

Mine, Yours or Ours? The Efficiency of Household Investment Decisions: An Experimental Approach

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Abstract

This article sheds light on the impact on household investment efficiency of a social norm that a man should not earn less than his wife. The experiment distinguishes this impact from that of spouses' desire for control over household resources. Both husbands and wives are found to sacrifice household income (efficiency) for greater control; but, consistent with this social norm, husbands alone behave inefficiently if assigned a *smaller* income share than their spouse. The evidence suggests *spiteful* behavior among such husbands: they are willing to undercut their own income to narrow the gap with their wives' earnings. The magnitude of husbands' inefficiency influenced by this social norm is comparable to that when husbands have the least control over household earnings. These results, taken together with evidence from developed countries, show that this social norm has a persistent effect on household efficiency, distinct from spouses' economic concerns.

JEL classification: D1, O1

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1. Introduction

Household decisions routinely involve allocating resources among members with diverse preferences. Economists have long been interested in how household members' preferences are weighted (i.e., their bargaining power) in this process and whether the outcomes achieved are efficient. There is by now a considerable body of work on this issue, with a focus on how *economic* drivers of spouses' bargaining power (such as their incomes, transfers, and marriage market options) affect household resource allocation.¹

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- 1 See [Chiappori and Donni \(2009\)](#) and [Fiala and He \(2017\)](#) for recent overviews of this literature. There is no clear consensus on how these economic drivers of spouses' bargaining power affect efficiency: [Chiappori and Donni \(2009\)](#) notes that the empirical literature focused on static decisions finds evidence supporting efficiency, while that focused

But the family is not just an economic entity; it is as much a *social* one. Traditionally, social norms have scripted roles such as the “provider” (for a man) and the “homemaker” (for a woman) in most societies. Spouses’ bargaining power, and hence household efficiency, is plausibly influenced by such other factors too, which are not economic or market-based. The present study takes this broader view of the household as a social as well as an economic unit, and examines the independent influence of each type of factor on the efficiency of household decisions.

The repeated nature of family interactions gives rise to multiple equilibria, not all of which need be efficient. As with Tolstoy’s famous observation about unhappy families, each inefficient household could be inefficient in its own way. Social norms could set the threat points that affect which one of these equilibria is selected (Lundberg and Pollak 1993, 1994); they can therefore shape the choices that couples make—be it about individual occupations, raising children, or the division of chores. Gender norms may even affect the issues that are regarded as appropriate for family members to bargain over.² The norm that this article focuses on is one that is widely prevalent across many societies: the norm that “a man should not earn less than his wife.”³

It can be tricky to separate the effects of social norms from those of spouses’ economic concerns about income control on intra-household decision-making efficiency. After all, the decision of whom to marry is itself likely to be jointly influenced by both sets of factors; this holds true for other decisions that precede marriage as well. This article therefore adopts an experimental approach to elucidate the effects of these two sets of factors within a simple, unified design framework.

Spouses are asked to make individual investment decisions, one each under four different experimental conditions that varied their personal control over the household income realized. The efficiency of a spouse’s decision is measured by whether it maximizes the household’s investment income. In one of these four income-control conditions, spouses are assigned control over a *fixed* share of household investment income, irrespective of their individual investment decisions. By design, this condition rules out spouses’ motivation to invest inefficiently in order to have greater control over household income. Variation in the fixed shares of husbands and wives within this condition is used to study the efficiency effect of the social norm that a man should not earn less than his wife. The other three conditions create varying degrees of a trade-off between maximizing household income and maximizing an individual spouse’s control over this income. All investment decisions are made under one of three different information conditions that varied *across* participants in what their spouses would be told *ex post*.

The study has three key findings that contribute to the literature on household decision-making. First, it finds experimental evidence of an extreme form of noncooperation and inefficiency within the household that could reasonably be interpreted as *spiteful* behavior: husbands with a smaller fixed share of household income are willing to undercut their own income only to ensure that their wives do not earn too much more than themselves. While some experimental evidence of spite does exist, there does not appear to be any documented evidence of it within a household context.⁴ Second, the

on inter-temporal decisions rejects efficiency. It is plausible to argue that decisions of the latter type should have a longer-term impact on household outcomes.

- 2 For instance, in her book about women’s property rights in India, Agarwal (1997) describes how it would be perceived as “unseemly” for women in South Asia to lay a claim to the land of their birth family, legal provisions notwithstanding.
- 3 The World Development Report (2012) on gender equality cites findings from surveys in 19 developing countries; it finds that “a wife with a higher income was generally seen as a threat to male status rather than a boost to the household economy” (page 171).
- 4 In a series of experiments conducted in Uttar Pradesh in North India, Fehr, Hoff, and Kshetramade (2008) and Brooks, Hoff, and Pandey (2018) found that a much greater proportion of high-caste men than low-caste men had spiteful preferences. One experiment involved binary-choice dictator games, such as a choice between option A—a higher payment for an anonymous recipient than the dictator—and option B—equal payment for both participants. The authors

data strongly suggest that this spiteful, inefficient behavior is driven by the social norm that a man should not earn less than his wife. In the data, a wife's share has a significant negative effect on her husband's investment efficiency *only when it strictly exceeds his share*—and not otherwise. Third, the results confirm that strategic economic concerns about control over household resources matter: *both* spouses' decisions are more inefficient the greater the control their partner has over investment income.⁵

Such self-destructive and spiteful behavior of husbands seems at odds with standard preferences represented in household models. What fits these findings best is the [Akerlof and Kranton \(2000\)](#) model of identity-based preferences shaped by gender norms, including one that a man must not earn less than his wife.⁶ Other recent articles in the household literature find similar evidence of investment inefficiency driven by spouses' desire for control over household resources—for example, [Iversen et al. \(2011\)](#) and [Schaner \(2012\)](#), in the latter case induced by spouses' having different inter-temporal preferences. What distinguishes the present study is the finding of inefficiency even when there is no gain in the size or share of family income under a spouse's control. In the context of consumption decisions, [Dasgupta and Mani \(2015\)](#) report that social norms about spouses' contribution to joint household goods influence men to allocate less of their earned income to such goods than their wives.

It is striking that social norms about men's earnings lead to household inefficiency in situations with relatively low (experimental) stakes, but the available evidence points to adverse effects on household efficiency in much richer developed countries too. Based on nationally representative panel data from the United States over the period 1990–2004, [Bertrand, Kamenica, and Pan \(2015\)](#) documented a greater incidence of domestic discord and divorce exactly when a woman's earnings share exceeds her male partner's. They also find that women who earn more spend *more* time on household chores than their husbands, while women with higher earnings potential than their partners take lower-paying jobs. In fact, women were less likely to be paired with men having lower income in the first place. Consistent with this pattern, [Fisman et al. \(2006\)](#) found that in a dating context, men value women's intelligence and ambition *if and only if* these qualities do not exceed their own.

Overall, the body of available evidence points to an efficiency impact of the social norm that a man must not earn less than his wife which is pervasive and perhaps even lexicographically dominant across stages of economic development. Understanding the stubborn persistence of certain social norms, as examined in this article, is important for the formulation of effective policies to address the challenges relating to female labor force participation, the gender pay gap, sexual harassment, and the proverbial glass ceiling.

