ESSAYS ON HOUSEHOLD ECONOMICS IN KENYA

by

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For my husband,

the best thing I picked up in grad school.

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ABSTRACT

Essays on Household Economics in Kenya

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This dissertation uses original data collected by the author in rural Kenya to study household economics. Data collection occurred September-November 2011, surveying 415 couples in Siaya County.

The first and second chapters of the dissertation use laboratory experimental methods to test features of household bargaining models. Using variations of the dictator game, the first chapter demonstrates that 97% of choices in the spouse dictator games are inefficient. While people give more on average when their decisions will be revealed to the spouse, average behavior obscures important heterogeneity: 37 percent of people give more when their choice will be revealed to their spouse, 50 percent do not respond to asymmetric information, and 13 percent are actually more generous in the secret game. Together these results suggest that models of the household should allow for heterogeneous responses to imperfect information, by both an agent and his spouse, and policy makers should consider that information might not always increase efficiency.

The second chapter develops a model that incorporates inequity aversion with monetary utility, allowing for additional discomfort with inequality in the spouse games and when

the respondent's actions are made public to his spouse. Numerical methods are used to measure the relative importance of limited contracting, information problems, and the value of spouse's monetary utility in explaining inefficient behavior between spouses. Surprisingly, limited contracting and information problems are not the primary causes of inefficiency, and instead that the variation in the value of spouse's monetary utility relative to own monetary utility is the most important driver of efficiency in the games and transfers between spouses in real life.

The final chapter demonstrates that husbands and wives report different numbers of material assets such as livestock, consumer durables, and grain stores, and that these differences have substantial impacts on traditional measures of poverty. Were social programs to be targeted with either a predicted expenditure poverty score card or principal component score, different households would receive services if husbands' reports were used instead of wives'. For the most consistent measure of asset ownership, it is suggested that practitioners take asset reports from a couple jointly.

CHAPTER I

Heterogeneous Households: Laboratory Tests of Efficiency and Information between Spouses in Kenya

1.1 Abstract

Most tests of household models examine average statistics, but households may be heterogeneous. Using dictator games played between married couples, I test the assumptions of efficiency and perfect information between spouses in rural Kenya. Using a within-subject (panel data) design, I test each assumption for each individual and provide a unique measure of the distribution of behavior across households. I find that 97 percent of choices are inefficient, with respondents sacrificing an average of 16 percent of potential income. While respondents on average give more when their decisions will be revealed to their spouse, I find that the mean obscures important heterogeneity: 37 percent of people give more when their choice will be revealed to their spouse, 50 percent do not respond to asymmetric information, and 13 percent are actually more generous when their decision remains hidden. I confirm that this heterogeneity in behavior in the games is important in the interpretation of survey measures of information between spouses: for those who do not respond to asymmetric information in the games, better information in real life is associated with greater efficiency in the games; for those who do respond to asymmetric information in the games, better information in real life is correlated with less efficiency in the games and is likely due

to spousal monitoring. Together these results suggest that models of the household should allow for heterogeneous responses to imperfect information by both an agent and his spouse, and policy makers should consider that information might not always increase efficiency.

1.2 Introduction

Basic economic models of decision-making examine the choices of individuals, but because individuals most often live and make choices within families, individuals rarely make truly independent decisions. Empirical studies have shown that family structure, relative economic status, and bargaining affect many outcomes, including savings (Anderson and Balland (2002), Schaner (2012)), business investment (de Mel, McKenzie, and Woodruff (2009)), agricultural investment (Udry (1996), Duflo and Udry (2004)), educational investment (Qian (2008)), health investment (Thomas (1990), Hoffman (2009)), nutrition (Haddad and Hoddinott (1994), Duflo (2003), Dubois and Ligon (2010)), and time use (Shultz (1990), Chen (2013)). Models of the household have been used to design public policy programs, most obviously cash transfer programs. Cash transfers today are most often given to women, based on the thinking that the income stream will increase her bargaining power, and transfers are usually distributed with the full knowledge of both wife and husband.

