

Note: The dependent variable in column 1 'entitled' is a dummy capturing feelings of ownership over one's earned income, in column 2 the dependent variable is the number of household decisions the woman can make on her own (ranges from 0 to 9), in column 3 dependent variable is a dummy equal to one if woman is allowed to work outside the house and in column 4 the dependent variable is a weighted index of these two (based on Anderson ,2012). ITT is a dummy equal to one if the respondent was part of the treatment group and 0 if in the control group. All regression include controls for age, marital status, if the woman is a housewife, whether literate, asset index. Robust standard errors in parenthesis. $***p < 0.01, **p < 0.05, *p < 0.1$.

Table A8 shows the regression of hiding on being treated in the RCT, as well as when we instrument the empowerment index with treatment and regress hiding on instrumented empowerment. We do not find any statistically significant effects in eithe regression. This is consistent with the results discussed in section 4.3 where the effects of the RCT and instrumented business variables are statistically significant only for survey measures, not experiment measures such as 'entitled' or 'hide'.

Table A8: Effect of RCT treatment and instrumented empowerment on hiding

	(1)	(2)
Dependent variable: Hide		
Dummy: ITT	0.039	
	(0.054)	
Weighted index		0.150
		(0.200)
Constant	0.293*	0.356**
	(0.151)	(0.144)
MDE	0.146	
Session F.Es.	Y	Y
Observations	267	267
R^2	0.035	0.071

Note: The dependent variable is hide which is a dummy equal to one when the respondent keeps more for self in the private round as compared to the public round and zero otherwise. ITT is a dummy equal to one if the respondent was part of the treatment group and 0 if in the control group. Weighted index is the instrumented value for effect of getting the treatment (getting a loan) on empowerment index. MDE is the ex post minimum detectable effect size at a significance level of 0.05 and power of 80 percent. All regression include controls for age, marital status, if the woman is a housewife, whether literate, asset index. Robust standard errors in parenthesis. $***p < 0.01, **p < 0.05, *p < 0.1$

Appendix B Experiment timeline

Two sessions were conducted in each of the 13 branches for a total of 26 sessions between August and September 2015. Both sessions in one branch area were held on the same day to minimize chances of information spill-over between participants.[30] Each session was held in a central location close to the local branch and to the residences of the participants. Given the location of Kashf branches, this could mean a distance of 10 to 15 km between participant residence and the site of experiments.The participation fee was set to be more than sufficient to cover transport costs by any means whether public or privately hired.

Participation was capped at a maximum of 12 couples per session to ensure that the logistics of each session were easily managed. In case more than 12 couples were present for a session, a ballot was conducted to select the 12 couples who would participate; others were asked to leave and paid the participation fee as promised.

The sequence of events during experiment sessions is as follows:

1. Upon arrival, subject pairs are seated in the main hall for the start of general instructions. At this point they are informed that they will be paid participation fee plus their earnings from the activities at the end of the session.
2. In case more than 12 pairs show up for the session, a ballot would be conducted to choose 12 pairs. 70.4% of the participants attended the sessions with their husband and 29.5% of the respondents attended with other male members of the household (son, father, brother, etc.)
3. Once 12 pairs have been selected to participate in the session, each pair would retrive a token from an opaque bag that would be their session ID. Tokens 1-6 were red in color; 7-12 were blue (the purpose of this coloring was explained later).
4. Subject pairs were then taken to their respective rooms, men in one room and women in another. No contact is allowed between subjects of opposite genders during the entire experiment. Activities are conducted simultaneously in both rooms.
5. Subjects of the same gender are seated in sequence of their ID tags. There are two rows of chairs spaced apart. Contact between subjects in the same room is strongly discouraged. To help logistics and data entry, participants with ID 1 - 6 are seated on one side, while 7 - 12 are seated on the other.
6. 2 enumerators were solely responsible for entering participant decisions; one for each room. Data was entered on excel sheets designed by the research team and was done

[30] In each branch area, surveys were conducted during the week, with experiment sessions conducted only on Sundays. All sessions were held on a Sunday so that working participants, particularly the men, were able to easily attend. Further, separate sessions were held for control and treatment participants of the RCT to minimise the likelihood of participants of the two sessions communicating with each other. Morning and afternoon sessions were randomly allocated to control or treatment clients to avoid any time-of-the-day effects biasing results.

immediately upon the completion of an activity/round in each room.