Section 2 describes the experimental design and rationale and provides details of the setting. Section 3 presents the experimental findings and considers alternative explanations for them. Section 4 discusses the broader implications of the results and concludes the article.

found that high-caste players valued the anonymous recipient's higher payoff negatively, while the low-caste players do not. Another experiment involved a repeated coordination game of common interest. The central result was that after suffering a loss from a coordination failure, a high-caste player generally tried to punish his partner by taking the noncooperative action in the next period, but the low-caste player did not behave in this way. As a result, most pairs of low-caste men quickly established the efficient and cooperative convention, while most pairs of high-caste men did not.

- 5 This latter finding is consistent with empirical evidence on inefficient allocation of resources across plots controlled by men versus women in Burkina Faso, documented in the classic work of [Udry \(1996\)](#). In terms of relative magnitudes in this article's experiment, the inefficiency of husbands with a smaller fixed share than their wife is similar to that when husbands are required to cede all control over household income to their wife.
- 6 As these authors note (on page 717): "identity can explain behavior that appears detrimental. People behave in ways that would be considered maladaptive or even self-destructive by those with other identities. The reason for this behavior may be to bolster a sense of self or to salve a diminished self-image."

Table 1. Income-Control Conditions

Seed money for investment = 50 rupee, Decision-maker (DM) chooses investment in Blue (B) and Red ($50 - B$) options

DM's control over household income	DM's payoff (always received in his/her private account)	Spouse's payoff	Spouse's payoff received in
(1) Fixed share $s(0.3 \leq s \leq 0.7)$	$s(2B + 1.5(50 - B))$	$(1 - s)(2B + 1.5(50 - B))$	Private account
(2) Low	$1.5(50 - B)$	$2B$	Private account
(3) Medium	$1.5(50 - B)$	$2B$	Cash
(4) High	$1.5(50 - B)$	$2B$	Joint account with DM

Source: Author's own experimental design.
Note: There are two investment options, “Blue” and “Red,” the first with a 100 percent return and the second with a 50 percent return. In the fixed-shares condition, the DM receives his/her assigned share of total returns from both the Blue and the Red options. In the low-, medium-, and high-control cases, the DM receives all payoffs from the Red option and his/her spouse receives all payoffs from the Blue option, with the higher rate of return. There is no uncertainty in the rate of return on investment. All income-control conditions are within-subject. DMs were placed in one of three mutually exclusive information environments for all their decisions; see table 2 for details on these.

2. Experiment Details: Design and Setting

Experimental Design

The study aimed to examine two key drivers of household decision-making efficiency based on spouses’ investment decisions: social norms about the relative earnings of husband and wife, and spouses’ desire for personal control over household income. The design varied some conditions within participants and one condition across participants. Each participant faced a sequence of decisions, one each under four experimental conditions that varied spouses’ control over household income realized from their investment decisions. These decisions were made under one of three separate information conditions that varied across participants.

The investment decision a participant faced under each of the four income-control conditions was always the same: how to allocate 50 rupees between two options, labeled Red and Blue, with returns of 50 percent and 100 percent, respectively.

Table 1, column (1), shows how a spouse’s control over the income realized varied across these four conditions. In the baseline “fixed shares” condition, the decision-maker received a fixed share s of the family’s total investment income from Red and Blue combined; the decision-maker’s spouse received the rest (a share of $1 - s$). Payments were made into individuals’ private accounts.

In the other three decisions, the decision-maker received in a private account all payoffs only from the Red option. The spouse received all payoffs only from the Blue option, in one of three ways:

- a private account (*low* control for the decision-maker);
- cash (*medium* control for the decision-maker);
- a joint account with the decision-maker (*high* control for the decision-maker).

Participants made all investment decisions under one of three information conditions—“None,” “Full,” or “Partial”—to which they were randomly assigned. These conditions varied the information made available to the decision-maker’s spouse ex post about the decision-maker’s investment options, choices, and earnings. The “None” condition was silent on all three, the “Full” condition offered details on all three, and the “Partial” condition reported only how much the decision-maker had earned for his/her spouse. All payouts were made in full at the end of the experiment itself, with no uncertainty in the returns.

Table 2. Income-Control and Information Conditions—Sample Sizes

	No information ^a	Full information ^a	Partial Information ^a	Total ^b
Four income-control conditions	101 men 101 women (couples)	101 men 101 women (couples)	48 men 50 women (either man or woman in each couple)	250 men 252 women (from 300 couples)
N (number of DMs)	202	202	98	

Source: Author's own data.

Note: Income-control conditions vary *within* participants; information conditions vary *across* participating households.

^aInformation pertains to what the spouse of the decision-maker (DM) was told after the experiment about the DM's investment options, choices, and earnings. The "No information" and "Full information" conditions pertain to what was divulged on these three aspects. The "Partial information" condition reported only the DM's earnings to the spouse. The DM in the "Partial information" condition was given the option of discussing his/her decision with the spouse as well.

^bAmong households assigned to the first two information conditions, both spouses individually made investment decisions. Among households assigned to the "Partial information" condition, *either* the husband *or* the wife made investment decisions. As a result, the total number of DMs is lower than the total number of couples who participated in the experiment.

Rationale for Experimental Design

It is useful to spell out how the design features described above help to measure separately the impact of the economic and social drivers of household decision-making efficiency.

Fixed-shares condition and social norms (see [table 1](#)): When a decision-maker is assigned a fixed share of family investment income, any observed inefficiency in investment decisions cannot be explained by a preference for greater control over household income—by design. As seen in row 1 of [table 1](#) (column 2), a decision-maker who invests B into the Blue option receives $s(2B + 1.5(50 - B)) = s(0.5B + 75)$, i.e., an amount that is linearly increasing in the Blue investment. Thus, investing in the Red option would reduce the household payoff without increasing the fraction under the decision-maker's control; he/she would simply receive the same fixed share s of a smaller pie. Given this observation, the variation in husbands' versus wives' shares under this condition was used to examine the influence of the social norm that "a husband should not earn less than his wife." The share s ranged between 30 percent and 70 percent in increments of 10 percent.

The share was varied only on the first five days of the (nine-day) experiment; on subsequent days, all spouses received equal shares of household income from this decision.⁷ During the first five days, shares were assigned with the aim that the fraction of participants receiving each particular share would be balanced within each day and across information environments. Table S1.1 in the supplementary online appendix shows that the number of participants receiving each of these different shares was well balanced over this period.

Other income-control conditions: The assumption underlying this feature of the design was that a spouse's payoff in cash is more physically accessible to the investment decision-maker than the spouse's payoff in a private account, while any payoff in a joint account is equally accessible to both spouses. Thus, the spouse's control varied across the three conditions. Across these conditions, decision-makers traded off a smaller household investment income from the Red option that they themselves control against higher returns (from the Blue option) that their spouses control, to varying degrees.

Information conditions (see [table 2](#)): These (across-participant) conditions were motivated by survey and field-experimental evidence that information asymmetries between spouses can affect their choices ([Bloch and Rao 2002](#); [Ashraf, Field, and Lee 2014](#)). Any information offered to a decision-maker's spouse was provided only *after* decisions had been made, to capture how the threat of subsequent retaliation by an

7 All results pertaining to this decision are reported both for the full sample and for the five-day subsample; see section 3 and the supplementary online appendix (which can be found at *The World Bank Economic Review* website) for details.

informed spouse could affect investment.⁸ Table S1.2 in the supplementary online appendix presents mean values of some key participant characteristics across the three information environments.⁹

The decision-makers in the “Partial” information environment were given the option of discussing all their initial investment decisions with their spouses (and to revise the decisions). The purpose of this “negotiation” option was to ensure that any inefficiency in the investment decisions was not driven by participants being unable to communicate and discuss the decisions with their spouses. At the same time, there was a concern that allowing such communication could create an opportunity for symmetric *quid pro quo* arrangements between spouses making individual investment decisions within the experiment. Hence, in each couple either the husband or the wife was randomly chosen to make investment decisions under the “Partial” information condition. For couples assigned to the other two information conditions, both spouses made individual investment decisions.