While the literature has recognized that households may have different incomes, different preferences, and make different choices, tests between models of how those choices are determined have implicitly assumed that all households make decisions in the same way. With rare exception, tests between models of household decision-making have examined only average statistics. There are two limitations in this strategy. First, means cannot measure heterogeneity. Mean statistics cannot tell us if there are different types of households in the population, and cannot tell us what fraction of households conform to one model or another. Second, it is possible that a minority of households could be so strongly different as to generate a misleading average statistic. In some cases, the mean of a distribution may obscure what is in fact true for most of the population.

In this study of household decision-making, I explicitly look for heterogeneity across individuals in which features of household models fit them best. I use laboratory games played between spouses to identify whether an *individual* adheres to different household model assumptions, allowing a classification of not only the average behavior in the population but also a count of how many people are best fit by each assumption. I focus on allowing for heterogeneous levels of efficiency between spouses and testing for different responses to asymmetric information. I also look for different behaviors across the genders.

Specifically, I play dictator games between spouses in rural Kenya. I first test for efficiency by setting the value of tokens passed to the spouse at 30 KSH while tokens kept for self are worth 20 KSH. This asymmetric payoff structure allows me to clearly observe how much household income players are willing to forgo to maintain control over personal income. I observe that most people do not maximize household income from these one-off transfers. The efficient option is chosen in fewer than three percent of observations. Individuals forgo an average of sixteen percent of possible household earnings to maintain personal control over half the realized pot. This behavior violates the efficiency assumption that defines the Collective model of household decision making, and is observed nearly universally in the sample.

The assumption of efficiency is often justified by the ideas that spouses must have complete and perfect information about each others' preferences and choices, and must be able to agree upon and enforce perfect contracts. In households in which we observe inefficiency, do we also observe violations of these underlying implicit assumptions? Further, we observe inefficient behavior nearly universally in the sample. Do we observe similarly universal evidence of imperfect information or limited contracts?

I test for an effect of imperfect information by playing two types of dictator game, one in which the respondent's decisions remain secret and another in which his choices are revealed to his spouse. While on average respondents give more when their decision will be revealed to their spouse, I find that the mean obscures important heterogeneity. On average, men

give 9.2 percentage points more in the public game than in the secret game, while women increase their giving by 6.9 percentage points when their choices will be revealed. These average differences are statistically different from zero and robust to a variety of controls. This average statistic indicates that the perfect information assumption does not hold in the sample. However, *half* of people do not respond to asymmetric information. Men give the same amount in public and secret in 49 percent of games, and women give the same in 50 percent of games. I also find that some people respond to asymmetric information in an unexpected way. Some people give more in the secret game than in the public game, precisely when their generosity cannot be observed. This happens in fourteen percent of all observations, and many of those people are consistently generous in secret: eight percent of individuals give more in secret for at least two of the three stakes offered in the games. These "Secret Benefactors" are a reminder that allowing for heterogeneous responses sometimes uncovers unexpected behavior.

That I do not observe heterogeneity in efficiency behaviors but do observe significant heterogeneity in responses to asymmetric information in the games suggests that information problems are not the driving cause of inefficiency, and that the relationship between efficiency and information is complex. To confirm that the heterogeneous information responses I find in the games are meaningful to real world behavior, I use survey data on information between spouses to explore the relationship between information in real life and efficiency in the games. Again I find that allowing for heterogeneity is important. When I pool Opportunists (those who give more in the public game than in the secret game) with Non-Responders (those who do not respond to asymmetric information in the games), I find that better information in real life is correlated with greater efficiency in the games. The average statistic indicates that better information is associated with better cooperation. However, when I split the sample, I find that better information indicates better cooperation only for Non-Responders, while for Opportunists, better information is correlated with greater non-cooperative behaviors and is likely indicative of closer monitoring by a suspicious spouse.

What is causing inefficient behavior in these games? My data hint at a specific form of limited contracting: transaction level sharing rules. While the Collective model suggests that households have a sharing rule that applies to total family income over time, with a set fraction of income over a week or month ending up with each member (Chiappori (1992)), my respondents are dividing money nearly evenly in every transaction. Rather than maximizing total income from the games and reallocating to a contracted sharing arrangement later, individuals seem to have a strong preference for a fair allocation in every choice. This is a form of limited contracting, and appears to be a driving force of inefficiency in these games.