7. The norms game is always played last. Dictator with public and private round (D), taking and dictator with earned endowments (TD) and risk (R) activities are played in random order, set beforehand by researchers. In addition, rounds of each activity (other than risk, which had just one round) were also played in random order. The order of play is shown in Table B1:

Table B1: Activity order

Game Order	Session No.
D-R-TD	11, 13, 14, 16, 25
D-TD-R	3, 9, 10, 17
R-D-TD	2, 6, 12, 26
R-TD-D	4, 5, 8, 15, 20
TD-D-R	1, 7, 22, 24
TD-R-D	18, 19, 21, 23

8. The first three activities are played. For dictator and taking activities (D and TD), each subject pair is randomly assigned to stranger and household member/spouse pairing. Earlier, individuals picked out their pair ID out of an opaque bag. Pairs with a red tag (tag ID 1 - 6), were partnered with their household member and those with blue tags were paired with strangers (of the opposite gender). Each pairing is done without replacement, which means all participants in the stranger pairing were paired with one partner only. 51% of the participants were paired with family member and 49.% are paired with a stranger.

9. The norms activity was always played last. Participants were asked to deem the appropriatness of a decision made by a woman in a hyothetical situation and earned money if their answer matched that of their partner in that round, where the pairing in each round was different. Three rounds were played. Individuals were paired once with household members, once with stranger of the opposite gender and once with stranger of the same gender. The order in which this pairing was done was randomly pre-set by the researchers and is shown in Table B2:

Table B2: Order of norms question pairing

Answers Matched to:	Session No.
Stranger (opposite gender), Stranger (same gender), Household member	1, 10, 11, 14, 17, 22
Stranger (same gender), Household member, Stranger (opposite gender)	13, 15, 24
Household member, Stranger (opposite gender), Stranger (same gender)	3, 6, 7, 23, 26
Stranger (opposite gender), Household member, Stranger (same gender)	4, 5, 8, 12, 19
Stranger (same gender), Stranger (opposite gender), Household member	2, 21, 25
Household member, Stranger (same gender), Stranger (opposite gender)	9, 16, 18, 20

10. At the end of the session, in each room, the enumerator would invite one participant to pick a number from 1 - 4 from an opaque bag. The number drawn out would determine which activity of the day was picked for payment. Then, for activities with multiple round, another ballot would determine the round, and then which room's decision (e.g. self or partner's allocations in the dictator and taking games) would be implemented for payment.
11. A short questionnaire was administered to the male participants.
12. Show-up fee + pay off from randomly selected activity was paid to each participant, independently and privately. Participants were not informed what their partners or members of household have earned.

Appendix C Survey questions to measure empowerment

The variable '*Decide alone*' is constructed using the response to the following survey question: Who in your household usually makes decisions about the following?

1. Clothing and footwear
2. Medical treatment
3. Recreation and travel
4. Visit friends in the neighbourhood
5. Make small purchases for yourself (e.g. clothes)
6. Make small purchases for others in the household (e.g. kitchen utensils)
7. Join a credit group/committee
8. Invest surplus money
9. Your marriage
10. Loan from an organisation

- Each item above is coded as 1 if the woman reports deciding alone and 0 otherwise and then added to form an equal weighted index.

The variable '*Not allowed work*' is constructed using the response to the following survey question: Why are you not actively seeking paid work?

- '*Not allowed work*' takes on the value 1 if the woman reported not being allowed by husband or father; and 0 otherwise, in response to the following question: