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Spousal Control and Intra-Household Decision Making: An Experimental Study in the Philippines

By Nava Ashraf*

I elicit causal effects of spousal observability and communication on financial choices of married individuals in the Philippines. When choices are private, men put money into their personal accounts. When choices are observable, men commit money to consumption for their own benefit. When required to communicate, men put money into their wives' account. These strong treatment effects on men, but not women, appear related more to control than to gender: men whose wives control household savings respond more strongly to the treatment and women whose husbands control savings exhibit the same response. Changes in information and communication interact with underlying control to produce mutable gender-specific outcomes. (*JEL* D13, D14, J12, J16, O15)

Household outcomes depend on decisions made by spouses who may often disagree. Given these potential differences in preferences, the particular conditions under which intra-household decisions are taken may matter a great deal for household outcomes. A large and growing literature in economics provides evidence from several countries that household savings and investment are significantly affected by how decision-making power is allocated between women and men. In particular, when intra-household financial decisions are made by women, savings and investment are often greater and repayment of debt is more likely.[1]

Theoretical and empirical work in economics has generally overlooked the range of factors that influence intra-household decisions. Most models of household decisions have either treated the household as an individual decision maker—ignoring intra-household decisions completely—or modeled household decisions as a bargaining process between agents who are able to make

* Baker Library 443, Harvard Business School, Boston, MA 02163 (e-mail: nashraf@hbs.edu). I thank Chona Echavez and the Green Bank of Caraga for field collaboration and support. I thank the Program on Negotiation at Harvard, the National Science Foundation (Doctoral Dissertation Research Grant #041893), the Russell Sage Foundation, and the Center for Basic Research in the Social Sciences for funding and support. I am grateful to Philippe Aghion, Attila Ambrus, Ninous Ashraf, Abhijit Banerjee, Dan Benjamin, Iris Bohnet, Colin Camerer, Rachel Croson, Esther Duflo, Erica Field, Guenther Fink, Roland Fryer, Matt Gentzkow, Ed Glaeser, Jerry Green, Richard Holden, Caroline Hoxby, Guido Imbens, Emir Kamenica, Dean Karlan, Larry Katz, Fuhito Kojima, Michael Kremer, David Laibson, Jean Lee, Stephen Leider, Ethan Ligon, Shelly Lundberg, Marcus Mobius, Sendhil Mullainathan, Muriel Niederle, Emily Oster, David Pelly, Robert Pollak, Matt Rabin, Jonah Rockoff, Mark Rosenzweig, Al Roth, Philipp Schnabl, Jesse Shapiro, Monica Singhal, Jeremy Tobacman, and Luigi Zingales, as well as four anonymous referees, for very helpful comments. I am also grateful to numerous seminar participants. Dilyan Donchev provided excellent research assistance. All errors remain my own.

[1] For example, income given to women is more likely to be used for investments in education, children's nutrition, and housing than income in the hands of men (Duncan Thomas 1990, 1994; John Hoddinott and Lawrence Haddad 1995; Esther Duflo 2003). Beatriz Armendariz de Aghion and Jonathan Murdoch (2004) review findings that microfinance loans made to women are significantly more likely to be repaid. Martin Browning (2000) provides an interesting model for how difference in savings outcomes can arise within one household.

binding commitments, have full information, and are able to communicate.[2] These models, all of which predict that outcomes will be Pareto optimal, are contradicted by empirical evidence against Pareto optimality (Christopher R. Udry 1996)[3] and complete information (Jan M. Pahl 1983; Markus P. Goldstein and Udry 1999; Michael A. Boozer and Goldstein 2003). More realistic assumptions, such as the possibility of private information and limited communication between spouses, may be needed. Indeed, more recent theoretical work has modeled households in which commitment between members is not assumed and is often limited; efficiency is not always attained (Ethan Ligon 2002; Maurizio Mazzocco 2004, 2007).

Empirical work on intra-household bargaining has increasingly used exogenous shocks to one spouse's income to identify its effect on household outcomes and to infer individual preferences.[4] However, who receives the income is only one factor that may affect the household outcome. There is a substantial sociological literature on the processes of intra-household decision making which emphasizes the importance of financial management structures in the family and the role that information and communication can play in making decisions within a marriage (see, for example, Daisy H. Dwyer and Judith Bruce 1988; Viviana A. Zelizer 2005). Nonetheless, factors like privacy of information have not been widely incorporated into household models of decision making;[5] even within these models, it is not clear how information asymmetries affect outcomes, beyond a standard prediction of decreasing efficiency. Understanding how spouses adjust strategically when information about their income and subsequent financial decisions is private, or when elements of the bargaining process (such as communication) change, is important to understanding household decision outcomes— but requires exogenous variation to identify.

In order to identify how information and communication affect intra-household decisions, I use an experimental approach. I observe intra-household financial decisions in a randomized field study. These experiments were explicitly designed not to treat households as a unit, but to allow for as much individual decision making as possible while varying the degree of privacy of information and ability to bargain.

Experiments have recently emerged as a method for getting inside the household.[6] These experimental papers have focused on testing predictions of existing (usually unitary) models of the household, similar to the empirical work in economics cited above. I use experiments, rather, as a method to tell us what existing economic models might be missing, by exogenously varying factors in household decision making—private information and communication—that are difficult to measure or vary empirically. Using experiments to understand decision making within the household can be challenging: subjects have an ongoing relationship with each other, so behavior within the experiments can often be undone when spouses leave the experiment. I thus design outcomes that are difficult to undo, like time-limited, person-specific gift certificates. In addition, and similar to challenges facing experiments in other applications, one worries about subjects behaving differently under the "artificial" conditions of the laboratory. To overcome this, I ran the experiments in a familiar setting to all subjects (a local bank with which they

[2] See, for example, Marilyn E. Manser and Murray Brown (1980), Marjorie B. McElroy and Mary Jean Horney (1981) and Shelly Lundberg and Robert A. Pollak (1994). Pierre-Andre Chiappori (1992) and Browning and Chiappori (1998) do not make assumptions about the specific bargaining process or structure, but assume that the bargaining outcome will be efficient.

[3] Richard Akresh (2005) finds evidence in support of Pareto efficiency for other parts of Cote d'Ivoire using an alternative nationally representative dataset. He cites other work that has found some evidence of inefficiency using survey data from Cameroon (Christine Jones 1986), Cote d'Ivoire (Duflo and Udry 2004), and Mexico (Habiba Djebbari 2005).

[4] See, as examples in a growing literature, Duflo (2003), Duflo and Udry (2004), and Marcos A. Rangel (2006).

[5] Exceptions include Ligon (1998) and Pierre Dubois and Ligon (2004).

[6] See, for example, Elizabeth A. Peters et al. (2004); Ian Bateman and Alistair Munro (2004); and Vegard Iversen et al. (2006).

had contact) and designed treatment conditions that mimic real world conditions under which couples made decisions. These conditions were decided upon through focus groups on couple decision making, where private information and communicating with one's spouse before decision making emerged as key variable situations; in debriefing, subjects talked about how much the treatment condition to which they were assigned reminded them of situations in which they had to make decisions.

In the experiments reported in this paper, subjects were given a sum of money, approximately a day's wage, and asked either to deposit the money directly or take consumption in the form of committed consumption or cash. The experiments were carried out with a sample of existing or previous clients—and their spouses—of a rural bank in the Philippines. Each subject was randomly assigned, along with his or her spouse, to one of three settings that had different limitations placed on the privacy of information and the possibility of spousal communication.

In the first condition, private information without pre-play communication (denoted "Private"), subjects are separated from their spouses at the onset of the experiment. They do not know what the spouse is doing, whether the spouse has received any income, what decisions the spouse is making, or what outcomes he/she receives; as much information as is possible is kept private from the spouse. In the second condition, public information without pre-play communication ("Public"), subjects and their spouses enter the room together. They learn about their own and each other's payoffs and choice sets, and make simultaneous decisions; however, they cannot communicate or see the decisions the other is making until after their decisions have been made. In the third condition, public information with pre-play communication ("Negotiation"), subjects and their spouses follow the same procedure as Public, but they communicate before making their decisions, and their decisions are immediately observable to each other.[7] Due to random assignment, the distribution of individual and household characteristics is approximately the same across all treatment conditions. Any significant difference in outcomes, therefore, can be attributed to the difference in treatment condition.

I find that men are more likely to deposit the money into their own account in Private and commit it to consumption in Public, and that this effect is mainly driven by men whose wives make the savings decisions in the household. Although initially it does not appear that women exhibit such behavior, women whose husbands control the savings decisions in the household behave as the men whose wives control the savings decisions. Finally, men are more likely to turn their money over to their spouse's account in the Negotiation condition, an effect that is greater for men who do not control the savings decisions in their household. Women whose husbands control the savings decisions in their household are also more likely to turn money over to their spouse's account.

Underlying the effect of information and communication appears to be the mechanism of monitoring; in my sample, women monitor the behavior of their husbands. This is consistent with the cultural setting of these experiments; in the Philippines, most men are expected to turn their earnings over to their wives for budgeting and allocation, but women often complain that their husbands do not turn over all their income. The pattern of women as financial managers who

[7] This combination of private-public information, and communication, suggests a fourth treatment: private information with pre-play communication. This treatment condition did not form part of the experiment because it was ultimately difficult to ensure privacy of information when there is also pre-play communication. The pre-play communication in the third treatment condition takes the form of expressing one's preferences for allocating the income shock to one's spouse: doing this before the Private condition (in order to maintain the same structure of communication) would mean that spouses would have to know about the income shocks and about the choices available—which would leave very little to remain private in the first condition. In future experiments, private with pre-play communication would be an interesting condition to implement, to determine if making the decisions in separate rooms—even having expressed one's preferences before—could in itself have a significant effect.

monitor their husband's use of income is found in many developing countries and in low-income US and UK households.[8] Such a financial management system can be seen as a contract, agreed to at the time of marriage, which the wife is expected to enforce.

I propose a framework of income monitoring within the household, where observability of income and communication at the time of decision making make a significant difference in the monitor's ability to enforce a contract. This implies that limited commitment and imperfect contractibility are more realistic assumptions in household decision-making models. My results suggest that husbands and wives respond strategically to changes in information and communication, but what initially looks like differences in response by gender appears to be driven by underlying household control structures that create incentives to change behavior in face of changes in monitoring; the implications of this for program design are discussed in the conclusion.

The remainder of the paper is organized as follows. Section I describes the conceptual framework that guides the experimental design. Section II describes the experimental design: the setting, outcomes, and conditions. Section III describes the empirical analysis and results, followed by a discussion of implications. Section IV concludes.

I. Conceptual Framework: Designing the Experiment

The experiments were designed in accordance with a model of the household in which husbands and wives develop a contract about financial management of the household at the beginning of marriage. Such a contract can take many forms; in this paper, I study a prevalent form of informal marital contracting in the Philippines, whereby women are the financial managers of the household who do the majority of the budgeting and, to varying degrees, control the spending and allocation decisions (A. Timothy Church 1986; Jeanne F. Illo 1989; Belen T. G. Medina 1991; Mina M. Ramirez 1984). "Cultural norms dictate that the husband turn over his earnings to his wife to receive in return a daily allowance for his daily expenses such as transportation, cigarettes and the like … the decisions to save, how much to save, and when to repay loans are more of the wife's independent decision" (Illo 1989, 45).[9] How such a contract arose is outside of the scope of this paper; survey self-reports across many countries in Asia suggest that men have traditionally viewed women as being better budgeters and having greater self-control (Villia Jefremovas 2000; Suzanne A. Brenner 1995). In my surveys, the majority of men, when asked why it is that their wife holds the income in the family, responded that they would spend it if they held the money.[10] The husband can thus benefit by deferring the responsibility of controlling

[8] In 70 percent of British low-income families, and in only 25 percent of higher-income families, Pahl (1990) found that wives manage the finances in the family; husbands are expected to turn over their income to their wives to manage. In 70.5 percent of Indonesian couples, the wife decided all money matters (Hanna Papanek and Laurel Schwede 1988). In supplementary surveys of my subjects in the Philippines, I find that 80 percent of households have the wife hold the income and do the budgeting; in 49 percent of households the wife also makes the major decisions about saving or spending money. This is not necessarily a source of rents in the household: budgeting and deciding about saving can be an onerous task when money is short.

[9] The following quote, from a homemaker in Mauswagon, Philippines, illustrates the degree to which financial management and turning over income can be part of a marriage contract, particularly in cultural settings like the Philippines: "I give him his daily allowance. His cigarette and liquor consumption is part of our budget because he buys them on credit at the store. I am the one in-charge of paying our debts every payday. I believe that husbands should turn over their earnings to their wives. At the marriage ceremony the coins are turned over by the groom to the bride. What is the significance of the marriage rights if husbands won't turn over their earnings to their wives?" (Chona Echavez 1996).