Together these results have implications for both theory and policy. First, these data indicate the Collective model of household decision-making is inappropriate for the vast majority of this sample. Second, in new non-cooperative models of the household, theorists should consider that agents may have heterogeneous responses to information and that their spouses may react accordingly. Third, new models should also consider a specific form of limited contracting: transaction level sharing rules. Finally, people designing and studying cash transfer programs should consider that information may have heterogeneous effects and that information may not always improve efficiency. Future work should allow for heterogeneity in tests of the relationship between information and efficiency in the field.

The paper is organized as follows: in Section 1.3 I review the theoretical and empirical literature on household decision-making and describe some relevant studies in the experimental literature; Section 1.4 describes the ethnographic setting for this study and explains the experimental design; Section 1.5 presents results of tests of efficiency and information in the games; Section 1.6 explores the link between information and efficiency using survey data and game behavior; Section 1.7 discusses and concludes.

1.3 Relevant Literature

1.3.1 Household Models: Theory, Tests, and Heterogeneity

The Collective model is currently the most popular model of the household.[1] Efficiency is the defining characteristic of the Collective model. The model assumes two agents that make choices that affect each other, and through some form of bargaining, arrive at decisions that are Pareto optimal.[2] In the words of those who defined the model, "the cooperative approach does recognize that the allocation of resources within the household may (and generally will) depend on the members' respective 'weights'; it simply posits that however resources are allocated, none are left on the table" (Browning, Chiappori, and Weiss (2011)). The Collective model then implies, for income streams that do not change bargaining weights, the efficient household will maximize total household income.

Note that testing for household income maximization is not simply a test of income pooling, or a test between the Unitary and Collective models of the household. Income pooling suggests that regardless of the fraction of income earned by each household member, income is spent in the same way. The Collective model instead allows for the income balance to influence bargaining weights, which can also be interpreted as a sharing rule (Chiappori (1992)). The sharing rule is then used to divvy up total income that comes to the household over time.[3] Because income from this experiment is surely too small and idiosyncratic to change bargaining weights, we should not expect it to affect the sharing rule for total income. An efficient respondent will maximize household income in the games because she knows that the fraction of total income (from the games and from other sources) that ends up in her hands will be the same regardless of what she chooses to do with this one small stream.

[1] Note that the unitary model is a special case of the Collective model in which the bargaining weights are unaffected by external factors. The unitary model is not discussed here because it has been widely dismissed by the empirical literature (Alderman et al. (1995)).

[2] The Collective model concludes that the household acts as if it is maximizing a weighted utility function, with utility weights a function of the bargaining weights. Bargaining weights are determined by external factors like wages and legal structures. The canonical form of the Collective model was developed in Manser and Brown (1980) and McElroy and Horney (1981), and solidified in Chiappori (1988) and Chiappori (1992).

[3] We can think of households "settling up" over a period of time such as a week or a month.

The assumption of efficiency is justified by the idea that because spouses interact frequently, they must know each other's preferences, resources, and choices, and they must also be able to come to binding agreements that at the very least do not leave money on the table. While formally the assumption of efficiency is what defines the Collective model, practically the notion of efficiency rests on the assumptions of complete and perfect information and perfect contracts between spouses.

Models that do not assume efficiency at the outset are classified as non-cooperative models. These models allow for asymmetric information about choices or preferences, limited commitment, or both. Misinformation and the possibility of cheating are especially relevant in dynamic settings; thus, non-cooperative models are more common in models of decisions across periods.[4] The theoretical literature has not yet settled on a canonical form of the non-cooperative model, in part because we do not know which assumptions better approximate the non-cooperative household: imperfect or incomplete information, limited commitment, or some combination of these elements.

Tests of household models typically come in one of two forms. Many studies test for inefficiency in household decisions directly, often by testing for household income maximization or efficient expenditures, with inefficiency taken as evidence against the Collective model. Other studies test to see if people behave differently when their spouse will or will not find out their choices, with households responding to asymmetric information classified as non-cooperative households.[5] To test one model against another in a sample, the econometrician will generally sum the responses to asymmetric information or the extent of inefficiency across households, calculate the mean response or inefficiency, and test to see if that mean is statistically distinguishable from zero.