Therefore, the number of decision-making spouses in the partial-information environment was roughly half that under the full- and no-information conditions. Table 2 lays out the within- and across-participant conditions described in this section and provides details of the sample size within each cell.

Experimental Setting, Protocol and Instructions

The Setting

The experiment was conducted in the Anantpur district in the state of Andhra Pradesh, India. Being the second most drought-prone district in the country, it is among the poorest as well. The sample consisted of 300 couples, recruited with the help of the Social Education and Development Society (SEDS), a non-governmental organization (NGO) that has operated in the area for 25 years. All the female participants recruited were members of self-help groups (SHGs) started and promoted by SEDS.¹⁰ The set of 85 villages where SEDS operated were stratified by the duration of SHG membership of its women, and 38 SHGs (from 32 villages) were chosen for participation, across all the strata created.¹¹

All married members of the participating SHGs and their husbands were recruited.¹² Particular care was taken to select and schedule participating villages such that there was no contamination of the experiment through information leakage.

The recruitment process started with a brief initial pre-survey, in which women were individually interviewed and invited to participate in the study along with their spouses. Prospective participants were informed that they would each receive (i) a show-up fee of 50 rupees for participating in “a study on the understanding of financial matters in the area” and (ii) free transportation to and from the experiment site. The fee of 50 rupees (roughly equivalent to US\$1) is comparable to men’s daily wages and is somewhat higher than women’s daily wages in the area. Consistent with such low wage rates and high poverty,

- 8 No doubt information flows between family members could also influence efficiency among family members for other reasons, for instance by affecting how they communicate with and persuade each other over family decisions. See Ashraf (2009) on this, where the design varied information environments *prior* to spouses’ decisions.
- 9 Two of these characteristics are significantly different across the three information treatments: husband’s age and wife’s age. Therefore controls were introduced for these variables in the regressions that study the impact of the information environment.
- 10 Self-help groups are a type of voluntary group savings and mutual support organization. They are promoted actively by the state government of Andhra Pradesh, resulting in widespread participation. Typically, SHGs have only women as members.
- 11 Three strata were created, one each for membership durations of up to three years, three to five years, and more than five years. Box, Hunter and Hunter (2005) highlight the benefits of stratification in increasing the possibility of detecting small treatment differences. See Bruhn and McKenzie (2008) for a broader discussion on the benefits of the use of stratification as a technique for randomized experiments.
- 12 Married participants would likely regard their interaction in the experiment as part of a repeated one, rather than as a one-shot game. This aligns well with the underlying motivation for this experiment, which is to obtain a snapshot of actual (and repeated) decision-making within the family.

Table 3. Summary Statistics

Variable	Mean	Std. dev.
Family characteristics		
Years of marriage	21.31	10.76
Number of children	2.82	1.44
Annual household income (rupees)	15,741.87	15,184.87
Fraction of women who report conflict with spouse over financial issues (0 = no, 1 = yes)	0.0345	0.18
Joint family (percentage of households)	25.33	
Both spouses work (percentage of households)	89	
Personal characteristics		
Wife's age	36.10	9.80
Husband's age	43.20	10.99
Wife's education (years)	1.36	2.77
Husband's education (years)	3.12	4.12
Number of participating households	300	

Source: Author's summary of own data.

Note: Std. dev. = standard deviation.

table 3 shows that the fraction of participating households in which both spouses work outside the home is close to 90 percent. The level of education is also very low, for both women and men. Interestingly, hardly any women in the study sample report conflicts with their spouse over financial issues.

At the time of recruitment, those who agreed to participate were informed of the 15-day window in which the study was to be conducted. The specific dates and times of the experiment for different participant groups were announced later, with advance notice of at least two days. The experiments were conducted on the premises of the NGO over nine days in October 2005, with three or four village groups participating each day. Participants were familiar and comfortable with the location, since they had been going there frequently for various activities of the NGO.¹³

Protocol and Instructions

Participants from each group were brought to the experiment location on their appointed participation date, as per a pre-announced schedule. Upon arrival, they were directed to separate waiting areas set up for men and women. Three men and three women (couples) at a time were each directed from the waiting area to one of six separate rooms. Given the high rates of illiteracy in the population, all instructions and explanations were provided orally by trained experiment coordinators.¹⁴ When subjects entered the experiment rooms, the experiment coordinators explained to them that they were there to participate in a study on “understanding of financial matters” among the area residents and that they would be presented with four tasks as part of the study. Subjects were told that their payment (apart from the participation fee of 50 rupees) would be based on their decisions in *one* of these four tasks, to be chosen randomly with the roll of a die. It was also emphasized that each one of their decisions was equally likely to be chosen for payment, so they should take all decisions seriously.

In the interest of preserving confidentiality about the investor's decisions, there was also a fifth payment option: if the roll of the die yielded a five, the experimenter would choose the amount to be paid to both spouses. The presence of this option was clearly communicated to participants—but not the actual amount

- 13 The no-show rate (among those who agreed to participate after the pre-survey) was around 10 percent, at least partly due to rainfall late in the planting season, after a four-year drought.
- 14 The gender of the coordinator was matched to that of each individual participant. Husbands and wives participated in the experiment at the same time, in separate rooms.

that would be paid (which was 35 rupees to each spouse, paid into private accounts). Thus, participants could plausibly claim to their spouses that the final outcome was based not on their own choices but that of the experimenter.

Next, each participant was made aware of what information their spouse would be given at the end of the experiment (depending on the information treatment the couple was assigned to). Then the coordinator explained the details of returns of the investment options “Red” and “Blue” and quizzed the participant to make sure they could correctly work out the returns from various amounts.

The coordinator then gave the participant 50 rupees for investment (in the form of ten 5-rupee coins). The four investment decisions were then presented, one decision at a time (in randomized order). At the end of each decision, a red box and a blue box in which the participant had “invested” the money were taken to independent data-entry staff, who recorded these investments. Men and women who had completed their investment decisions were asked to wait in separate designated waiting areas while their earnings were computed. Payments were made privately. Accounts opened were in the form of post office savings accounts rather than bank accounts.¹⁵ When all members of a group had been paid, the entire group was transported back to their village. It must be pointed out here that the setup and conduct of the experiment made it virtually impossible for spouses to know about each other’s tasks and options at the time of decision-making, other than any information the experimenter chose to provide at the end of the proceedings. (Refer to [table 2](#) for the information conditions.)

Design Issues with Artefactual Field Experiments

Using the classification of field experiments outlined in [Harrison and List \(2004\)](#), this experiment would be characterized as an “artefactual” field experiment. A major concern with such experiments is that participants may find the decisions or the setting artificial and so the results observed may not hold true in real-life outcomes. [Levitt and List \(2007\)](#) discuss various ways in which this could bias the experimental results, as compared to natural field experiments. These concerns are addressed below in the context of the present experiment.