[10] Representative responses from the husbands include: "It's not safe if I hold the money, I might spend it for my vices"; "I'm very impulsive when it comes to spending my money. That's why I give all my income to my wife"; "I believe that it is a regulation in the family that the wife will hold the money." In very rare cases, the husband had to take over handling the money, despite cultural norms, because his wife "just wasn't good with money." This is consistent

the spending and lending of money earned.[11] In a model of intra-household specialization, Gary S. Becker (1981) shows that even small initial differences in comparative advantage or cost can result in large effects when such differences lead spouses to take on different roles in the household, due to increasing returns from investment in activity-specific human capital.

This deferral of responsibility, or intra-household specialization in financial management, can allow the financial manager of the household to make everyday allocational decisions closer to her preferences than his. Thus, at any given moment, the husband may be tempted to cheat. In particular, he may withhold money and not turn all of it over. "While women devote all their wages to the household budget, men withhold some of theirs at the outset to spend on so-called vices" (Illo and Rona C. Lee 1991). This behavior is so widespread that there is a word in the Tagalog language that is applied to men not handing over all of their income to their wives: *kupit*. *Kupit* literally means to pilfer, to filch, to steal in small quantities.[12] Colloquially, it is applied to husbands and wives in the following way: "It is like an unwritten agreement that the husband will turn over his earnings to the wife, but he will make *kupit* by declaring "ghost" expenses/deductions. In some cases, this will be in the form of not declaring unexpected income like bonus, incentive or loyalty pay, or only declaring a portion of what he receives."[13]

In particular, when the husband receives extra money at work, he faces a decision of whether to turn it all over to his wife as the cultural norm/contract dictates, and have the amount he has earned be taxed/used on an allocation that is closer to her preferences ("Turn Over"), or whether to "shield" it from her in some way by hiding it ("Hide") or committing it to consumption ("Commit"). Committing it to consumption is akin to spending it immediately on something enjoyable (like at the bar on the way home) to avoid it being taxed when it is turned over. In a situation where she cannot observe his actions, there is some probability that she will find out if he hides it. There is a possibly greater probability (still less than one) that she will find out if he commits it to consumption because it may be harder to hide a commodity bought or used (such as a new outfit or alcohol-infused breath) than it is to hide money.

If she finds out, she immediately expropriates what she can, in keeping with her role as the financial manager: if the money was hidden, she takes it all as if he had turned it over. If the money has already been committed/spent, she tries to undo it in subsequent budget allocations. In both cases, in addition to trying to take back the money that was spent, she enacts a (likely nonmonetary) punishment to show him her displeasure.[14] This displeasure is greater if she feels that he willfully and explicitly defied her, rather than possibly made a mistake in interpreting her preferences.

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with a more formal analysis of my data, where "husband controls savings" is significantly predicted by a self-report that "spouse is more impulsive than I am."

[11] Illo (1989) writes of an additional benefit of deferring this responsibility: "Because the wife generally keeps the cash, the man can and does avoid lending cash by referring the matter to the woman. More than the husband, the woman can convincingly explain to the would-be debtor why she cannot lend them money, especially if the family's financial position is so tight that moneylending can force the family to do without basic things."

[12] Tagalog-English Dictionary (1986).

[13] Chona Echavez, personal correspondence. In addition, Erlinda Burton (Research Institute for Mindanao Culture (RIMCU) at Xavier University) writes: "The definition of '*kupit*' refers to a practice of stealthily or secretly taking a very small amount from an amount of cash for whatever purpose it is to be used. For example, a husband would make '*kupit*' of a small amount from his salary before giving it to his wife or an employee who would take a little amount from the office's coffers."

[14] As one respondent said when asked what happened when she and her husband got into a conflict over money, "I was so angry with him that I didn't do his laundry for three weeks!" I assume that the wife is somewhat limited in the degree to which she can punish, both by cultural norms and because many types of nonmonetary punishment (like forcing the husband to sleep on the couch) can be costly to the punisher; she chooses the maximal level of punishment she can, given the implied guilt of the husband. I argue that explicit defiance increases the maximal allowable punishment level.

Thus, the payoff if he Turns Over is simply the allowance he gets, along with the ordinary household expenditure allocation, and no punishment. The payoff from hiding is the full sum of money he receives if she does not find out; if she does find out, he receives his ordinary allowance and some punishment (which is greater if she feels that he explicitly defied her by putting the money away somewhere else).[15] The payoff from committing to consumption if she does not find out is less than that from hiding (since the money had to be committed immediately and is less fungible) but greater than if he had just received his allowance and the standard expenditure allocation; if she does find out, he receives some punishment, as above, and she tries to expropriate the already spent funds as much as she can—that is, she reallocates subsequent budgets to decrease his allowance, for example, but she can't reallocate the budget fully, particularly if the amount he spent is more than several months of his entertainment/luxury allowance. It is thus more difficult to undo consumption that has already been committed.[16]

Even in a case where all information is public and she will inevitably find out what decisions her husband made, the intention behind the decision can matter greatly for the degree of punishment a husband might receive. In particular, I argue that she is more likely to punish him if she knows for sure that he explicitly defied her: i.e., she had an opportunity to tell him clearly what her preferences are in the moment he made the decision. Of course, communication in the context of bargaining could have many effects.[17] The anthropology literature focuses on the role of communication in providing an opportunity for the woman to show her displeasure for his choices as a way to try to influence his actions.[18] This clear stating (or restating) of preferences can change expected punishment; in particular, communication prior to decision making can invoke greater punishment if the spouse goes against a clearly stated preference, since now he will have acted in explicit defiance (rather than tacit defiance when a preference has not been explicitly stated in the moment). In a condition of full information, but one without communication at the moment of decision making and thus without full certainty about the spouse's preferences or willingness to punish, the husband could plausibly deny guilt about knowingly breaking the contract.[19]

Changing opportunities for privacy of information and communication before decision making can clearly serve to change monitoring possibilities for the original marital financial contract, and thus change the payoffs for each choice. In a case where there is private information, with a limited probability of detection, the payoff to hiding a shock to income would be greatest; in the case of full information—where hiding and spending will be fully detected afterward—committing to consumption could yield an outcome closer to one's preferences than either hiding or turning over (since hidden money will be discovered and turned over to be taxed by the manager); this depends on the tax rate and the maximal punishment for tacit defiance. However, when communication occurs right before decision making, both hiding and committing to consumption may invoke stronger punishments due to being in explicit defiance of the spouse's wishes. Thus, turning money over may be more likely in this case.

[15] For a situation in which this is not the case, imagine the man pleading that he was actually putting the money away to buy her a present.

[16] This could be the case because the money she has allocated for his allowance is much smaller than the money he has just spent on one good: it may be very difficult to take that (small) allowance away regularly for a long period of time. In addition, if budget cuts have to be made over many months, subsequent cuts could be heavily discounted over present consumption, depending on discount rates and functions. For individuals with great impatience or with present-biased time inconsistency, the value of present consumption over future budget cuts would be even more extreme.

[17] See Kathleen L. McGinn and Rachel Croson (2004) for an excellent overview of the role of communication and communication media in enhancing "social awareness" in bargaining situations.

[18] "When the woman feels that the husband's decision is not a fair or good one, she can continue to show her displeasure either by nagging him about the matter or by shutting him out" (Illo 1977).

[19] In addition, the punisher may have an aversion to punishing when guilt is not certain.

In the next section I will describe how I designed the experimental treatments and outcomes to mimic these real-world settings.

II. Experimental Design

A. *Experimental Setting*

The experiments were run with 146 married couples in the conference rooms of Green Bank, a rural private bank in Mindanao, the Philippines. The subject pool was drawn from former and existing clients of Green Bank and their spouses. Recruiters went door to door and invited subjects and their spouses to a study for which they would each receive a 40-peso fee to show up and the opportunity to earn more money.[20] Some members of the subject pool who were approached to take part in the experiment came from a group of individuals who had been involved in a large-scale randomized field experiment (Ashraf, Dean Karlan, and Wesley Yin 2006) and who were in communities near the bank's location; this provides me with baseline data to study selection on take-up of the invitation to the experiment. Using these data, I find that subjects from this pool who accepted the invitation to participate were not significantly different in most characteristics from those who did not (Appendix Table A1). In addition, men and women did not appear to select into the experiment based on decision-making power in the household.[21]

Once the couples were recruited, they arrived at the laboratory at a prearranged time for the experimental sessions, which were randomly assigned across days and times.[22] After the experiment was completed, individual-level surveys were conducted either directly after the experiment was finished in the lab or in the subsequent two to three days in the homes of the subjects. These surveys were conducted with each spouse separately and privately. The questions included levels of education, occupation, income variability, immediate money needs, how income is received, and how much, if any, is given to the spouse. Additional questions were asked about decision making and conflict in the household, including perceptions of patience, impulsiveness, and responsibility of one's spouse and problems with liquor and gambling.[23]

Table 1 provides summary statistics of the sample from both of the individual-level surveys. This was a broad sample of married couples, with substantial heterogeneity: subjects range from newlyweds to couples married for more than 50 years, from relatively poor for this region to relatively well off, from having completed only one year of education to those having graduated from college. Not all subjects were bank clients: only 38 percent of the men and 51 percent of the women have accounts at Green Bank.[24] In the majority of cases, both husband and wife work (approximately 70 percent); in 60 percent of all couples the husband brings in more income than the wife. Consistent with the sociology literature cited in Section I, the wife is the one who holds the income in the family and does the budgeting in more than 80 percent of these cases. Half of all couples respond "wife" or "jointly" (with wife's decision being a tie-breaker) when asked who

[20] Fifty pesos equals approximately $1US. Recruiters did not specify the amount of additional money that could be earned.

[21] In the final sample, 118 households come from this subgroup of 201 individuals approached to bring their spouse (Appendix Table A1 describes determinants of take-up); 28 remaining couples were drawn from invitations to 50 prior and current Green Bank clients in the surrounding area.

[22] Recruiters did not know what this schedule was.

[23] Surveys were conducted after the experiment so the survey questions would not prime subjects. There is no evidence that the reverse happened: survey responses to questions about conflict in the household or decision making did not differ significantly by treatment condition.

[24] Although I also asked subjects about their bank account status at Green Bank, I used objective data from Green Bank archives on the subject's bank account status, as this variable could be misreported by treatment condition if a subject wanted to hide bank account status from his or her spouse.

Table 1—Summary Statistics

	Experimental data 2004		CLHNS 1998		ISSP 2002	
	Males	Females	Males	Females	Males	Females
Variable	($N = 291$)		($N = 1{,}746$)		($N = 416$)	($N = 456$)
Age	44.62	42.15	44.08	41.72	44.33	38.37
	(11.52)	(10.90)	(6.93)	(6.05)	(12.89)	(12.01)
Number of children	3.77[a]	3.74	4.45		2.54	2.61
	(2.17)	(2.14)	(2.06)		(1.50)	(1.57)
Highest grade completed	10.32	11.44	7.66	7.33	9.33	9.47
	(3.22)	(3.38)	(3.92)	(3.81)	(3.48)	(3.29)
Daily wage	370.68	401.99	253.24	146.97	382.7	284.94
	(1,010.05)	(1,509.51)	(336.13)	(214.41)	(820.74)	(523.75)
Both husband and wife work	0.74	0.72	0.71		0.35	0.34
	(0.44)	(0.45)	(0.45)		(0.48)	(0.47)
Husband makes more income than wife	0.62	0.61	0.67		0.65	0.82
	(0.49)	(0.49)	(0.47)		(0.48)	(0.39)
Husband turns over all income to wife*	0.61	0.61	0.68		0.54	0.59
	(0.49)	(0.49)	(0.47)		(0.50)	(0.49)
Husband turns over some (but not all) income to wife*	0.28	0.28	0.30		NA	
	(0.45)	(0.45)	(0.46)			
Work outside the home	0.96	0.77	0.86	0.76	0.80	0.38
	(0.20)	(0.43)	(0.35)	(0.45)	(0.40)	(0.49)
Years married	19.18	19.02	20.77		NA	
	(11.25)	(10.94)	(5.82)			
Wife does budgeting	0.80	0.72	NA		NA	
	(0.40)	(0.45)				
Wife controls savings decisions	0.25	0.28	NA		NA	
	(0.43)	(0.45)				
Husband controls savings decisions	0.18	0.13	NA		NA	
	(0.38)	(0.34)				
Couple has conflicts over money	0.36	0.39	NA		NA	
	(0.48)	(0.49)				
Has an account at Green Bank	0.38[a]	0.51	N/A		NA	
	(0.49)	(0.50)				
Spouse has account at Green Bank	0.42	0.30	N/A		NA	
	(0.50)	(0.46)				
Couple has joint bank account	0.07	0.07	N/A		NA	
	(0.21)	(0.21)				

Notes: Column 1 of this table presents summary statistics from the experimental sample, collected during the experiment and in individual surveys conducted after the survey separately with husbands and wives, based on their own reports. One woman could not be located after the experiment, and thus survey variables are available for only 145 out of the 146 experimental sample couples (291 individuals). Data on years married were collected from only 132 couples. Columns 2 and 3 present similar variables collected on other datasets across the Philippines, for comparison purposes. The CLHNS (the Cebu Longitudinal Health and Nutrition Survey) surveyed Filipino women who gave birth between May 1, 1983, and April 30, 1984, and conducted follow-up surveys in 1991–1992, 1994, and 1998. CLHNS couples for this table are based on household roster information from the most recent data. The ISSP (International Social Survey Programme) 2002, Module on Family and Changing Gender Roles in the Philippines, was a nationally representative sample of voting-age adults (18 years and older) in 2002. Since ISSP does not select couples, the sample for the table is not restricted to couples.