[4]Representative non-cooperative models include Lundberg and Pollak (1993) (limited commitment; static setting), Bloch and Rao (2002) (incomplete information; static setting), Chen (2013) (imperfect information and limited commitment; static setting), and Ligon (2002) (limited commitment; dynamic setting).

[5]It is more difficult to test for limited commitment directly in households because there are few things that can vary commitment exogenously. For example, one may think that split-migrant families (in which the husband and wife live in different locations) may find it more difficult to enforce contracts. However, the choice to live separately is surely not exogenous to other factors relevant to household decision making.

Economists in several literatures have recognized the importance of heterogeneity,[6] so why have studies of the household looked almost exclusively at average behavior? I see two reasons. First, data about household decisions are usually available only in cross-section (also known as between-subject) formats. Each respondent is usually observed in the dataset only once, in one state of the world or treatment condition. We do not observe the individual in the counter-factual situation, thus we rely on large and randomly assigned samples in each state of the world or treatment group to difference away individual fixed effects on average. Because it is difficult to construct a proper counter-factual for an individual using cross-section data, we rely on group averages to draw conclusions about mean treatment effects.[7]

Second, even if we were to able observe households more than once, standard tests of household model assumptions are complex, thus measurement of the test statistics difficult, and the variables used to construct the tests are often noisy. We would need to observe each household many times to make inferences about an individual household specifically. For example, a common test of efficiency in the household is the test of collective rationality, or efficiency in expenditure decisions. The test statistic is constructed by comparing the ratios of the derivatives of Engel curves for two goods across the two members of the couple. Measuring the components of this test statistic is difficult. Expenditures and incomes are often highly variable, thus respondents' reports of them prone to measurement error. It's also likely that people make small, random deviations from perfect efficiency in their real-world decisions. We require large sample sizes to mitigate these random measurement and optimization errors. The need for large samples is compounded because even perfectly measured and perfectly efficient expenditures are an inherently high-variance outcome, so especially large samples are needed to generate statistical power. It is usually necessary to

[6]For examples, Blundell and Stoker (2005) discuss issues of "heterogeneity and aggregation" in consumer demand, consumption and savings, and wages and labor participation.

[7]In principal, it would be possible to use quantile regression, matching, or sub-group analyses to test for heterogeneous behavior, but these techniques require strong assumptions and still fundamentally estimate average behavior for more narrowly defined groups.

pool observations across individuals even if panel data are available, thus leading to measures of only average behavior.

Measuring heterogeneity across households is difficult using standard methods, but is straight-forward using experimental techniques. Laboratory games are attractive for two reasons. First, laboratory games can be designed to force choices between starkly different options, allowing clean tests of household model assumptions. Large sample sizes are then not necessary to construct strong tests. Second, each individual can be measured several times in different treatment conditions, creating a panel (or within-subject) dataset and allowing conclusions to be drawn about each individual distinctly. This allows a classification of not only the average behavior in the population but also detailed measurement of the distribution of individual behavior.

1.3.2 Household Models: Empirical Evidence

In the developing world, evidence on household model assumptions from average statistics is mixed.[8] Bobonis (2009) tests the efficiency of consumption decisions in households in Mexico, using the PROGRESA transfer and rainfall shocks to instrument for bargaining power and income. Examining the average statistic, Bobonis cannot reject efficiency in static decisions. By contrast, Robinson (2012) tests for efficiency in risk sharing between spouses in Kenya by experimentally varying income shocks, finding that on average, couples do not share risk efficiently. Duflo and Udry (2004) test for efficiency in consumption decisions in households in Cote d'Ivoire by using rainfall to instrument for income shocks to male or female income. Duflo and Udry conclude that on average, households do not behave efficiently. Using laboratory games, Kebede et al. (2011) play voluntary contribution games between spouses in Ethiopia using a between-subject design in which each respondent is assigned to either receive information about their spouse's decisions or not, but no individual

[8] In general, average statistics suggest that households in the developed world behave collectively in both static and dynamic decisions. See Bergstrom (1997) and Chiappori and Donni (2009) for reviews of the literature.

makes choices under both information treatment conditions.[9] They find that on average, respondents do not play the games efficiently. In a study of dynamic decisions, Udry (1996) studies agricultural investment decisions in households in Burkina Faso, finding that on average households do not invest resources efficiently. In a test of perfect information in the household, Chen (2013) finds evidence of asymmetric information on average in split-migrant households in China in which the husband and wife live in separate locations. In the Kebede et al. (2011) study, the authors also test for an effect of asymmetric information, finding that revealing the respondent's decision to their spouse improves efficiency in some games while having no effect in others; the authors conclude that the role of information is context dependent.