The first concern is that lack of anonymity may bias participants’ actions in the direction of choices that the experimental coordinators observing them would approve of. In the present context, social norms are such that people would approve of a family with little domestic conflict.¹⁶ If so, this should bias the participants to behave more efficiently, and the outcomes observed should be interpreted as a lower bound on the inefficiency that actually exists within the household. The fact that the participants chosen for a study on intra-household decision-making are spouses in real life helps allay two other common concerns. Specifically (as already mentioned in footnote 12), it is not a problem that the participants would regard the experimental game not as a one-shot game but rather as a repeated one. By construction, the sample of spouses (rather than the usual sample consisting of students) is very representative of the population that this experiment aims to study.

It is true that participants in this study are most likely poorer than average (given their willingness to show up for the announced fee, which was roughly equivalent to a day’s wages for unskilled labor). However, it is not clear that poverty should systematically bias efficiency, either upward or downward. Another issue raised by [Levitt and List \(2007\)](#) is that choice sets in a laboratory setting may be artificially constrained, which could distort participants’ decisions. In the current context, the investment decisions presented allowed participants considerable flexibility in how they could apportion their investments across the two options. Some investors were also allowed the option of negotiating or discussing all their decisions with their spouses before finalizing their investments. Finally, the stakes were large enough (close

15 The post office was chosen because all villages have access to a post office (but not necessarily a bank), which would make operating the account equally easy for all participants.

16 This is likely reflected in the survey data too, with less than 3 percent of the women in the sample reporting any conflict with their husbands over financial matters—which is not entirely consistent with their behavior in the experiment.

Table 4. Mean Investment in High-Return “Blue” Option (Rupees)

	All N = 502 (1)	Men N = 250 (2)	Women N = 252 (3)
Investor control over income			
Fixed share	44.95	42.2	47.68
Investor’s payoff = s (Blue + Red returns); rest to spouse ($0.3 \leq s \leq 0.7$)	(11.42)	(13.24)	(8.44)
Low control	36.63	34.94	38.32
All Blue returns to spouse in private account; all Red returns to investor	(19.27)	(18.33)	(20.06)
Medium control	38.30	35.62	40.98
All Blue returns to spouse in cash; all Red returns to investor	(18.77)	(18.85)	(18.35)
High control	43.37	41.36	45.36
All Blue returns to spouse in joint account; all Red returns to investor	(14.93)	(15.92)	(13.63)
Overall mean investment (across 4 decisions)	40.81	38.53	43.09
	(16.75)	(17.03)	(16.18)

Source: Author’s analysis based on own data.

Note: The maximum possible investment in the Blue option is 50 rupees. Standard deviation of the amount invested in the Blue option is reported in brackets. All payoffs to the investor are paid into a private account. There are two fewer observations for men than for women because two families in which husbands alone were designated as participants (under the partial-information treatment) did not show up for the experiment.

to two days of individual earnings) to make the decisions real and consequential for participants, even if they do not encounter such situations in their daily life. All investment decisions were made with actual money, which made the decisions more real as well.

3. Empirical Results

Given the linear return structure, it was quite clear to all participants what they needed to do to maximize their household’s total income: invest the entire 50 rupees in the high-return (Blue) option. Therefore, the main dependent variable examined is the amount that each individual invests in the high-return option. Table 4 reports the mean investment in the Blue option out of a maximum of 50 rupees, for each of the four decisions.¹⁷ Note that any shortfall relative to this amount indicates investment inefficiency.

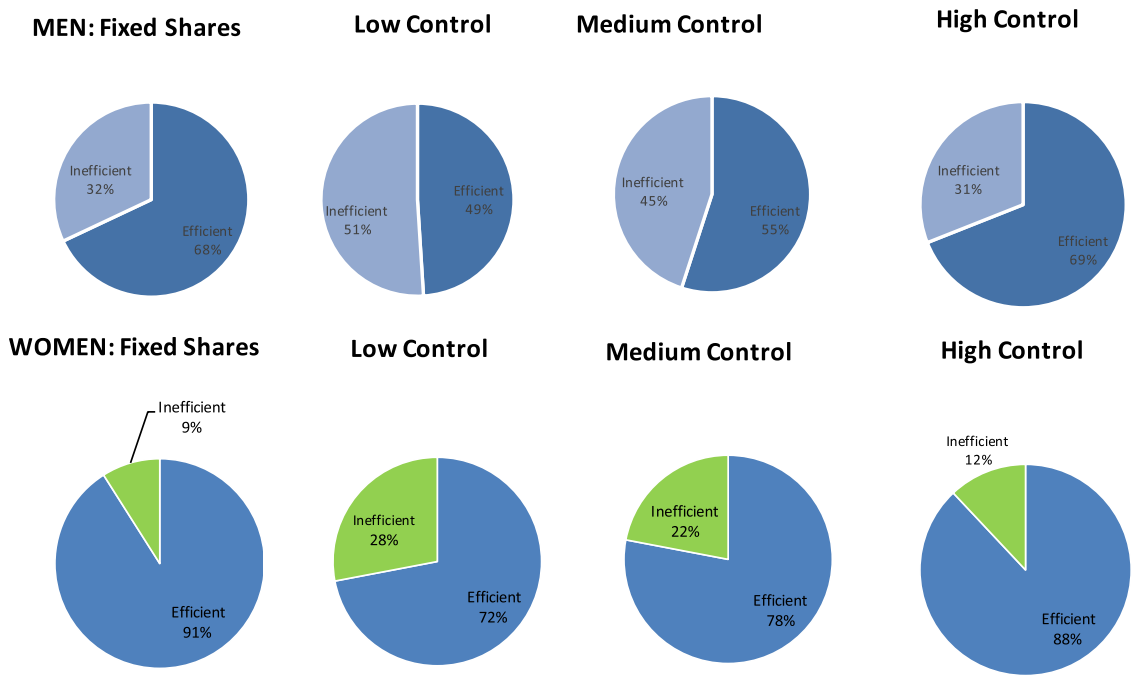
Looking across the second to fourth rows within each column, it can be seen that lower control over household returns is associated with lower investment in the Blue option. At the lowest level of control (second row), men invested only 34.94 rupees (an underinvestment of 30 percent), while women put in 38.32 rupees (an underinvestment of 24 percent). The investment pattern under “Fixed share” (first row) is not fully efficient either, especially among men.¹⁸ Thus, on average, decisions that more adversely affect the size of economic resources under a spouse’s control are less efficient—but the absence of control considerations does not lead to maximum efficiency.

To verify that the investment means are not driven by decisions among a small fraction of households, fig. 1 displays the fraction of husbands and wives who maximized efficiency for each of the four decisions. It shows that with lower control, the fraction of men and women who invest efficiently decreases. Further, a third of the men in the sample do not maximize household income even when their share of it is fixed.

17 The differences in mean investment level across different rows are statistically significant at the 1 percent level in all cases, with the following exceptions: Among men, the differences between (i) low and medium control and (ii) fixed shares and high control are not statistically significant. Among women, the difference between the low- and medium-control decisions is significant at the 10 percent level.

18 These patterns are stable across all the information environments. See table S1.3 in the supplementary online appendix for details.

Figure 1. Fraction of Households in Which Spouses Invest Inefficiently



Source: Author's analysis based on own data.

Note: In the “Fixed Shares” case, the fraction of inefficient investors varies according to whether or not a decision-maker’s share is lower than his or her spouse’s, as follows: 58 percent of men and 10 percent of women when the husband’s share is lower than the wife’s; 41 percent of men and 20 percent of women when the wife’s share lower than the husband’s.

This implies that these men are foregoing not just some income for their wife, but also some that would have been under their own control.