* All variables were collected separately for husbands and wives, except for "Husband turns over all income" and "Husband turns over some income," which were asked only of the husbands in the sample. These questions are included here for comparison purposes with similar questions asked in other household decision-making surveys in the Philippines.

makes the savings decisions in the household; approximately 25 percent respond "only wife," which I code as "Wife controls savings decisions," and approximately 15 percent respond "only husband," which I code as "husband controls savings."[25] Finally, almost 40 percent of couples in the sample reported having conflict over money issues in the household. Appendix Table A2 shows these summary statistics by treatment condition and by gender, with pairwise *t* tests for significance; all but two variable means are statistically indistinguishable across conditions, one at 10 percent significance.[26] Table 1 also shows similar variables for comparison from two major surveys conducted in the Philippines, the Cebu Longitudinal Health and Nutrition Survey, which was representative of the nearby region of Cebu, and the International Social Survey Programme, Module on Family and Changing Gender Roles in the Family, which was nationally representative. Although the experimental sample was not selected to be representative, the respondents do not appear substantially different from regional or national norms with respect to most variables.

B. *Experimental Conditions*

Subjects, upon arriving at the laboratory with their spouses, were randomly assigned to one of three conditions under which they made decisions about saving or spending an endowment. These conditions were designed to mimic the real-world circumstances under which households were making decisions. Figure 1 provides a schematic diagram of the experimental design.

In the first condition, Private subjects were separated from their spouses upon arrival and told that the women were to be in one room and the men in another. Once the subjects were settled, they were registered and told about how much money they were getting and which decisions they were going to be asked to make. Subjects were explicitly told at the beginning of the experiment that their spouse did not know whether they received any income or what choices they had, that their choices would be kept private, and that they would be paid based on their choices before reuniting with their spouses.[27] Designing a perfectly private condition for married couples is challenging, particularly since spouses could always attempt to learn the information from each other when they went home. I designed the Private condition to occlude as much information as possible, in order to allow the subject to maintain "plausible deniability" in front of his or her spouse when the subject exited the experiment. Upon entering the experiment, spouses were taken into separate rooms when told that they would be receiving 200 pesos with which to make allocational decisions (in excess of the 40 pesos show-up fee), as well as what choices they had

[25] Husbands and wives were separately and privately asked about who controls the savings decisions; as the summary statistics by gender show, there was a small discrepancy between who each person reported controlled the savings decisions in the household. In the analysis, I use their own reports about who controls in the household, since what is important for the theoretical framework is personal perception of who controls the finances in the household. None of these variables was significantly differently reported across treatment conditions, nor did differences in reports between husbands and wives differ significantly among treatments. Although the questions were asked after the experiment, the answers were not affected by the experiment itself.

[26] "Education" and "Spouse has bank account" are significantly different across treatment conditions; subjects in Negotiation have, on average, two years less education than subjects in the Private or Public conditions. Subjects in Negotiation are also slightly more likely to have a spouse that has a bank account at Green Bank. Appendix Table A2 reports these specifications.

[27] One possible threat to maintaining privacy of information is that subjects may have heard from their neighbors about the experiments and what occurred therein. When subjects came in for the experiment, they were asked individually how they heard about the experiment, to check whether they had heard from anyone other than the recruiter who came to their house. All subjects answered that they had learned from the recruiter. In addition, subjects were more casually asked in debriefing whether any friends or neighbors had mentioned being part of this study at Green Bank or had told them what had happened when they had come to Green Bank. They responded that people were unlikely to talk about this with their friends, because it is not common to discuss financial matters with friends or neighbors—in part because as soon as one reveals that one has just received some money, one might be asked to share it.

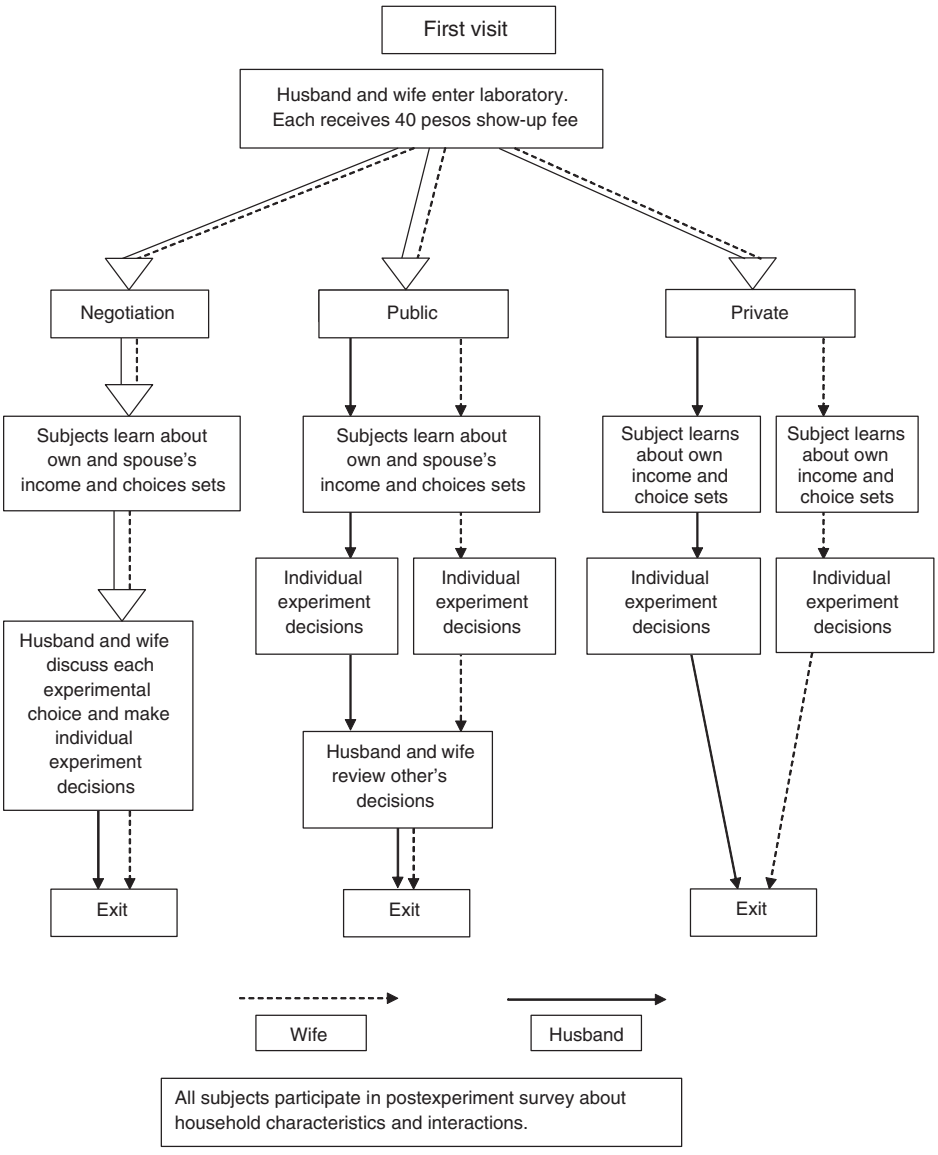

FIGURE 1. DIAGRAM OF EXPERIMENTAL DESIGN

available to them; it is plausible that subjects had some probability distribution over whether their spouse was simply filling out a questionnaire or was getting the same amount of money (if any) as they were and whether they were facing the same choices. This is in comparison to the Public and Negotiation conditions, in which they knew *for certain* that their spouses were facing the same income shocks and same choices as they were.

In addition, the Private condition obscured both outcomes and the choices leading to those outcomes through a luck-of-the-draw mechanism. Under all treatment conditions in the experiment, subjects made several decisions about how to allocate their 200 pesos. They were told that at the end of the experiment, one of these decisions would be randomly chosen. In addition, there was

a chance that none of the decisions would be realized and instead one would get the luck of the draw, which could be any one of the outcomes possible in the experiment (as well as nothing).[28] The probability of receiving "luck of the draw" was the same across all three treatment conditions. However, the luck of the draw created plausible deniability only in the Private condition, since it obscured the link between choices and outcomes. (In the other two conditions spouses saw each other's entire range of choices and could perfectly map choices to outcomes.) Thus, even if a spouse were able to find out what outcome one received after walking out of the experiment in the Private condition, the subject could always claim that he got that outcome through bad luck and not through any choice of his own.[29]

Moving from Public to Private can therefore tell us the net effect of obscuring information about spouse's income and choices, but cannot tell us definitively which aspect of the information was most important. The obscuring of information involved obscuring the possibility of income shocks and the choices available, and providing plausible deniability for responsibility for any outcome received. This is in comparison to the Public condition, in which all information about income and available choices was publicly revealed and outcomes were both fully verifiable and the choices that led to those outcomes were perfectly observable.

In the second condition, Public, subjects and their spouses enter the room together, and each subject sits at a different table from his/her spouse in the same room. They both learn about their own and each other's payoffs and choice sets, and make simultaneous decisions; however, they cannot communicate or see the decisions the other is making until all decisions have been made. They know that their choices will be fully revealed to their spouse once the experiment is over. At the end of the decision-making process, subjects meet with their spouse, show each other all the decisions they made, and discuss. They are not allowed to change any decision at this point. When the couple returns together to compare responses, local researchers fill out a form detailing each subject's decision and their response to the spouse's decision, as well as any discussion or conflict between the spouses that ensued. This condition is analogous to the real-world situation in which one spouse has received extra income at work or elsewhere and can put it aside or spend it—but with the foreknowledge that the spouse will find out what he or she did with it.[30]

In the third condition, Negotiation, subjects and their spouses follow the same procedure as "Public," but they are required to communicate before making their decisions, and their decisions are immediately observable to each other. Couples are instructed to tell each other what they would like to do for each decision, discuss what would be best to do, and then to make a final (individual) decision.[31] This condition is analogous to standard cooperative or collective household models where couples with full information decide together what would be best. Although couples were not required to come to agreement after talking, evidence suggests that

[28] As described in more detail in the subsection below, the subjects made eight main decisions about allocating their 200 pesos. After each subject had filled out his/her choices, the experiment rolled a nine-sided die to determine which choice would be enacted for the subject. If the die rolled on one to eight, one of the subject's own choices would be realized. If the die rolled on nine, the subject would receive what was called "luck-of-the-draw," which meant that he/she picked an outcome out of a hat. The hat included all possible outcomes in the experiment, including the outcome of receiving nothing. The subjects were told this in advance.

[29] Please see the Web Appendix for the Experimental Instruction Forms for each treatment condition (available at http://www.aeaweb.org/articles.php?doi=10.1257/aer.99.4.1245).

[30] One subject compared it to going to the bar on the way home from work: his wife would know that he spent his money on drink, but by then it would be too late and he would already be drunk.

[31] A qualitative supplement for each couple is coded by local researchers for each decision, including a measure of which spouse appeared to dominate the negotiation process, and arguments used for persuasion. Analysis on these measures shows that the person who dominates the majority of decisions in the negotiation is significantly correlated (at 5 percent) with the one who is older (corr coefficient = 0.21) and who has more education (0.23). These supplements were gathered discreetly; experimental assistants were instructed to be available to help translate individually for any couple who asked, but otherwise kept to their own table on the side.