Most studies that test household model assumptions do not allow for heterogeneity across households, but there are important exceptions. Ashraf (2009) tests for the effect of asymmetric information between spouses in the Philippines, finding that on average, men are more selfish when their decisions will not be revealed to their wives. To allow for some heterogeneity, Ashraf splits the sample into households in which the woman or man is the primary financial decision maker, and finds that the average behavior of these two groups is different. Schaner (2012) and Lich-Taylor (2001) use the same strategy to allow for heterogeneity in their studies. Schaner splits her sample of couples in Kenya into those that are well-matched in their time preferences and those that are mis-matched, and finds that the mis-matched couples make more inefficient decisions on average than do well-matched couples. Lich-Taylor splits his sample of couples in the United States into those with and without children, finding that the average behavior of these groups is best fit by different models of decision-making.

The study of households that is closest in design to my own is Mani (2010). She plays

[9] "Between-subject" is a term often used in the experimental literature. It is analogous to cross-section data in which each respondent is observed in one treatment condition. By contrast, "within-subject" means that each respondent plays several games in several different treatment conditions. The term is analogous to panel data, in which each respondent is observed in more than one situation such that individual fixed effects can be differenced out of the final measure.

voluntary contribution games between spouses in India, testing for both efficiency and asymmetric information between spouses. Mani uses a within-subject design to test for efficiency,[10] measuring each respondent in each treatment condition. The within-subject design allows an examination of the distribution of behavior in the sample. She finds that men do not maximize household income in 31-51% of decisions while women behave inefficiently in 9-28% of decisions. Mani also varies the information the respondent's spouse receives to test for an effect of asymmetric information on efficiency. The test of information uses a between-subject design, with respondents making decisions in only one information condition, allowing only an analysis of the change in mean behavior with information. Mani finds that information does not improve efficiency on average.

1.3.3 The Experimental Literature

In the non-household experimental literature, there are two studies that are similar in design to my own. Leider et al. (2009) play a variety of dictator games between friends at Harvard University. To test for an effect of information, some games are played in secret, while in others the respondent's decision will be revealed to their game partner. The study uses a within-subject design, with each respondent making decisions in each type of games, which allows a description of heterogeneity in the population. While the authors do examine some heterogeneous effects, showing that people who are more generous to anonymous strangers are likely to be friends with other altruists, they mostly examine differences in average behavior across treatment groups, finding that people are more generous in public games.

Ligon and Schecter (2012) play dictator games between neighbors in rural Paraguay, varying both whether the respondent's choices were revealed to his game partner, and also varying whether the respondent knew and was able to choose who his game partner was.

[10] Mani's primary goal in using a within-subject design to test efficiency is to test for differences in efficiency across allocation rules. For example, she finds that men contribute less to pots over which their wives make allocation decisions than they do to pots that men control.

Ligon and Schechter use a within-subject design, with each respondent playing each type of game, and thus are able to speak to the distribution of behavior. Heterogeneity is not a main theme of the paper, but the authors briefly discuss demographic, financial, and social network correlates of behavior and motives for behavior in the games. They find that people are more generous when their decisions are public.