Given this puzzling behavior, some plausible reasons for inefficiency that could be specific to the present experimental context were checked for. Literacy rates in this experiment are low, so one reason for inefficiency could be that the men did not understand the investment rules clearly. However, literacy differences between efficient versus inefficient investors do not explain the observed behavior.¹⁹ One possible reason for greater financial literacy among women could be their exposure to SHG membership. To allay this concern about women in the present sample, duration of SHG membership was included as a control in all of the regression tables; the results are found to be robust to the duration of women’s SHG membership. Therefore, the findings are not driven by lower financial literacy or exposure to financial decision-making among men.²⁰ Also, the rules of the investment game were explained individually to each participant, with follow-up questions to verify that the participant had understood the rules clearly. Hence there is no good reason that men should be particularly confused about the rules relative to women.

Another possible reason for inefficiency is that participants find the stakes too small to take the fixed-shares investment decision seriously. There are a few reasons why this seems unlikely. First, the returns

19 Men who invested inefficiently in the fixed-shares decision do not have significantly fewer years of education than other men who invested efficiently (3.08 versus 3.22 years). Furthermore, their wives, with much less education (1.06 years), invested much more efficiently too (46.6 rupees versus the husbands’ 25.6 rupees, on average).

20 The survey data for the sample show that financial decisions such as asset purchases are either made by husbands unilaterally (21 percent) or by husbands and wives jointly (64 percent), and only very rarely by women alone (4 percent). In the remaining 11 percent of households, someone else in the family made asset purchase decisions.

from any single decision (i.e., participants' expected experimental earnings) are not so meager—up to twice the daily wages for a man—so the loss from inefficiency can be up to half a day's wages. Second, the stakes are no different between the fixed-shares decision and the other three investment decisions. In the latter, spouses' choices show a systematic inverse relationship between their control over returns and their investment efficiency, which suggests that they are in fact taking those decisions seriously. At the other extreme, if these stakes were regarded as too modest (so that there is no real effect on spouses' long-term bargaining power within the household), it makes it all the more remarkable that men are willing to lose some of their own income only to deny their wives a modest, one-time monetary gain.

Having ruled out these plausible contextual concerns, the efficiency effects of spouses' individual shares of control over household returns will be examined next.

Social Norms, Gender Identity, and Investment Choices

It is admittedly difficult to fit husbands' self-destructive behavior observed in the fixed-shares decision into a standard rational choice framework. However, [Akerlof and Kranton's \(2000\)](#) model of identity offers one possible explanation, based on adherence to social norms. Their model amends standard preferences to include two components. One is based on consumption, but there is also another identity-driven component: individuals lose utility when they take actions that go against "behavioral prescriptions" for their gender (or some other social category that they identify with). What might such prescriptions consist of in the household context? The authors offer some examples, such as that "men should not do women's work in the home" or that "men should earn more than their wives." The latter possibility in explaining men's behavior in the fixed-shares decision is investigated here.

[Figure 1](#) showed that 32 percent of husbands and 9 percent of wives invested inefficiently in the fixed-shares case. In fact, this inefficiency is much higher among husbands who controlled a smaller fraction than their wives, for whom this fraction rises to 58 percent. In comparison, among women who controlled a smaller share of household income than their husbands, this fraction is only 20 percent. The mean investment of wives with smaller shares is 44.90 rupees, while for husbands with smaller shares it is as low as 34.71 rupees. The latter amount is slightly *lower* than the mean investment level among all husbands in the low-control decision (34.94 rupees). Also, of the husbands who invest efficiently, 81 percent had an assigned income share of 50 percent or higher. Overall, there is significantly higher inefficiency among husbands when they are assigned a smaller share of household income than their wives.

To examine the impact of the wife's share on a husband's investment more systematically, a linear regression specification of the following form was estimated:

$$y_i = \alpha + \beta \text{Share}_i + \gamma X_i + \epsilon_i. \quad (1)$$

In equation (1), y_i is the amount invested in the high-return Blue option by the individual participant from household i in the fixed-shares decision, and Share_i represents the fixed income share of individual i 's spouse, for which two variants are considered: one is the actual fixed share of the investor's spouse, and the other is a dummy variable that equals 1 when the wife's share strictly exceeds her husband's; X_i is a set of household- or individual-specific controls.

[Table 5](#) reports the results from the analysis. Investment efficiency among wives does not seem to be influenced by their husband's share (column 1). In contrast, column (2) shows a negative and significant effect of a wife's share on her husband's investment: a 10 percent increase in the wife's share reduces the husband's investment in the high-return option by 2.6 rupees. To check whether this effect exists across all parts of the share distribution, the sample was split into two subsamples: one in which a wife's share is less than or equal to the husband's and another in which a wife's share strictly exceeds the husband's. There is no effect of the share *within* each subsample (columns 3 and 4). However, when a dummy variable is used for whether the wife's share strictly exceeds her husband's, there is a significant negative impact on his

Table 5. Social Norms and Investment Under Fixed Shares

Independent variable	Dependent variable							
	Wife's investment in high-return Blue option	Husband's investment in high-return Blue option					Husband's and wife's investment in high-return Blue option	
	Women Full sample (1)	Men Full sample (2)	Men Sample: wife's fixed share ≤50% (3)	Men Sample: wife's fixed share >50% (4)	Men Full sample: dummy =1 if wife's share >50% (5)	Men Full sample: dummy =1 if wife's share >50% + household controls (6)	Household fixed effects (7)	Household fixed effects + spouse-specific controls (8)
Fixed share of investor's spouse ^a	-0.069 [0.061]	-0.260*** [0.092]	0.156 [0.119]	-0.53 [0.447]			-0.175** [0.076]	-0.163*** [0.071]
No information ^b	0.728 [1.103]	1.388 [1.910]	2.274 [1.966]	-4.566 [5.162]	1.153 [1.876]	0.519 [1.871]		
Partial information	-0.573 [1.626]	2.151 [2.119]	3.343 [2.107]	-3.096 [5.762]	2.145 [2.047]	2.261 [2.123]		
Wife's share strictly exceeds husband's (dummy variable)					-9.482*** [2.402]	-9.633*** [2.365]		
High caste dummy (1 = BC/OBC; 0 = SC/ST)							-3.399 [2.185]	
Household income ('000 rupees)							0.057 [0.039]	
Wife's education level							0.136 [0.354]	
Husband's education level							0.142 [0.220]	
Wife's age							0.404 [0.265]	
Husband's age							-0.268 [0.188]	

Table 5. continued

Independent variable	Dependent variable					
	Wife's investment in high-return Blue option	Husband's investment in high-return Blue option				Husband's and wife's investment in high-return Blue option
		Men Full sample (1)	Men Sample: wife's fixed share ≤50% (3)	Men Sample: wife's fixed share >50% (4)	Men Full sample: dummy =1 if wife's share >50% + household controls (6)	Household fixed effects + spouse-specific controls (8)
Number of children					−0.382 [1.025]	
Number of girl children					−1.615 [0.994]	
Nuclear family dummy					4.591* [2.443]	
SHG membership date					0.001* [0.001]	
Education						−0.22 [0.330]
Age						−0.604*** [0.181]
Share of household income						−0.895 [2.543]
Constant	43.941*** [3.469]	55.385*** [5.364]	34.400*** [5.597]	78.239** [30.077]	19.578 [14.960]	54.050*** [4.371]
Observations	252	250	198	52	244	500
R-squared	0.01	0.04	0.02	0.08	0.16	0.61

investment (column 5). There is no attenuation in the size of the coefficient from the inclusion of various household-specific controls (column 6).