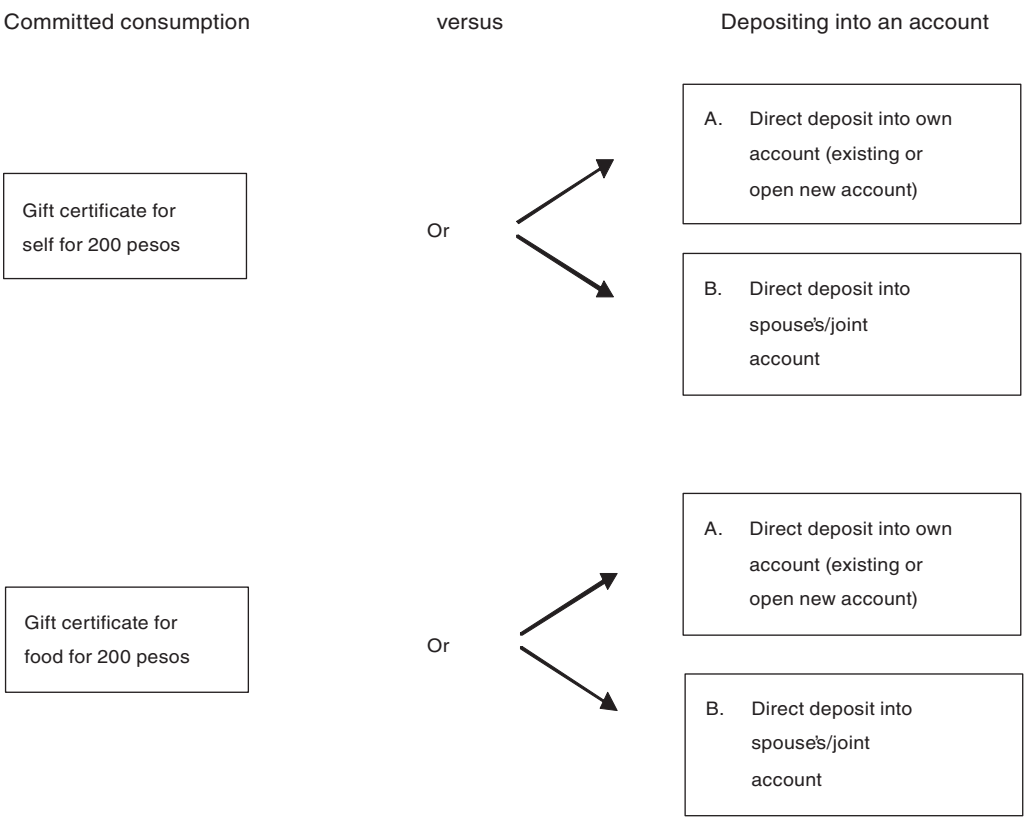

FIGURE 2A. EXPERIMENTAL CHOICES

subjects saw this condition as a coordination exercise: correlation among spouses' choices was significantly higher in this condition.

C. *Experimental Outcomes*

In addition to a 40 peso show-up fee, subjects earned the equivalent of a day's wages (200 pesos, or $4), which they received at the end of the experiment.[32] They were informed about their payment only after they entered their particular experimental condition. During the experiment, subjects were asked to make several decisions in advance about what they would like to do with both earnings. One of these decisions is randomly chosen to be implemented at the end of the experiment.

As shown in Figure 2A, subjects could choose to deposit the money into their own account (or, if they did not have an account, into a new account in their name) or their spouse's/joint account. Outcome measures not related to direct deposit are reported in Appendix Table A6 but are not the focus of this paper.[33] Comparing these two types of choices—direct deposit and committed

[32] All subjects also received another 200 pesos in 3 months' time, given to them in the form of a postdated check, as part of choices measuring time preference (for long-term horizon) and time inconsistency.

[33] A number of choices were elicited in the experiment that did not have to do with direct deposit but were collected for other purposes. These other choices, reported in the Appendix, were: cash against different values of gift certificates

consumption—allows for outcomes that vary in observability based on the treatment condition: redeemed gift certificates, particularly for apparel, would be more observable, whether they are chosen in Private or Public, whereas money put into a private savings account is more hidden when chosen in Private, but not when it is chosen in Public.

Subjects traded off consumption that was precommitted in the form, in one decision, of a gift certificate for a "special good for self"[34] worth 200 pesos against receiving 200 pesos directly deposited into an account of their choosing and, in another decision, of a gift certificate for food worth 200 pesos redeemable at a number of stores against 200 pesos directly deposited into an account of their choosing. Both types of gift certificates expired within 1 to 2 weeks of the experiment, and could be used only by the person whose name was on the certificate; thus, they were a way of committing the income to a particular consumption good.[35]

In order to understand the degree to which subjects valued putting money aside into an account, subjects also traded off receiving 200 pesos in cash against varying amounts put into direct deposit in a savings account of their choosing. This choice is described in Figure 2B. Subjects answered each of the trade-offs (200 cash versus 225 in account, 200 cash versus 200 in account, 200 cash versus 175 in account, 200 cash versus 150 in account, 200 cash versus 125 in account), providing a measure of willingness to pay to deposit into an account of one's choosing.

III. Empirical Analysis and Results

Table 2 describes the main results for direct deposit decisions, by the three treatment conditions, and for men and women separately, comparing means through Fisher's exact tests; subsequent tables present the results controlling for observables and for interaction effects with underlying financial control structure. In the body of the paper, I focus on the results from the decision to commit 200 pesos to consumption in the form of a gift certificate for apparel, which could be used only for oneself (labeled "gift certificate for self"), or to put 200 pesos into one's own account (either existing or new account) or that of one's spouse; the results from decisions for gift certificate for committing to food versus direct deposit is presented in the Appendix tables and exhibit the same patterns. I discuss the results on willingness to pay for direct deposit and its implications for inefficiency in the household after a preliminary discussion of these first results.

I run the following regression:

$$D_{sim} = a + \beta T_{im} + v\mathbf{X}_{im} + e, \tag{1}$$

for self; trade-off of cash against different values of gift certificates for food; cash against saving in accounts in the name of a child; and short and long horizon time preferences which give us a measure of patience, impatience, and time inconsistency (these time preference measures were evaluated using certified bank post-dated checks with transaction costs equalized by requiring all subjects to come back three times to the bank to sign in and receive 20 pesos (more than twice their fare to the bank) when they return: once in two weeks, once in three months, and once in three and a half months). Subjects knew that each decision had a chance of being realized, as outlined in the Experimental Design section. Previous experimental work has found that the collection of additional outcome variables does not dilute incentives (see Susan K. Laury 2000).

[34] This gift certificate is redeemable only in the women's apparel department for female subjects, and in the men's apparel department for male subjects. After several trials using different "private goods," this was what appeared to appeal to the broadest variety of both men and women as special, indulgent goods for themselves.

[35] This was done by ensuring that the gift certificates for self (for a large department store called Gaisano) were produced by the national department store head office and would not be accepted if they were redeemed after the expiration date or if the person using them was not the same person as the name on the certificate (verified through national identification cards and numbers); store employees were trained to handle these transactions. Similarly, the managers of a small number of stores that sold food and foodstuffs consented to be part of the project and produced and monitored the food gift certificates to ensure both that they were not used after expiration and that they were used only by the intended recipient (again verified through national identification cards).

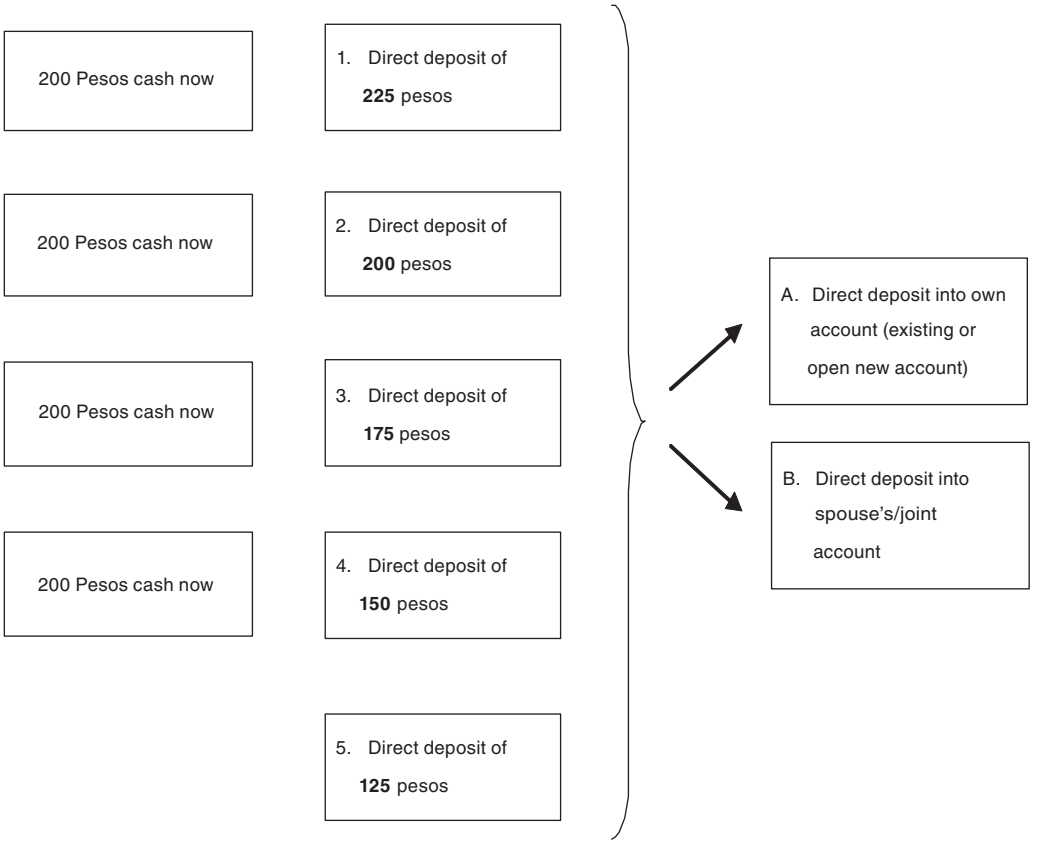

FIGURE 2B. WILLINGNESS TO PAY FOR DEPOSITING INTO AN ACCOUNT

where D_{sim} is the outcome variable of interest which takes on three forms (s): I code each outcome "gift certificate for self"; "direct deposit into own account"; "direct deposit into spouse's account" as a dummy variable (s_1, s_2, s_3) to allow for the most nonparametric analysis using ordinary least squares (OLS) on dummy variables.[36] The treatment variable (Private, Public, or Negotiation) is denoted by T and the vector of controls by $\mathbf{X}$. I run the regressions separately for men (m) and women (w) to allow for heterogeneous responses to treatment; controls include both own and spouse's demographic characteristics and account status. The results, described below, present the response of the financial decision to asymmetric information and communication.

To understand the degree to which this response to asymmetric information and communication may be driven by underlying roles in the household (rather than simply gender), I interact the treatment with the degree to which the spouse controls the savings decisions in the household.

[36] The fact that these dummy variables are coded in relation to each other inherently takes into account that they come from the same variable. The dummies add to one, for each individual; thus, the slope coefficients add to zero. Results from predictions of all three dummies are shown to illustrate both coefficients and standard errors. The coefficients are estimated using OLS estimation, with bootstrapped standard errors (300 repetitions) in parentheses. Running OLS imposes less structure than running a multinomial probit and allows for ease of interpretation of coefficients (Josh Angrist 2001). Since almost all variables in all regression specifications are dummy variables, OLS functions similarly to probit and logistic regression, but imposes the least structure on the data. The results do not change with probit or logistic specifications.

TABLE 2—MAIN EXPERIMENTAL OUTCOMES

	Male			Female		
	Private $N = 48$	Public $N = 48$	Negotiation $N = 50$	Private $N = 48$	Public $N = 48$	Negotiation $N = 50$
Gift certificate for self	0.25	0.58	0.30	0.38	0.40	0.28
Direct deposit in own account	0.52	0.23	0.32	0.54	0.35	0.52
Direct deposit in spouse or joint account	0.23	0.19	0.38	0.08	0.25	0.20
Fisher's exact *p*-value: Private to Public	0.002			0.052		
Fisher's exact *p*-value: Public to Negotiation		0.015			0.246	
Fisher's exact *p*-value: Private-Negotiation			0.112			0.24

Notes: This table shows the distribution of subjects' choices on whether they would prefer 200 pesos in the form of a gift certificate for a "special good for self" worth 200 pesos (redeemable at the local department store), or having the 200 pesos directly deposited into an account of their choosing: their own account (already existing own account or new account that can be opened in their name) or into their spouse's/joint account. The first row presents the fraction of individuals who preferred gift certificates for self over direct deposit of 200 pesos into their own account or 200 pesos deposited into spouse's/joint account. The second row is the fraction of individuals who preferred direct deposit for 200 into their own savings account over either a gift certificate for self worth 200 pesos or over deposit of 200 pesos into their spouse's or a joint savings account over gift certificate for self worth 200 pesos or over deposit of 200 pesos into their own account. The table presents results from Fisher's exact tests for significant differences in the distribution of these choices across the three treatment conditions of Private, Public, and Negotiation. These tests are conducted separately for men and women, to allow for gender interactions in the data. They thus compare men's (women's) responses in one treatment condition to men's (women's) responses in a different treatment condition and do not directly compare men's answers to women's answers within each treatment condition.

This tests the prediction that individuals with less control in the household are more likely to try to shield income shocks through hiding (in Private) or committing to consumption (in Public). I use the variable "Who decides whether to save or spend money" as a proxy for an individual's perception of who controls the allocation decisions in the household. This is a variable that is both pre-existing to the experiment and is subjective: it is based on an individual's perception of the reality within the household. What matters for this prediction is the *perception* that one's spouse controls the financial decisions and that therefore one will get little or no say in the allocation once one turns over the money.[37] Thus, I use each subject's self-reports about who controls the savings decisions in the household. By interacting this variable with the treatment conditions, I test for—and find—heterogeneous treatment effects, which serve to suggest the mechanism underlying the main experimental results.

I find that men are more likely to deposit the money into their own account in Private and commit it to consumption in Public. This effect is mainly driven by men whose wives make the savings decisions in the household. Although initially it does not appear that women exhibit such behavior, women whose husbands control the savings decisions in the household behave as the men whose wives control the savings decisions, consistent with the theoretical framework above.

[37] Since most of the men in my sample have wives who are the financial managers, consistent with the Filipino cultural context, this variable captures only the additional variation that comes from perceiving that one has a spouse who truly controls these decisions (i.e., likely does not give any say in the allocation decision to their partner); the prediction is simply that for this (smaller) subsample results should be stronger.

Finally, men are more likely to turn their money over to their spouse's account in the Negotiation condition, an effect that is greater for men who don't control the savings decisions in their household; this also holds for women whose husbands control the savings decisions in their household (although this treatment interaction loses significance in the full specification).

RESULT 1: *Men prefer to put money away in their own accounts when information is Private, but when information is made Public, they switch to committing money to consumption. Women choose to put money away rather than committing it to consumption regardless of the treatment condition.*

Table 2 presents the effect of obscuring information—in going from the column labeled "Private" to "Public"—using Fisher's exact tests. In the Private condition, 52 percent of men prefer to directly deposit money into their own account (two-thirds opening new accounts in their name) rather than putting it into their spouse's account (23 percent) or committing it to consumption (25 percent). However, when information about the outcomes is made Public, 58 percent of men choose to commit their money to consumption rather than putting the money into their own account (23 percent) or into their spouse's account (19 percent). The change in the distribution of these outcomes in moving from Private to Public is highly statistically significant, with a Fisher's exact p-value of 0.002. The same pattern and significance levels repeat in the decision for the gift certificate for food,[38] described in Appendix Table A5. Women, in contrast, do not vary across treatment conditions in their desire to deposit money into an account rather than to commit it to consumption; they change from depositing into their own accounts in Private to their spouse's account in Public.

Adding controls (in Table 3) shows that, as would be expected, having an account at Green Bank has a positive and significant effect on choosing to deposit into one's own account, and the spouse having an account has a negative effect on depositing into spouse's account, but these controls do not alter the treatment effects. Men are significantly more likely to save in their own accounts in Private, both with or without controls for having an account, whether their spouse has an account, their daily wage and their spouse's daily wage, and their and their spouse's education. Women, in contrast, do not vary across treatment conditions in their desire to save their earnings in an account rather than spend them. However, as regards which account to deposit into, making information private moves women from saving in their spouse's account to saving in their own account, an effect that remains generally robust controlling for account dummies.

RESULT 2: *Both men and women whose spouses control savings decisions are more likely to put money away in Private and commit it to consumption in Public.*

Table 4 describes the interaction between treatment conditions and underlying perceptions of household control over financial decisions. Men whose wives control the savings decisions are 65 percentage points more likely to commit money to consumption in Public rather that putting money away (panel 1, column 1).[39] Women whose husbands make the savings decisions are 60

[38] Although food can be shared, and is thus not a strictly selfish good, it is a highly desirable consumption good among men in the Philippines. Other studies in the Philippines (Dubois and Ligon 2005) have shown the strong degree to which husbands receive better quality, and quantity, of food in the household when their wages increase.

[39] The effect of the Private treatment on men whose wives control savings is the addition of the straight coefficient on Private (-0.201) plus the interaction coefficient on Private*WifeControlsSavings (-0.452), plus the straight coefficient on WifeControlsSavings (0.288), which equals -0.365. To calculate the change for men whose wives control savings in going from public information to making information private, subtract the straight coefficient for the base case of WifeControlsSavings (0.288) from the above, yielding $(-0.365–0.288) = -0.653$. Thus, men are 61 percentage points

TABLE 3—GIFT CERTIFICATE FOR SELF OVER DIRECT DEPOSIT: CONTROLS

	Gift certificate for self over deposit into any account		Own account deposit over gift certificate for self or spouse's account deposit		Spouse's account deposit over own account deposit or gift certificate for self	
	(1)	(2)	(3)	(4)	(5)	(6)
Panel 1. Male						
Private	−0.333***	−0.305***	0.292***	0.305***	0.042	−0.000
	(0.092)	(0.100)	(0.100)	(0.080)	(0.083)	(0.095)
Negotiation	−0.277***	−0.262**	0.097	0.111	0.180*	0.151*
	(0.091)	(0.095)	(0.095)	(0.091)	(0.088)	(0.093)
Husband's age		0.010		−0.001		−0.009
		(0.010)		(0.011)		(0.008)
Wife's age		−0.005		0.001		0.005
		(0.009)		(0.011)		(0.008)
Husband's highest grade completed		−0.013		0.018		−0.005
		(0.014)		(0.015)		(0.015)
Wife's highest grade completed		0.032**		−0.023		0.009
		(0.015)		(0.015)		(0.014)
Husband's daily wage				−0.040		−0.009
				(0.063)		(0.055)
Wife's daily wage				0.014		0.008
				(0.050)		(0.057)
Have account at Green Bank		−0.043		0.244***		−0.202**
		(0.086)		(0.082)		(0.073)
Spouse has account at Green Bank		−0.066		−0.123		0.189**
		(0.088)		(0.086)		(0.084)
Have joint account		0.095		0.068		0.127
		(0.212)		(0.241)		(0.216)
Constant	0.583***	0.180	0.229***	−0.257	0.188***	0.562**
	(0.066)	(0.281)	(0.064)	(0.265)	(0.058)	(0.230)
Observations	145	143	145	143	145	143
R^2	0.09	0.158	0.064	0.201	0.031	0.176

percentage points more likely to commit money to consumption in Public rather that putting money away (panel 2, column 2). Men whose wives control the savings decisions are also 55 percentage points more likely to put money away into their own accounts in Private (panel 1, column 3), and women whose husbands control savings are 72 percentage points more likely to put money away into their own accounts (panel 2, column 4). The same pattern, with even greater significance, holds for food, described in Appendix Table A4.

Thus, what looks like differences in gender in responding to treatment conditions, from Result 1, appears in fact to be driven by differences in underlying household control structure. This is consistent with the conceptual framework above, which predicts that subjects whose spouses control the savings decisions would be more likely to commit money they receive to consumption, or hide it if they are undetected—unless doing so would be in explicit defiance of their spouse's preferences.

less likely to choose committed consumption in Private, or 65 percentage points more likely to choose it in Public. The same procedure is used to calculate the other treatment interaction effects described in Result 2.

TABLE 3—GIFT CERTIFICATE FOR SELF OVER DIRECT DEPOSIT: CONTROLS *(Continued)*

	Gift certificate for self over deposit into any account		Own account deposit over gift certificate for self or spouse's account deposit		Spouse's account deposit over own account deposit or gift certificate for self	
	(1)	(2)	(3)	(4)	(5)	(6)
Panel 2. Female						
Private	−0.008	0.050	0.180*	0.105	−0.172**	−0.155**
	(0.099)	(0.096)	(0.097)	(0.112)	(0.080)	(0.067)
Negotiation	−0.097	−0.070	0.148	0.091	−0.051	−0.021
	(0.097)	(0.097)	(0.098)	(0.099)	(0.088)	(0.086)
Husband's age		0.004		−0.004		0.000
		(0.010)		(0.011)		(0.009)
Wife's age		−0.001		−0.000		0.002
		(0.010)		(0.011)		(0.009)
Husband's highest grade completed		−0.027*		0.009		0.018
		(0.016)		(0.016)		(0.012)
Wife's highest grade completed		0.020		−0.130		−0.007
		(0.015)		(0.017)		(0.013)
Husband's daily wage		0.052		−0.009		−0.043
		(0.096)		(0.091)		(0.063)
Wife's daily wage		−0.027		0.024		0.003
		(0.041)		(0.067)		(0.050)
Have account at Green Bank		−0.214***		0.365***		−0.151**
		(0.084)		(0.082)		(0.068)
Spouse has account at Green Bank		−0.095		−0.052		0.148*
		(0.091)		(0.103)		(0.081)
Have joint account		−0.085		0.111		−0.026
		(0.240)		(0.253)		(0.180)
Constant	0.383***	0.430	0.361***	0.482*	0.255***	0.088
	(0.074)	(0.341)	(0.071)	(0.289)	(0.067)	(0.218)
Observations	144	143	144	143	144	143
R^2	0.009	0.108	0.024	0.172	0.035	0.142

Notes: This table predicts determinants of the choices summarized in Table 2. As described in the Table 2 notes, this choice was between 200 pesos in the form of committed consumption (in a gift certificate for self) versus 200 pesos directly deposited into an account of one's choosing (one's own account versus spouse's/joint account). To facilitate regression analysis and interpretation of the source of the change in distribution, each of these options is coded as a dummy variable; the fact that they are coded in relation to each other inherently takes into account that they come from the same variable. The dummies add to one for each individual; thus, the slope coefficients add to zero. The coefficients from predicting the third dummy could thus be calculated from the coefficients on the first two; however, presenting all three gives us the standard errors as well. The coefficients and standard errors take into account the interrelationship among the three variables, arising essentially from one data point for each subject. The coefficients are estimated using OLS estimation, with bootstrapped standard errors (300 repetitions) in parentheses. This is equivalent to running probit and logit estimates since almost all variables are dummy variables, and imposes less structure on the data (Angrist 2001). Columns 2, 4, and 6 estimate with both own and spouse's control variables. Three observations, two women and one man, are dropped due to missing data on daily wage, leaving a full sample size of 144 women and 145 men. When own and spousal daily wage is included in the regression, this requires dropping the spouse as well from columns 2, 4, and 6, leaving a final sample size of 143.

*** Significant at 1 percent. ** Significant at 5 percent. * Significant at 10 percent.

RESULT 3: *Communicating with their wives at the moment of decision making makes the majority of men put money into their spouse's account, rather than consume or put it into their own account, when compared to a condition of public information.*

TABLE 4—GIFT CERTIFICATE FOR SELF OVER DIRECT DEPOSIT: TREATMENT INTERACTIONS

	Gift certificate for self over deposit into any account		Own account deposit over gift certificate for self or spouse's account deposit		Spouse's account deposit over own account deposit or gift certificate for self	
	(1)	(2)	(3)	(4)	(5)	(6)
Panel 1. Male						
Private	−0.201*	−0.334***	0.230**	0.303	−0.028	0.030
	(0.122)	(0.105)	(0.102)	(0.100)	(0.092)	(0.097)
Negotiation	0.149	−0.262**	0.024	0.099	0.125	0.162*
	(0.117)	(0.106)	(0.111)	(0.091)	(0.095)	(0.095)
Wife controls savings × Private	−0.452**		0.318		0.135	
	(0.195)		(0.203)		(0.200)	
Wife controls savings × Negotiation	−0.521***		0.397*		0.124	
	(0.217)		(0.196)		(0.202)	
Wife controls savings decisions	0.288*		−0.142		−0.146	
	(0.157)		(0.118)		(0.121)	
Husband controls savings × Private		0.176		0.005		−0.180
		(0.309)		(0.326)		(0.209)
Husband controls savings × Negotiation		−0.017		0.074		−0.057
		(0.326)		(0.373)		(0.262)
Husband controls savings decisions		0.004		−0.027		0.023
		(0.235)		(0.272)		(0.170)
Constant	0.222	0.200	0.192	0.256	0.586	0.544**
	(0.299)	(0.293)	(0.267)	(0.274)	(0.243)	(0.245)
Account, education, and wage variables (own and spouse)	Yes	Yes	Yes	Yes	Yes	Yes
Observations	143	143	143	143	143	143
R^2	0.197	0.164	0.229	0.201	0.182	0.181

Table 2 describes outcomes in the Negotiation condition, once husbands and wives are able to bargain and communication is enforced: only 30 percent of men and 28 percent of women now choose the committed consumption. Rather, Negotiation inspired the majority of men to directly deposit into their spouse's account and the majority of women to directly deposit into their own accounts (consistent with the high degree of coordination between couples in choosing which account to deposit into, observed in Negotiation). Table 3 presents this result controlling for own and spouse's demographic and account variables. Women whose husbands control the savings decisions exhibit the same pattern as men in Negotiation; they are 16 percentage points more likely to deposit money into their spouse's account in Negotiation, although this interaction effect is not statistically significant (Table 4, column 6).

A. *Discussion*

The results above are consistent with the monitoring framework in which making information public leads to a larger proportion of men committing income to consumption rather than trying to hide their money or turn it over. These information changes act most strongly on those men whose wives control the savings decisions rather than simply doing the budgeting, for example.