Finally, a specification with household fixed effects was considered, including observations on both the husband's and the wife's investments. The advantage of this approach is that any unobservable characteristics of a household that may affect the behavior of husbands or wives can be accounted for. There is clear evidence that an individual is more inefficient when the spouse's fixed share is larger. Given the results for wives and husbands reported in [table 5](#) columns (1) and (2), respectively, it can be inferred that this effect is driven by husbands' inefficient behavior (column 7). The effect is also robust to the inclusion of individual-specific controls on age, education, and household income share (column 8).²¹

By way of robustness checks, it was verified that the shares assigned to spouses are not systematically correlated with key observable household characteristics. Table S1.5 in the supplementary online appendix shows that households in which the wife's share exceeds 50 percent are no different from those in which it does not. The criteria used for this purpose are the same as those used to verify random assignment across the information treatments. In addition, concerns about omitted variable bias were addressed following the method outlined in [Bellows and Miguel \(2009\)](#). It was estimated that in order to explain away the causal effect of the share dummy variable, the effect of unobserved (omitted) variables would have to be over six times greater than the estimated effect with the observed household control variables.²² This suggests that the observed coefficient on the share dummy variable cannot easily be explained by omitted variables.²³ Overall, the results and robustness checks provide persuasive evidence that husbands' behavior becomes inefficient when their wife's share exceeds their own, but not otherwise.

Other Investment Decisions

Next, the other three investment decisions of husbands who are inefficient under the fixed-shares case are examined. The reasoning here is that husbands who care enough about adhering to the social norm to undercut their own income would care more about the income share under their control in these other decisions too. After all, they actually lose some control by being more efficient in these three cases, unlike in the fixed-shares case. If, instead, it is found that the men who undercut their own income in the

- 21 Table S1.4 in the supplementary online appendix shows that these results also hold for the first-five-days subsample of participants.
- 22 The intuition underlying this approach is as follows: If including controls substantially attenuates the coefficient estimates on the share dummy variable, it is possible that inclusion of more controls would reduce the estimated effect even further. If, on the other hand, the inclusion of controls has no effect on the magnitude of coefficient estimates, then one can be more confident in suggesting a causal interpretation of the estimated relationship. [Bellows and Miguel \(2009\)](#) formalized this intuition by deriving the "influence" ratio of omitted variables to observed control variables that would be needed to fully explain away the coefficient on the variable of interest. Accordingly, the statistic estimated is $\frac{\hat{\beta}_F - \hat{\beta}_R}{\hat{\beta}_F}$, where $\hat{\beta}_F$ represents the estimated coefficient on the share dummy variable from a regression with the full set of controls (column 6) and $\hat{\beta}_R$ is the coefficient of interest from a regression with a restricted set of controls (column 5). The resulting value of the test statistic $\frac{\hat{\beta}_F - \hat{\beta}_R}{\hat{\beta}_F}$ is 6.1. See section III and appendix A in [Bellows and Miguel \(2009\)](#) for further details.
- 23 An issue to address here is whether the absence of inefficiency in women's investment when their husbands receive a smaller share is inconsistent with the presence of the social norm being studied. Two reasons suggest that it is not inconsistent. First, it is possible that this norm is more strongly tied to a male identity than a female one. As anthropologist [Chowdhry \(2015\)](#) noted: "Possession and control of land, money, and women are associated with izzat [male honor]." Second, as outlined in [Akerlof and Kranton \(2000\)](#), suppose individuals get utility from two factors: material resources and norm adherence. For women, norm violation is compensated for by greater material resources under their control, but not so for men. Given this trade-off for women, their efficient behavior is consistent with their commitment to the norm. Of course, factors other than social norms operating at the community, household, or even individual level (such as threats to self-esteem) could influence spouses' decision-making outcomes too ([Zelizer 2005](#); [Crocker and Canevello 2012](#)).

fixed-shares decision are more efficient in the other decisions, this weakens the case for the earlier explanation based on the social norm. The following regression specification is estimated for each of the other three decisions:

$$y_i = \alpha + \beta \text{spiteful_man}_i + \gamma X_i + \epsilon_i, \quad (2)$$

where the second (and main) variable on the right-hand side is a dummy variable that equals 1 when the man from household i is “spiteful,” i.e., invests less than the full 50 rupees in the Blue option under the fixed-shares condition, and equals 0 otherwise. The household-level control variables X_i are the same as those used in equation (1) and reported in table 5. Table 6 presents the findings.

Spiteful husbands are found to be more inefficient than other husbands in all the other household decisions. Relative to other husbands, their inefficiency is more pronounced (and statistically significant) under medium and high control over the wife’s income (columns 4–7 of table 6) than under low control. Under the low-control condition, it is simply that all husbands are more concerned about their bargaining power and hence less willing to cede income to their wives (columns 2 and 3). Overall, it seems a fair description to say that spiteful husbands are more inefficient because they care more about asserting their control over family returns. In this sense, their behavior in the other decisions is consistent with the norm-based explanation offered for the fixed-shares case.²⁴

To summarize, there is persuasive evidence to suggest that the inefficiency of husbands’ investment decisions under the fixed-shares condition is due to the influence of a social norm that a husband should not earn less than his wife. It seems unlikely that husbands’ inefficiency arises because they perceive a one-time larger share for their wives during the experiment as setting a precedent or “giving her ideas” about how the family division of bargaining power could be different from the status quo.

Control over Household Income and Investment Efficiency

This subsection looks at whether and how a desire for control over household income (spouse’s earnings) affects investment efficiency. The following linear specification is estimated, using data from decisions (2)–(4) in table 1, corresponding to low, medium, and high control for the decision-maker:

$$y_i = \beta D_{ji} + \alpha + \epsilon_i, \quad (3)$$

where y_i is the number of rupees invested by individual i in the high-return (Blue) investment option, D_{ji} is a dummy variable for decision $j = \{L, M, H\}$ (for low, medium, and high control, respectively) of a person from household i .²⁵ The omitted case is the fixed-shares decision; it serves as a benchmark given that a spouse’s bargaining power is entirely exogenous to his/her decision. Separate regressions are carried out for men and women.

Table 7 shows that, for both men and women, inefficiency is greatest under low control and smallest under high control. For both men and women, the differences between the coefficients for low and high control are significant at the 1 percent level; although the level of statistical significance for the low-versus medium-control coefficients is weaker, they are in the expected direction as well. Overall, these results confirm findings from other research that household savings and investment decisions are less efficient if the decision-maker’s control over family resources is weakened.

Impact of Information

The results reported in tables 4–7 have already accounted for differences in the information environment faced by participants. As seen from the results in table 5 (for the fixed-shares decision) and table 7 (for the decisions with low, medium, and high investor control), the information made available to spouses ex post

24 Table S1.6 in the supplementary online appendix reports similar results for the first-five-days subsample.

25 Since these variations in control over income are within-subject, standard errors are clustered at the individual level. Individual fixed effects and control for the rank order of each of the decisions are also included in the estimation.

Table 6. Spite and Investment Efficiency in the Other Three Decisions

Independent variable	Dependent variable Investment in high-return Blue option (rupees) (minimum = 0; maximum = 50)						
	Men						
	Control over income (all conditions) (1)	Low control ^c (2)	Low control ^c (3)	Medium control ^c (4)	Medium control ^c (5)	High control ^c (6)	High control ^c (7)
"Spiteful" husband ^a	-5.525*** [1.534]	-3.592* [2.103]	-2.931 [2.377]	-7.338*** [2.312]	-7.879*** [2.512]	-6.231*** [2.084]	-4.567** [2.303]
No information ^b	-0.798 [1.706]	-0.822 [2.545]	-0.04 [2.557]	-0.999 [2.585]	-0.86 [2.711]	-1.003 [2.248]	-0.382 [2.240]
Partial information	-2.146 [2.271]	-1.022 [3.298]	-1.046 [3.428]	-4.097 [3.347]	-4.648 [3.507]	-1.729 [2.623]	-0.646 [2.821]
Constant	39.905*** [1.954]	36.732*** [3.604]	48.450*** [17.361]	42.531*** [3.156]	26.413 [18.041]	40.684*** [4.407]	34.815** [16.881]
Number of observations	750	250	244	250	244	250	244
R-squared	0.02	0.01	0.08	0.04	0.08	0.04	0.1
Controls for family characteristics ^d	No	No	Yes	No	Yes	No	Yes
Individual fixed effect	Yes	—	—	—	—	—	—

Source: Author's analysis based on own data.

Note: ^aA "spiteful" husband is one who invests less than the entire 50 rupees in the high-return Blue option in the fixed-shares decision.

^bThe omitted information category here is "Full information," where a spouse receives information about the investor's options, decisions, and earnings.

^cUnder the low, medium, and high (investor) control conditions, returns from the Blue option were paid to an investor's spouse in a private account, in cash, and in a joint account with the investor, respectively. Returns from the Red option were paid to the investor in a private account in all three cases.

^dControls for family characteristics are the same as those included in table 5, column 6; refer to table 5 for details.

All regressions include controls for the randomly assigned rank order of the individual investment decisions. Robust standard errors are given in brackets. *, **, and *** denote significance at the 10 percent, 5 percent, and 1 percent levels, respectively.

Table 7. Impact of Control on Investment Efficiency

Independent variable	Dependent variable: Investment in high-return Blue option (maximum 50 rupees)		
	Combined (1)	Men (2)	Women (3)
Investor control over income ^a			
Low-control condition ^b	−8.282 ^{**} [1.108]	−7.254 ^{**} [1.574]	−9.355 ^{***} [1.530]
Medium-control condition ^c	−6.647 ^{**} [1.046]	−6.577 ^{**} [1.490]	−6.796 ^{**} [1.454]
High-control condition ^d	−1.584 [*] [0.863]	−0.837 [1.401]	−2.397 ^{**} [1.117]
Constant	45.590 ^{***} [1.113]	42.253 ^{***} [1.533]	48.999 ^{***} [1.515]
Number of observations	2008	1000	1008
R-squared	0.44	0.43	0.42

Source: Author's analysis based on own data.

Note: ^aThe omitted control-over-income condition here is the fixed-shares case in which each spouse gets paid a fixed share *s* of returns from both investment options.

^bSpouse gets paid all returns from high-return (Blue) option in a private account; investor receives all returns from low-return (Red) option in own account.

^cSpouse gets paid all returns from high-return (Blue) option in cash; investor receives all returns from low-return (Red) option in own account.

^dSpouse gets paid all returns from high-return (Blue) option in a joint account with the investor; investor receives all returns from low-return (Red) option in own account.

All regressions reported here include individual fixed effects and control for the rank order of the decision. Robust standard errors are given in brackets, clustered at the individual level. *, **, and *** denote significance at the 10 percent, 5 percent, and 1 percent levels, respectively.

has little impact on investment decisions. This is confirmed in the results reported in [table 9](#) separately for men and women, under each of income-control conditions.

Such outcomes could emerge for two reasons. One is that, irrespective of information treatment, investors expect that their spouses will be able to infer their actions from the outcomes. However, as described in detail in [section 2](#), various aspects of the experimental protocol make such inference virtually impossible. The other explanation in this context is that investing spouses do not fear retaliation from their spouse for their lack of efficiency when their investment decisions are a *fait accompli*. There are several reasons why this is plausible in the present context: In nearly 90 percent of households in the sample, both men and women work, so husbands and wives are used to having income that they have individual control over. Further, there is no clear norm of one person being in charge of the household financial planning and budgeting, male or female.²⁶ Hence, a vast majority of households in the area of study do not have a convention of either spouse handing over income to the other.²⁷ Also, note that the results here are quite consistent with those of [Ashraf \(2009\)](#), which show that ex ante communication between spouses does not induce more family-favoring choices, if spouses make their decisions individually after such communication.

Additional Concerns and Alternative Explanations

Negotiation between Spouses

One concern with the results discussed above is that individuals' behavior could be driven by a lack of ability to communicate and discuss their decisions with their spouses. Investors may want to make side deals with their spouses that would increase their incentive to invest efficiently. The negotiation option, provided to participants in the partial-information treatment, was designed to address this specific issue. Investors could discuss all their initial decisions with their (non-investing) spouses and revise the decisions

26 For instance, on savings decisions and asset purchase or sale decisions, 57 percent and 64 percent of women, respectively, report that decisions on these matters are made jointly by both spouses. For decisions on food, health, and education, the fraction of women reporting joint decision-making ranges from 57 percent to 61 percent.

27 Two percent of men and 24 percent of women report handing over their entire income to their spouse.

Table 8. Negotiation with Spouse

	Men			Women		
	Number of investors			Number of investors		
	Total	Negotiation		Total	Negotiation	
		No	Yes		No	Yes
	48	48	0	50	19	31
		Before negotiation			Before negotiation	
		After negotiation			After negotiation	
Investment in Blue option						
(a) 50 rupees (all decisions)	18	—	—	12	21	22
(b) <50 rupees (at least one decision)	30	—	—	7	10	9
Mean investment in Blue (rupees):						
Fixed share	39.5	—	—	42.9	39.5	39.5
Low control	22.5	—	—	21.4	31.5	36.5
Medium control	22.5	—	—	21.4	23	23
High control	38.4	—	—	35.7	42	37

Source: Author’s analysis based on own data.
Note: The negotiation option allowed the investor in each of the 98 households assigned to the partial-information enviroment to discuss his/her initial set of investment decisions with his/her spouse and to change the decisions. In the low-, medium-, and high-control conditions, spouses received payment in a private account, in cash, and in a joint account with the investor, respectively.

if they so desired. This group consisted of 48 men and 50 women, and [table 8](#) reports the numbers who exercised this option and how they invested.

Among the 48 men, it turns out that not a single one chose to discuss his decisions with his spouse! About 63 percent of these men invested with less than full efficiency. On the other hand, 62 percent of the 50 women in this treatment chose to talk to their husbands, but less than a third of them had made any inefficient decision originally, and only one of them revised her decision subsequently. Even among the other 38 percent of women who chose *not* to discuss their decisions, only a little over a third had originally underinvested in one or more of the four decisions. One reason for this lack of interest in negotiation among participants (especially men) could be that they did not expect to achieve binding commitments about how to allocate household income by negotiating with their spouse. In other words, it is plausible that there is limited commitment to mutual spousal agreements in these households. Overall, it seems safe to conclude that the inefficiency in investment choices was not driven by an inability to communicate with the spouse.

Maximizing Household Income versus Maximizing Household Welfare

The definition of efficiency has implicitly assumed that maximizing household income will maximize household welfare, but there could be circumstances in which the two do not always coincide. For example, the husband could have self-control problems, say with respect to spending on alcohol, that may end in domestic violence (which even he may regret after the fact). If so, household *welfare* would be maximized by the wife’s investing in the lower-return option that she controls, rather than maximizing household income.