TABLE 4—GIFT CERTIFICATE FOR SELF OVER DIRECT DEPOSIT: TREATMENT INTERACTIONS *(Continued)*

	Gift certificate for self over deposit into any account		Own account deposit over gift certificate for self or spouse's account deposit		Spouse's account deposit over own account deposit or gift certificate for self	
	(1)	(2)	(3)	(4)	(5)	(6)
Panel 2. Female						
Private	−0.075	0.126	0.249**	0.031	−0.174**	−0.157**
	(0.121)	(0.110)	(0.124)	(0.105)	(0.087)	(0.077)
Negotiation	−0.199*	0.002	0.213**	0.042	−0.014	−0.044
	(0.116)	(0.108)	(0.110)	(0.115)	(0.105)	(0.096)
Husband controls savings × Private		−0.726**		0.692**		0.035
		(0.276)		(0.305)		(0.144)
Husband controls savings × Negotiation		−0.597**		0.393		0.203
		(0.254)		(0.280)		(0.227)
Husband controls savings decisions		0.640***		−0. 466*		−0.174*
		(0.141)		(0.213)		(0.109)
Wife controls savings × Private	0.468**		−0.562***		0.093	
	(0.221)		(0.234)		(0.164)	
Wife controls savings × Negotiation	0.504**		−0.504**		0.001	
	(0.223)		(0.230)		(0.175)	
Wife controls savings decisions	−0.280*		0.356**		−0.076	
	(0.150)		(0.164)		(0.124)	
Constant	0.532	0.223	0.362	0.641**	0.106	0.136
	(0.336)	(0.293)	(0.311)	(0.280)	(0.219)	(0.229)
Account, education, and wage variables (own and spouse)	Yes	Yes	Yes	Yes	Yes	Yes
Observations	143	143	143	143	143	143
R^2	0.153	0.160	0.217	0.204	0.015	0.152

Notes: Bootstrapped standard errors (300 repetitions) in parentheses, on OLS estimation. Wife controls savings × Negotiation is the interaction between Wife controls savings decisions and negotiation. Husband controls savings × Negotiation is the interaction between Husband controls savings decisions and Negotiation. Wife controls savings decision: variable = 1 if, in response to the question: "Who decides whether money will be saved or it would be spent on something?" the subject answers "wife." Variable = 0 if subject answers "husband" or "husband and wife together." It is the subject's perception of who controls savings decisions in the household; a longer, more precise label for the variable is "Own perception that wife controls savings decisions." Husband controls savings decisions = 1 if the subject answers "husband" in response to "Who decides whether money will be saved or it would be spent on something?" Variable = 0 if subject answers "wife" or "husband and wife together." It is the subject's perception of who controls savings decision in the household. A longer, more precise label for the variable is "Own perception that husband controls savings decisions." Account, education, and wage variables (own and spouse) consist of all controls from previous table: own age, spouse's age, own highest grade completed, spouse's highest grade completed, own daily wage, spouse's daily wage, have account at Green Bank, spouse has account at Green Bank, and have joint account. Treatment and interaction results are robust to excluding controls. Spousal variables are as reported by the spouse.

*** Significant at 1 percent. ** Significant at 5 percent. * Significant at 10 percent.

The experimental means appear to show little effect on women's behavior of changing privacy of information in taking consumption for themselves, but this masks heterogeneous treatment effects; women whose husbands control the savings decisions do indeed behave very similarly to the men in our sample. This suggests that what initially looks like gender differences in treatment responses in the experiment is really about differences in control in the household.

Under a standard unitary household model, even one in which spouses specialize in different types of labor (including financial management) in the household, one should not see such

differences arising by changing information conditions. If anything, spouses who are not responsible for the financial management should be more likely to turn over their earnings to the other spouse if they don't know what they should do with it, rather than trying to put it into their own account (particularly opening a new account in their name), or committing it to a form of consumption that is difficult to undo.

Similarly, under a nonunitary bargaining model, exogenous bargaining power should matter for the outcomes chosen, but observability of outcomes should not. The fact that putting money away into one's own account versus committing it to consumption appears to take on such different value depending on whether or not it is observable suggests that the decision of what is done with money has possibly as much to do with opportunities and incentives for enacting one's preferences as with one's bargaining power.

Indeed, the apparent preference for putting away the endowment into one's own account in Private but committing it to consumption in Public suggests there is a first stage of bargaining that household models have missed, one in which it is decided how much will be bargained over. Once information is made public, subjects can try to impose preferences on *type* of consumption, but possibly more important is how much is given over.

Simply making information public does not seem to solve the incentive problem; rather than affecting the extensive margin of how much to turn over, it affects the intensive margin of what the money is spent on and what it can be committed to, even if the spouse will find out afterward.

The differences in results between this condition of public information and where spouses have to communicate before deciding is striking. This is consistent with the prediction from the monitoring framework, whereby communication is used to explicitly state preferences and reinforce the contract. Indeed, the supplements on the Negotiation condition revealed strong statements women made to persuade their husbands to turn over their income by saving it in the wife's account, often repeating "remember you have a family" and sometimes saying a child's name repeatedly until the husband made his decision. These tactics, in many cases, appear to have worked: men overwhelmingly chose to deposit the income into their wives' accounts, rather than into their own account or a new account opened in their own name. The negotiation also causes the small proportion of women whose spouses control the savings decision to turn over their money, but communication seems to be a monitoring technology that particularly favored women.

B. *Inefficient Outcomes?*

The treatment effects of information and communication, and the way in which these effects interact with spousal control, have implications for our understanding of household decision making and, specifically, for unitary and nonunitary household models, as discussed above. Nonetheless, it is difficult to argue definitively that choosing to put money away into one's own account or committing it to consumption is necessarily an *inefficient* choice for the household (and therefore strong evidence against collective or cooperative bargaining models which assume or predict efficiency).[40]

However, supporting evidence from a separate outcome in the full experiment suggests that the motivation to rend control back by putting money away in private may lead to inefficiencies. As Figure 3B describes, subjects traded off receiving 200 pesos in cash against varying amounts put into direct deposit in a savings account of their choosing. Subjects answered each of the

[40] In part, this is based on how much one believes that the gift certificates, which were designed to be large in amount, personalized, expire quickly, and committed to a specific good, were difficult to undo and therefore a Pareto dominated choice compared to having more flexible cash in an account.

TABLE 5—WILLINGNESS TO PAY FOR DIRECT DEPOSIT

	Male			Female		
	$N = 48$	$N = 48$	$N = 50$	$N = 48$	$N = 48$	$N = 50$
Cash versus direct deposit	Private	Public	Negotiation	Private	Public	Negotiation
Prefer cash always	0.50	0.66	0.54	0.56	0.50	0.48
Direct deposit in own account	0.33	0.19	0.16	0.39	0.27	0.40
Direct deposit in spouse's or joint account	0.16	0.14	0.30	0.04	0.23	0.12
Fisher's exact *p*-value: private to public	0.198			0.021		
Fisher's exact *p*-value: public to negotiation		0.187			0.245	
Fisher's exact *p*-value: private-negotiation			0.092			0.379
How much cash willing to give up for direct deposit?						
Mean (in pesos)	21.88	9.37**	13.5	11.97	10.93	17.00
(standard deviation)	(32.87)	(25.07)	(28.22)	(26.29)	(24.14)	(31.31)
[minimum, maximum]	[0,75]	[0,75]	[0,75]	[0,75]	[0,75]	[0,75]

Notes: In this decision, subjects traded off receiving 200 pesos in cash against varying amounts put into direct deposit in a savings account of their choice (see Figure 2B). Subjects gave an answer for each of the trade-offs: "Would you prefer 200 cash versus 225 in account, 200 cash versus 200 in account, 200 cash versus 175 in account, 200 cash versus 150 in account, and 200 cash versus 125 in account?" If they chose direct deposit in any of the trade-offs, they designated the account into which the money should be deposited. Prefer cash always is the percentage of subjects who always preferred 200 cash to any amount put into an account. Direct deposit into own account is the percentage of subjects who chose to put the money into an account in any of the trade-offs rather than receive 200 cash, and chose own account as the designated account. Direct deposit into spouse or joint account is the percentage of subjects who chose to put the money into an account in any of the trade-offs rather than receive 200 cash, and chose their spouse's or joint account as the designated account. The first part of the table presents results from Fisher's exact tests for significant differences in the distribution of these choices across the three treatment conditions. Willingness to give up cash for direct deposit: because the subjects gave answers for a range of direct deposit amounts, we are able to measure how they valued direct deposit into an account as compared to 200 pesos cash. Subjects displayed monotonicity in their responses (that is, if they chose 175 pesos in their account over 200 cash, they also chose 200 pesos in their account over 200 cash and 225 pesos in their account over 200 cash). The variable, How much cash willing to give up for direct deposit?, is assigned a value of 0 pesos if subject always chose cash, or chose 225 in account or 200 in account over 200 cash; 25 pesos if subject preferred to receive (minimum) 175 pesos direct deposit over 200 cash; 50 if subject answered (minimum) 150 in account versus 200 cash; and 75 pesos if subject answered (minimum) pesos into account versus 200 cash. Note that this is an underestimate of the actual willingness to give up cash for direct deposit as trade-offs were not asked for below 125 pesos. These amounts are compared using tests across treatment conditions.

*** Significant at 1 percent. ** Significant at 5 percent. * Significant at 10 percent.

trade-offs (200 cash versus 225 in account, 200 cash versus 200 in account, 200 cash versus 175 in account, 200 cash versus 150 in account, 200 cash versus 125 in account), providing a measure of willingness to pay to deposit into an account of one's choosing. As Table 5 shows, men were again more likely to choose to put money away into their own accounts in Private (33 percent in Private, compared to 19 percent in Public). Appendix Table 3 shows the extent to which underlying financial roles in the household can exacerbate this effect of asymmetric information: men whose wives make the savings decisions are significantly more likely to put money into their own accounts in Private (women whose husbands made the savings decisions also followed a similar pattern, although the coefficient is not significant).

However, demonstrating that men are more likely to put money into their own accounts in Private—even when (or especially when) their spouses are the ones making the savings

decisions—is not evidence of inefficiency. The *additional* information that this outcome provides us is the extent to which a subject was willing to pay in order to deposit the money into an account of his/her choosing. Twenty-one percent of subjects were willing to give up some money (i.e., they chose direct deposit amounts below 200 pesos).[41] These subjects were sacrificing money that could not be regained in order to make sure it was deposited into the savings account. In debriefing surveys after the experiments, subjects who responded in this way explained that direct deposit made sure their money was *segurado* (secured); they used the popular Filippino expressions *Inig ang kuarto* (the money is hot) and *paxi, paxi* (the money will get divided) to describe why they felt that once there was cash in hand, they did not trust themselves or their spouse, as the case may be, to deposit the cash into the savings account later on their own. They preferred to have it directly deposited during the experiment even if it meant a lower amount went into their account. Men sacrificed significantly more money in Private to have money deposited into an account (an average of 21 pesos in Private, compared to 9 pesos in Public)—and the account they preferred in Private was their own, often opening an account when their wife already had one.[42]

This suggests a very specific channel through which asymmetric information can create inefficient outcomes in financial decision making: through incentives to hide one's additional income from one's spouse. This is particularly important given the theoretical work showing that efficient risk sharing can increase savings but requires income pooling and joint saving (Mazzocco 2004). Ultimately, the degree to which hiding of income is widespread among households is an empirical question. Growing empirical work suggests hiding of income that occurs among spouses has significant implication for tax reporting and national income calculations (Frances Wooley 2003; Jay L. Zagorsky 2003).[43] Measuring a willingness to pay for one's money to be safely sheltered or put aside, and seeing how that willingness to pay varies when there is asymmetric information or when spouses are forced to communicate, as I have here, is one way of concretely measuring the losses to household efficiency from intra-household frictions.[44]

[41] Subjects displayed monotonicity in their responses (that is, for example, if they chose 175 pesos in their account over 200 cash, they also chose 200 pesos in their account over 200 cash and 225 pesos in their account over 200 cash).

[42] Subjects who always chose cash, or chose 225 in account or 200 in account over 200 cash, were coded as willing to give up zero pesos in order to have money directly deposited into an account. Subjects who preferred to receive (minimum) 175 pesos direct deposit over 200 cash were coded as being willing to give up 25 pesos in cash for direct deposit; 50 pesos if subject answered (minimum) 150 in account versus 200 cash; and 75 pesos if subject answered (minimum) 125 pesos into account versus 200 cash. Since subjects were not asked for trade-offs below 125 pesos, this is may be an underestimate of the actual willingness to give up cash for direct deposit.

[43] I am grateful to Elizabeth Gugl for pointing me to this work. Relatedly, "sheltering" or hiding of income from one's spouse calls into question one of the standard assumptions of household models: income pooling. In recent work, Alexander Gelber (2008) used separate tax records for husbands and wives in Sweden to reject income pooling, finding outcomes that were consistent with a spouse's extra income being unobservable to the other spouse.

[44] Of course, this measure of willingness to pay is both a measure of one's preference for the good (for example, one's desire to have one's money put into a savings account or how much one likes a gift for self) *and* one's preference for having the money committed. I thus asked a willingness-to-pay question, measured in the same way as described above, for the other outcomes collected in the experiment: for a gift for self, for food, and for savings in the name of the child. Table A5 reports the willingness-to-pay measures, along with the other outcomes of the experiment. Both spouses seemed to love putting money into a savings account in the name of the child and were willing to give up a significant amount of money for it; this preference did not vary with asymmetric information or communication. In contrast, the amount of money both spouses were willing to give up to commit for a gift certificate for themselves decreased dramatically as their choices were made public (for women) and couples could communicate prior to decision making (for women). A similar, although less dramatic, effect occurs for money given up for committed consumption of food. In these cases, it did seem that communication eased household frictions and improved efficiency. However, both men and women were still willing to give up a significant amount of money, even after negotiation, for money put into an account; the fact that this mainly went to the wife's/household financial decision-maker's account in negotiation suggests that this was more of a commitment strategy for the couple as a unit.

IV. Conclusion

Using an experimental design, I am able to elicit causal effects of spousal observability and communication on household choices. I find that making information public moves men from putting money away into their own accounts to committing it to consumption. This effect appears to be driven not as much by gender as by control: men whose wives control savings decisions in the household are much more likely to exhibit this treatment effect, consistent with a framework in which information serves a monitoring role in enforcing a contract in which one spouse controls the finances. Although women in the Philippines are traditionally in charge of budgeting, there is heterogeneity among households in degrees of control. Indeed, women whose husbands control the savings decisions exhibit the same type of behavior as the men. This provides further evidence that the effect of privacy of information—and of communication—is heterogeneous, and depends critically on existing household roles. These roles are not just an efficient division of labor, as they have been primarily presented in the intra-household literature in economics, but rather can create a system of incentives that make hiding money desirable and committing it to consumption necessary in order to enforce one's preferences.

My experiment suggests that conditions of asymmetric information interact with underlying household control structures to create greater incentives for hiding, and thus any interventions that change household public information should take into account what the underlying roles are. There are many interventions and policies that can have asymmetric effects on information within the household: making prices of certain goods (that only one spouse sells in a nearby market, for example) public or giving subsidies to the household versus loans only to women without the husbands' knowledge. Migration provides a particularly stark example of altering information asymmetries. Jost de Laat (2005) shows that migrant men in Kenya go to great lengths to monitor the activities of the wives who receive remittances, because of their concern that the wives will take advantage of the asymmetric information created; indeed, in Kenya, a culture that has the opposite gender norms for financial management from the Philippines, many women form "secret savings societies" to keep extra income they earn in the workplace from their husbands.[45] Joyce Chen (2006) finds that migrant-sending households in China respond strongly to the efficacy of monitoring through adjusting intra-household allocation.

De Laat and Chen present frequent visits as a monitoring technology for enforcing contracts in the face of private information. My paper suggests that even when information is public, monitoring technologies make a difference by influencing decision making. In particular, communication at the moment of decision making appears to significantly change men's choices in particular. The theoretical framework I have presented suggests that the effect of communication is due to disincentives for explicit defiance, rather than the tacit defiance that occurs in a condition of full information, but no communication.

I provide evidence for why we may see gender differences when looking at means—differences in preferences that are not immutable, based on gender alone; they are due to the roles the genders have taken on, and the structure of household financial management that has created incentives for strategic behavior. When we observe strong gender differences in outcomes or treatment effects—whether in empirical or experimental data—it is important to know where such differences are coming from, particularly before advancing programs and policies that serve one spouse versus the other because we believe one gender's preferences are more closely aligned with those of the policymaker's. In particular, it is critical to ask what effect this program will have in creating, exacerbating, or mitigating information asymmetries within the households,

[45] Personal correspondence with village bank managers and female clients of K-Rep Development Agency in Kenya.

and what are the existing household management roles that may create incentives for one party to take advantage of the changes in information created through the program.

Previous empirical work which observes household outcomes and changes in members' incomes to draw conclusions about underlying gender preferences should be interpreted with caution: such results are not necessarily reflective of intrinsic or immutable preference differences between women and men. Further emphasis on the bargaining process in which men and women interact—in particular the effects of information and communication—and the way in which this process interacts with underlying control structures in the household, can shed greater light on how individual incomes turn into household outcomes.

Appendix

Table A1—Experiment Sample Selection

	Dependent variable: Take-up of experimental offer					
	Male			Female		
Age	−0.001	−0.001	−0.003	−0.000	0.001	−0.001
	(0.005)	(0.005)	(0.006)	(0.005)	(0.005)	(0.005)
Highest grade completed	−0.036	−0.037	−0.054**	0.012	0.014	0.015
	(0.024)	(0.025)	(0.027)	(0.021)	(0.022)	(0.021)
Total household income	0.071	0.069	0.125	0.262**	0.232**	−0.239
	(0.130)	(0.130)	(0.137)	(0.115)	(0.120)	(0.121)
Total self-reported savings	−0.004	−0.004	−0.003	0.002	0.002	0.002
	(0.007)	(0.007)	(0.007)	(0.009)	(0.009)	(0.009)
Own labor and pension income	−0.129	−0.128		−0.400**	−0.362**	
	(0.180)	(0.182)		(0.173)	(0.177)	
Barangay						
Bading Pob	0.085	0.088	0.143	−0.086	−0.085	−0.072
	(0.176)	(0.178)	(0.172)	(0.145)	(0.147)	(0.151)
San Vincente	0.152	0.155	0.115	−0.002	−0.006	0.004
	(0.135)	(0.142)	(0.144)	(0.129)	(0.130)	(0.132)
Pagatpatan	0.178	0.179	0.109	−0.127	−0.157	−0.145
	(0.146)	(0.147)	(0.161)	(0.274)	(0.271)	(0.276)
Pangabugan	−0.014	−0.012	0.060			
	(0.177)	(0.178)	(0.173)			
Score of female decision-making power		−0.010			0.111	
		(0.400)			(0.285)	
Wife decides about buying expensive items			−0.055			0.040
			(0.077)			(0.070)
Wife decides about large family purchases			−0.125			−0.021
			(0.096)			(0.079)
Wife decides whether she can work outside the house			0.102			−0.040
			(0.091)			(0.067)
Observations	83	83	83	103	103	103
Mean dependent variable	0.66	0.66	0.66	0.53	0.53	0.53

Notes: A barangay is the smallest political unit and defined community, on average comprising 1,000 individuals. Standard errors in parentheses. Individuals were recruited to take part in the experiment from two samples: (1) Green Bank clients who had taken part in a prior field experiment, and on whom there was prior baseline data; and (2) other Green Bank current and prior clients. This table reports a probit regression of take-up of the experiment on subgroup (1): 201 individuals in this subgroup were approached and asked to bring their spouses into the bank for the experiment; 115 of these individuals showed up (57 percent). To the extent that individuals in this subgroup were originally randomly selected out of a larger pool of Green Bank clients, their selection into the experiment would likely be similar to that of subgroup (2). This table shows the results from a probit regression on a dummy variable for showing up to the experiment conditional on being offered to take part. Fifteen individuals were dropped from the regressions because they had missing data for some observations or, in the case of four individuals, Barangay Pangabugan perfectly predicted failure to take up.

TABLE A2—SUMMARY STATISTICS BY GENDER

	Private	*p*-Value private-public	Public	*p*-Value public-negotiation	Negotiation	*p*-Value private-negotiation
Panel 1. Male						
Age	43.617	0.892	43.333	0.157	46.800	0.198
	(10.271)		(10.217)		(13.559)	
Years married	18.403	0.978	18.344	0.337	20.835	0.328
	(9.907)		(10.432)		(13.286)	
Number of children	3.395	0.259	3.895	0.848	3.979	0.194
	(2.209)		(2.106)		(2.193)	
Highest grade completed	11.040	0.809	10.895	0.004**	9.080	0.004**
	(3.215)		(2.667)		(3.403)	
Daily wage	281.052	0.449	398.288	0.892	431.430	0.482
Median daily wage	(450.978)		(941.965)		(1,407.165)	
Both wife and husband work	0.750	0.692	0.770	0.487	0.700	0.258
	(0.437)		(0.424)		(0.462)	
Work outside the home	1.000	0.571	0.937	0.437	0.940	0.816
	(0.000)		(0.244)		(0.239)	
Wife does the budgeting	0.833	0.319	0.750	0.404	0.820	0.863
	(0.376)		(0.437)		(0.388)	
Wife makes more income than husband	0.312	0.829	0.333	0.571	0.280	0.727
	(0.468)		(0.476)		(0.453)	
Husband turns over all money to wife†	0.645	0.652	0.600	0.806	0.574	0.481
	(0.483)		(0.495)		(0.499)	
Husband turns over some money to wife†	0.229	0.864	0.244	0.226	0.361	0.159
	(0.424)		(0.434)		(0.485)	
Wife controls savings decisions	0.270	0.478	0.208	0.551	0.260	0.904
	(0.449)		(0.410)		(0.443)	
Husband controls savings decisions	0.187	1.000	0.187	0.722	0.160	0.722
	(0.394)		(0.394)		(0.370)	
Couple has conflicts over money	0.333	0.299	0.437	0.161	0.300	0.726
	(0.476)		(0.501)		(0.462)	
Has an account at Green Bank	0.333	0.832	0.354	0.346	0.440	0.248
	(0.476)		(0.483)		(0.501)	
Spouse has account at Green Bank	0.395	0.677	0.354	0.100+	0.520	0.221
	(0.494)		(0.483)		(0.504)	
Couple has joint bank account	0.104	0.135	0.020	0.489	0.100	0.459
	(0.308)		(0.144)		(0.303)	

TABLE A2—SUMMARY STATISTICS BY GENDER (*Continued*)

	Private	*p*-Value private-public	Public	*p*-Value public-negotiation	Negotiation	*p*-Value private-negotiation
Panel 2. Female						
Age	40.541	0.788	41.063	0.112	44.740	0.073*
	(9.635)		(9.336)		(12.965)	
Years married	18.447	0.910	18.205	0.365	20.463	0.403
	(9.932)		(10.291)		(12.599)	
Number of children	3.458	0.389	3.833	0.8410	3.920	0.294
	(2.163)		(2.086)		(2.174)	
Highest grade completed	11.583	0.454	12.085	0.037**	10.700	0.223
	(3.607)		(2.850)		(3.535)	
Daily wage	588.646	0.114	180.95	0.377	431.160	0.674
Median daily wage	(1,738.882)		(195.140)		(1,925.509)	
Both wife and husband work	0.750	0.953	0.723	0.543	0.700	0.514
	(0.437)		(0.452)		(0.462)	
Work outside the home	0.791	0.035	0.787	0.437	0.720	0.224
	(0.410)		(0.413)		(0.453)	
Wife does the budgeting	0.687	0.945	0.680	0.275	0.780	0.304
	(0.468)		(0.471)		(0.418)	
Wife makes more income than husband	0.270	0.950	0.276	0.684	0.240	0.729
	(0.449)		(0.452)		(0.431)	
Husband turns over all money to wife†	0.000	0.652	0.000	0.806	0.000	0.481
	(0.000)		(0.000)		(0.000)	
Husband turns over some money to wife†	0.000	0.864	0.000	0.226	0.000	0.159
	(0.000)		(0.000)		(0.000)	
Wife controls savings decisions	0.312	0.274	0.212	0.331	0.300	0.894
	(0.468)		(0.413)		(0.462)	
Husband controls savings decisions	0.125	0.779	0.106	0.444	0.160	0.625
	(0.334)		(0.311)		(0.370)	
Couple has conflicts over money	0.354	0.773	0.382	0.573	0.440	0.390
	(0.483)		(0.491)		(0.501)	
Has an account at Green Bank	0.520	0.223	0.395	0.044**	0.600	0.435
	(0.504)		(0.494)		(0.494)	
Spouse has account at Green Bank	0.229	0.490	0.291	0.360	0.380	0.107
	(0.424)		(0.459)		(0.490)	
Couple has joint bank account	0.104	0.135	0.062	0.489	0.040	0.459
	(0.308)		(0.244)		(0.197)	

Notes: Standard errors in parentheses.

† Reports by husband. All others are individual reports.