In the present experiment, the observed investment patterns offer some suggestive evidence to rule out such a concern. Arguably, self-control problems of the kind described above are likely to be greater when the husband’s earnings are in cash than when they are in a private account. However, wives do not lower their investment in the high-return option when the husband is paid in cash. Rather, wives invest more when their husbands get paid in cash rather than in a private account, the difference being significant at the 10 percent level. This suggests that wives’ decisions to invest inefficiently are not driven by such concerns about potential welfare-reducing effects of their husbands’ higher income.

Table 9. Impact of Information on Investment in High-Return (Blue) Option

Independent variable	Dependent variable Investment in high-return (blue) option							
	Men				Women			
	Control over income conditions				Control over income conditions			
	Fixed share (1)	Low control ^b (2)	Medium control ^c (3)	High control ^d (4)	Fixed share (5)	Low control ^b (6)	Medium control ^c (7)	High control ^d (8)
Information treatments ^a								
No information		0.187 [2.535]	-0.194 [2.654]	-0.38 [2.239]		-2.578 [2.948]	-2.188 [2.603]	2.101 [2.021]
Partial information		-0.369 [3.234]	-3.18 [3.505]	0.052 [2.777]		3.611 [3.250]	-1.629 [3.293]	2.458 [2.438]
Wife's share of earnings (fixed-shares case)								
Other controls:								
Husband's age		Yes	Yes	Yes		Yes	Yes	Yes
Wife's age		Yes	Yes	Yes		Yes	Yes	Yes
Constant		45.256	41.267	54.78		38.53	39.33	44.184
Number of observations		249	249	249		251	251	251
R-squared		0.04	0.01	0.05		0.01	0	0.01

Source: Author's analysis based on own data.

Note: ^aThe omitted information category is "Full information," where the investor's spouse is informed about the investor's options, actual choices, and earnings. Under "Partial information" the spouse is informed only of what the investor earned for him/her, but not about the investor's options or actual choices. In the "Fixed share" treatment each spouse gets paid a fixed share *s* (between 30 and 70 percent of returns) from both investment options.

^bSpouse gets paid all returns from high-return (Blue) option in a private account; investor receives all returns from low-return (Red) option in own account.

^cSpouse gets paid all returns from high-return (Blue) option in cash; investor receives all returns from low-return (Red) option in own account.

^dSpouse gets paid all returns from high-return (Blue) option in a joint account with the investor; investor receives all returns from low-return (Red) option in own account.

Robust standard errors are given in brackets. *, **, and *** denote significance at the 10 percent, 5 percent, and 1 percent levels, respectively.

Alternative Explanations

Among the alternative factors that may explain the study results, one that merits attention is some form of mental accounting, as described by [Thaler \(1990\)](#), i.e., spouses earmark amounts placed in specific accounts for different types of expenditure; this could be their reason for investing in the Red and Blue options, rather than only the latter. However, such earmarking does not explain why participants systematically invest more money in the Red option when they have lower control over the investment returns. Neither does it explain, in the case of husbands, why they should place more in the Red option when their spouse's share specifically exceeds half—especially since doing so lowers the absolute returns available in both accounts.

A second possible explanation to consider is that participants are applying some rule of thumb that they should invest in both options, but this succumbs to the same critiques as the mental accounting explanation. Besides, rules of thumb are more likely to be applied when decision problems are particularly challenging. In the current context, participants were consistently able to spell out which allocation would maximize returns when they were told about the rates of return from the Red and Blue options—*before* they learned the sharing rules for the returns from these options for individual decisions.

Finally, risk diversification could not have been a reason for investment in both options either, given that there was no uncertainty in the returns.

4. Discussion and Conclusion

This article offers experimental evidence of how social norms play an important role in household decision-making and its efficiency, distinct from economic concerns about control over resources. Specifically, it shows how the social norm that a man should not earn less than his wife results in an extreme form of noncooperation—spiteful behavior by husbands. Men with fixed smaller family income shares make investment decisions that undercut their own income only to ensure that their wives do not earn too much more than themselves. The magnitude of investment inefficiency due to this social norm is comparable to that in experimental conditions where husbands have the lowest control over their wives' experimental income. Women's investment efficiency is also affected by how much control they wield over the family's earnings, but it is not affected by the social norm. Such evidence runs counter to the predictions of a standard bargaining framework in the household economics literature—and can be explained only within a framework where social norms based on gender identity influence spouses' choices.

There is a significant body of real-world case studies and observational data that are consistent with the evidence presented in this article, inasmuch as men's behavior suggests that their identity within the household is challenged by greater economic status of the wife. To take just one example, in developing countries it has been documented that income transfer programs targeted to women have elicited adverse reactions from husbands, some of it in the form of domestic violence.²⁸ Furthermore, it is not clear that the influence of this norm changes substantially with economic development either, as the U.S. national evidence from 1990–2004 discussed in section 1 shows ([Bertrand, Kamenica, and Pan 2015](#)).²⁹ Even the most recent U.S. recession in 2010, in which 75 percent of job losses affected men, has triggered discussions

28 See, for example, [Schuler, Hashemi, and Riley \(1997\)](#) and [Angelucci \(2008\)](#) on increased domestic violence arising from microcredit access in Bangladesh and *Oportunidades* cash transfers in Mexico, respectively. [Dey Abbas \(1997\)](#) and [Quisumbing and Maluccio \(2000\)](#) document other adverse reactions of men to income opportunities for women. It must be acknowledged that these examples of inefficiency may not necessarily be cases where women's earnings *exceed* their husbands' as a result of such increased resources. This might explain other evidence to the contrary, showing that domestic violence decreases with transfers ([Hidrobo, Peterman, and Heise 2016](#)) or a lower gender wage gap ([Aizer 2010](#)).

29 See also *The Second Shift* by [Hochschild \(1990\)](#) on the persistence of gender differences in occupation choice and division of household chores in the United States.

in mainstream newspapers about the sustainability of marriages in which women earn a greater portion of the income.³⁰ McMillan and Gartner (1999) found that an American woman with an unemployed spouse faces a greater threat of domestic violence when she is herself *employed* rather than unemployed.

As the *World Development Report* (2012) acknowledges, there could be many reasons why gender-based social norms that may trigger spiteful or inefficient behavior remain so stubborn in their influence (Box 4.7, page 174). In some cases, this persistent influence may simply be due to how widespread such norms are; or it could be driven by the power of those who benefit from such social norms. It could even be driven by “pluralistic ignorance”—where members of a group may privately reject a norm, but assume (incorrectly) that most others accept it. Burzstyn, Gonzalez, and Yanagizawa-Drott (2018) document a clear case of this last effect: they found that a vast majority of young married men in Saudi Arabia support female labor force participation but substantially underestimate the level of support from other similar men, including their neighbors. Randomly correcting these beliefs leads to increased job search efforts by women.

More work to understand the mechanisms that underlie the persistence of norm-based behaviors within specific cultural settings is an important and potentially fruitful avenue of future research. Given the persistent and pervasive influence of certain gender norms, integrating such research into the policy-making process can be valuable. It could yield useful insights into how to tackle challenges relating to women’s labor force participation and economic development in poorer societies, as well as issues such as the gender pay gap, sexual harassment, occupation choice, and family leave policy in developed countries.

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30 See “Alpha Wives: The Trend and the Truth.” *New York Times*, January 24, 2010.

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