*** Significant at the 1 percent level. ** Significant at the 5 percent level. * Significant at the 10 percent level.

TABLE A3—CASH VERSUS DIRECT DEPOSIT INTO SAVINGS ACCOUNT

	Cash over any savings		Own savings over cash or spouse's savings		Spouse's savings over own savings or cash	
	(1)	(2)	(3)	(4)	(5)	(6)
Panel 1. Male						
Private	−0.166*	−0.031	0.146	0.059	0.021	−0.028
	(0.107)	(0.115)	(0.085)	(0.094)	(0.079)	(0.102)
Negotiation	−0.116	−0.031	−0.024	−0.044	0.139	0.076
	(0.100)	(0.124)	(0.073)	(0.102)	(0.082)	(0.100)
Wife controls savings × Private		−0.443*		0.379*		0.065
		(0.227)		(0.217)		(0.176)
Wife controls savings × Negotiation		−0.302		0.099		0.203
		(0.211)		(0.187)		(0.180)
Wife controls savings decisions		0.282**		−0.083		−0.199**
		(0.132)		(0.117)		(0.085)
Constant	0.667***	0.649**	0.190**	0.018	0.146**	0.331
	(0.070)	(0.304)	(0.052)	(0.230)	(0.052)	(0.240)
Account, education and wage variables (Own and Spouse)	No	Yes	No	Yes	No	Yes
Observations	145	143	145	143	145	143
R^2	0.020	0.085	0.032	0.153	0.024	0.099
Panel 2. Female						
Private	0.052	0.146	0.140	0.054	−0.192**	−0.201**
	(0.101)	(0.112)	(0.088)	(0.103)	(0.070)	(0.077)
Negotiation	−0.021	0.059	0.132	0.071	−0.111	−0.131
	(0.108)	(0.120)	(0.095)	(0.113)	(0.081)	(0.086)
Husband controls savings × Private		−0.440		0.249		0.190
		(0.370)		(0.344)		(0.121)
Husband controls savings × Negotiation		−0.290		0.056		0.233
		(0.335)		(0.251)		(0.175)
Husband controls savings decisions		0.402*		−0.150		−0.251
		(0.258)		(0.212)		(0.097)
Constant	0.511***	0.006	0.255***	0.628**	0.234***	0.366**
	(0.076)	(0.321)	(0.061)	(0.310)	(0.060)	(0.178)
Account, education and wage variables (Own and Spouse)	No	Yes	No	Yes	No	Yes
Observations	144	143	144	143	144	143
R^2	0.004	0.111	0.018	0.120	0.054	0.129

Notes: Bootstrapped standard errors (300 repetitions) in parentheses, on OLS estimation. Wife controls savings × Negotiation is the interaction between Wife controls savings decisions and Negotiation. Husband controls savings × Negotiation is the interaction between Husband controls savings decisions and Negotiation. Wife controls savings decision: variable = 1 if, in response to the question: "Who decides whether money will be saved or it would be spent on something?" the subject answers "wife." Variable = 0 if subject answers "husband" or "husband and wife together." It is the subject's perception of who controls savings decisions in the household; a longer, more precise label for the variable is "Own perception that wife controls savings decisions." Husband controls savings decisions = 1 if the subject answers "husband" in response to "Who decides whether money will be saved or it would be spent on something?" Variable = 0 if subject answers "wife" or "husband and wife together." It is the subject's perception of who controls savings decisions in the household. A longer, more precise label for the variable is "Own perception that husband controls savings decisions." Account, education, and wage variables (own and spouse) consist of all controls from Table 3: own age, spouse's age, own highest grade completed, spouse's highest grade completed, own daily wage, spouse's daily wage, have account at Green Bank, spouse has account at Green Bank, and have joint account. Treatment and interaction results are robust to excluding controls. Spousal variables are as reported by the spouse.

*** Significant at 1 percent. ** Significant at 5 percent. * Significant at 10 percent.

TABLE A4—FOOD INTERACT

	Food over any savings		Own savings over food or spouse's savings		Spouse's savings over own savings or gift for food	
	(1)	(2)	(3)	(4)	(5)	(6)
Panel 1. Male						
Private	−0.348***	−0.222*	0.246**	0.108	0.102	0.114
	(0.097)**	(0.119)	(0.089)	(0.102)	(0.072)	(0.093)
Negotiation	−0.275	−0.166	0.054	−0.015	0.221**	0.182*
	(0.099)	(0.109)	(0.079)	(0.098)	(0.078)	(0.100)
Wife controls savings × Private		−0.467**		0.582**		−0.114
		(0.229)		(0.209)		(0.188)
Wife controls savings × Negotiation		−0.323		0.255		0.067
		(0.203)		(0.189)		(0.198)
Wife controls savings decisions		0.105		−0.114		0.008
		(0.155)		(0.117)		(0.112)
Constant	0.745***	0.968**	0.170***	−0.019	0.085**	0.051
	(0.064)	(0.305)	(0.055)	(0.238)	(0.041)	(0.245)
Account, education and wage variables (own and spouse)	No	Yes	No	Yes	No	Yes
Observations	144	142	144	142	144	142
R^2	0.090	0.168	0.056	0.194	0.052	0.108
Panel 2. Female						
Private	−0.116	−0.023	0.245**	0.160	−0.129*	−0.137**
	(0.099)	(0.114)	(0.100)	(0.108)	(0.067)	(0.075)
Negotiation	−0.137	−0.043	0.225**	0.161	−0.087	−0.118
	(0.102)	(0.116)	(0.095)	(0.110)	(0.070)	(−0.086)
Husband controls savings × Private		−0.307		0.180		0.126
		(0.294)		(0.299)		(0.121)
Husband controls savings × Negotiation		−0.305		0.118		0.187
		(0.294)		(0.253)		(0.178)
Husband controls savings decisions		0.467**		−0.290		−0.177*
		(0.148)		(0.149)		(0.085)
Constant	0.595***	0.420	0.212***	0.287	0.191***	0.292
	(0.070)	(0.285)	(0.063)	(0.310)	(0.058)	(0.184)
Account, education and wage variables (own and spouse)	No	Yes	No	Yes	No	Yes
Observations	143	142	143	142	143	142
R^2	0.015	0.150	0.053	0.164	0.027	0.079

Notes: Please see Table A6 for the main experimental outcomes for the choice of gift certificate for food over direct deposit. This table presents controls and interactions with spousal control. Bootstrapped standard errors (300 repetitions) in parentheses, on OLS estimation. Wife controls savings × Negotiation is the interaction between Wife controls savings decisions and Negotiation. Husband controls savings × Negotiation is the interaction between Husband controls savings decisions and Negotiation. Wife controls savings decision: variable = 1 if, in response to the question: "Who decides whether money will be saved or it would be spent on something?" the subject answers "wife." Variable = 0 if subject answers "husband" or "husband and wife together." It is the subject's perception of who controls savings decisions in the household; a longer, more precise label for the variable is "Own perception that wife controls savings decisions." Husband controls savings decisions = 1 if the subject answers "husband" in response to "Who decides whether money will be saved or it would be spent on something?" Variable = 0 if subject answers "wife" or "husband and wife together." It is the subject's perception of who controls savings decision in the household. A longer, more precise label for the variable is "Own perception that husband controls savings decisions" account, education, and wage variables (own and spouse) consist of all controls from Table 3: own age, spouse's age, own highest grade completed, spouse's highest grade completed, own daily wage, spouse's daily wage, have account at Green Bank, spouse has account at Green Bank, and have joint account. Treatment and interaction results are robust to excluding controls. Spousal variables are as reported by the spouse.

*** Significant at 1 percent. ** Significant at 5 percent. * Significant at 10 percent.

TABLE A5— FULL EXPERIMENTAL OUTCOME

	Private		Public		Negotiation	
	Males $N = 48$	Females $N = 48$	Males $N = 48$	Females $N = 48$	Males $N = 50$	Females $N = 50$
Gift certificate for self versus cash						
200 pesos cash always	0.66	0.61	0.72	0.73	0.86**	0.84**
Gift certificate $\geq$ 200 over 200 cash	0.21	0.26	0.19	0.23	0.12	0.14
GC $<$ 200 over 200 pesos cash	0.13	0.13	0.09	0.04	0.02**	0.02**
WTP for gift certificate for self	5.32	5.43	3.70	1.56	1.00*	1.02*
Gift certificate for food						
Cash	0.56	0.42	0.58	0.52	0.61	0.50
Gift certificate $>$ 200	0.31	0.42	0.27	0.44	0.35	0.44
GC $<$ 200 pesos over 200 pesos cash	0.13	0.17	0.15	0.04**	0.04	0.06*
WTP for gift certificate for food	6.25	7.29	6.25	2.08*	2.04	3.00
Child's savings account versus cash						
Cash	0.62	0.43	0.52	0.56	0.58	0.54
Gift certificate $>$ 200	0.13	0.35	0.29*	0.19*	0.24	0.30
GC $<$ 200 pesos for child's saving account over 200 cash	0.26	0.21	0.18	0.25	0.18	0.16
WTP for gift certificate for child's savings	17.5	15.6	12.5	15.6	12.5	11.00
Gift certificate trade offs						
200 pesos gift certificate for food over 200 pesos gift certificate for self	0.77	0.90	0.71	0.92	0.86*	0.88
200 pesos into child's savings account over 200 pesos gift certificate for self	0.53	0.79	0.54	0.69	0.60	0.58**
200 pesos into child's savings account over gift certificate for food	0.54	0.66	0.52	0.56	0.46	0.50
200 pesos child's savings account over 200 pesos into own savings account	0.54	0.73	0.52	0.60	0.46	0.48**
Time preference						
Patient	0.48	0.48	0.42	0.52	0.38	0.44
Impatient	0.06	0.08	0.10	0.04	0.06	0.06
Impatient now, patient later	0.375	0.354	0.375	0.375	0.400	0.320
Time preference for spouse	0.66	0.66	0.66	0.61	0.59	0.56

Notes: This table shows the full set of experimental outcomes, comparing across treatment conditions using tests. Willingness-to-pay (WTP) variables are determined in the following way: the variable WTP for gift certificate for self is assigned a value of 0 pesos if the subject always chose cash, or chose a gift certificate worth 225 or 200 over 200 cash; 25 pesos if subject preferred to receive a gift certificate worth (minimum) 175 pesos over 200 cash; and 50 if subject answered that s/he would prefer a gift certificate worth (minimum) 150 over 200 cash. Note that this is an underestimate of the actual willingness to give up cash for gift certificates for self and food, as trade-offs were not asked for below 150 pesos. Time-preference variables: patient, impatient, impatient now, patient later refer to time preference questions that were asked in near term and in far term. To ensure that subjects trusted that they would receive the money if they waited, we used certified bank postdated checks (with transaction costs equalized by requiring all subjects to come back three more times to the bank to "sign in" and receive 20 pesos (more than twice their fare to the bank) when they return: once in two week, once in three month, and once in three and a half months. Almost 90 percent of subjects returned for these sign-ins and received their additional 20 pesos each time). Those who were willing to wait for a sum larger than 200 pesos in the near term (in 2 weeks versus now) and in far term (in 14 weeks versus 12 weeks) were classified as patient. Those who always opted for the 200 pesos both now, in the near term, and in 12 weeks, in the long term, were classified as impatient. Those willing to wait in the long term, but wanting the 200 pesos now in the near term, were classified as impatient now, patient later. Time preference for spouse: subjects were asked, through a series of discrete choices, what amount of money should the spouse be willing to wait for two weeks, rather than getting the 200 pesos cash today. Subjects were told that if this decision was the one chosen, this choice would actually be implemented for the spouse. This decision, therefore, elicits a combination of the subject's hope for, and their expectations of, their spouse's behavior.

*** Significant at 1 percent. ** Significant at 5 percent. * Significant at 10 percent.

TABLE A6—MAIN EXPERIMENTAL OUTCOMES: FOOD OVER DIRECT DEPOSIT

	Male			Female		
	Private $N = 48$ (1)	Public $N = 47$ (2)	Negotiation $N = 50$ (3)	Private $N = 48$ (4)	Public $N = 48$ (5)	Negotiation $N = 50$ (6)
Gift certificate for food	0.40	0.74	0.46	0.48	0.58	0.45
Direct deposit in own account	0.42	0.17	0.22	0.46	0.23	0.45
Direct deposit in spouse or joint account	0.19	0.09	0.32	0.06	0.19	0.10
Fisher's exact p-value: private to public	0.003			0.027		
Fisher's exact p-value: public to negotiation		0.006			0.068	
Fisher's exact p-value: private-negotiation			0.095			0.865

Notes: This table presents results from Fisher's exact tests for significant differences in the distribution of choices for a gift certificate for food worth 200 pesos versus direct deposit into an account of one's choice, across the three treatment conditions. The first row is the fraction of individuals who preferred a gift certificate for food over direct deposit of 200 pesos into their own account and 200 pesos deposited into the spouse's/joint account. The second row is the fraction that preferred direct deposit for 200 into their own savings account over either a gift certificate for food worth 200 pesos or a deposit of 200 pesos into the spouse's account. The third row is the fraction that preferred direct deposit for 200 into the spouse's or a joint savings account over a gift certificate for food worth 200 pesos and over deposit of 200 pesos into their own account.

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