1.4 Experimental Setting and Design

1.4.1 Ethnography

The study takes place in Siaya, homeland to Kenya's third largest ethnic group, the Luo. In the Nilotic language group, the Luo are thought to have migrated from South Sudan through Uganda to settle around Lake Victoria in Kenya and Tanzania about 350 years ago, first settling in Siaya.[11] Traditionally, the Luo were polygynous and virilocal, with multiple wives migrating to their husband's family's land. In the early 20th century, it was most common for each co-wife to be assigned her own piece of the family's land. Women were largely independently responsible for their plots, able to decide what to plant and maintaining control over the harvest.[12] The husband had a separate field, and while he was expected to share some of his harvest if his wives experienced a shortfall, the crops that came from his field were his alone.[13] Men achieved status by converting grain to cattle and using cattle for the bridewealth payments of new wives. Because their interests were often

[11] "Siaya, today a rural area involved in maize-growing, with small numbers of cattle associated with dispersed households, was the transit and settlement zone of the earliest Luo-speakers to enter what is today Kenya, some three and a half centuries ago. Groups and lineages that have maintained settlements in Siaya are the 'parents' of an expanding and dispersing Luo population. ... It is an ennobled landscape, for groups elsewhere refer in their histories to sacred or original sites in what is today Siaya" (Cohen and Atieno Odhiambo (1989)).

[12] "JoKoguta who grew up before the 1930s agreed that a married woman was *wuon puodho* (the person in charge of the field). She could decide what to plant in her own fields and she had control over the crops coming from those fields, including any surplus" (Francis 2000).

[13] "A husband also had his own field, *mondo*. His wives did most of the work on the *mondo*, and he was expected to use the crops to make good any shortfall in their supplies of food. Otherwise, he could dispose of crops from the *mondo* as he saw fit" (Francis (2000)).

at odds, historically husbands and wives tried to keep their financial affairs separate.[14]

British colonization brought three important forces that influenced Luo culture. First, the introduction of Christianity encouraged marriages to remain monogamous and men to assert greater authority as patriarchal heads.[15] Second, the British provided opportunities for men to migrate to commercial centers and participate in the new cash economy. Because women were largely excluded from the cash economy, they became more dependent on their husbands. Finally, a growing native population and British appropriation of land led each new generation to split ever smaller plots, and because more families were monogamous and men more frequently away, many families merged their formerly gender separated plots into one. Where before it was clear that a woman had rights to her own crop income, ownership over the merged family field was less clear.[16] By the late 1980s, husbands most often controlled the family farm and its income.[17]

In pilot work for this project, my study team did qualitative interviews with married respondents in rural villages in Siaya in January 2011. Of ten women asked, only two reported that they had their own plot of land. However, about half the respondents said that if a woman sells farm produce, she will keep the money for herself. Most interestingly, some said it depended on the relationship: "they use money together as there is a good understanding [between the couple]. If there is no understanding, then everyone will keep their earnings/produce." Another woman said "if they have mutual agreement, they sit

[14] "Like many other peoples practicing mixed farming and herding in Africa south of the Sahara, Luo have had in the past a hierarchy of values whereby men seek to convert grain to small stock, small stock to large stock, and large stock to wives (and thus also to children) when their circumstances permit. ... Most cattle are considered male or male-overseen property, and a form of saving and investment for the future of the individual and lineage. They are the center of a prestige system fundamental in the Luo social order: men seek to consolidate their interests as against those of women" (Shipton (2007)).

[15] Fenske (2012) documents the decline in polygamy across Africa.

[16] "Growing land shortage [in the 1930's-1950s] meant that the field system became simplified. Men who wanted to have a separate crop income, and who had enough land, continued to keep the *mondo* separate from other fields. Where there was less land, households began to amalgamate continuous land into one field (or one field for each wife, if there were several wives). These farms might look similar - a single field - but the status of the field was an important issue. Was it all *mondo*, or had the *mondo* disappeared? These were important issues, because they were also questions about rights to labor and crop income" (Francis (2000)).

[17] "[A single field] became the most common arrangement in monogamous households, although a few men still had a *mondo* in the late 1980s. Male control of land and crop income because most common in households where farming was the main source of income for the husband" (Francis (2000)).

down and decide what to do with the money together. If they don't agree, the woman spends it on her own." When a different set of respondents was asked "when you get money, are you supposed to give it to your spouse? Does it matter if the money is earned (like from a business or selling vegetables) or if the money is won or given as a gift (like the money I will give you today to thank you for participating)?" seven of nine men said that they were supposed to share with their wives, and eight said it didn't matter where the money came from. One respondent said "he is supposed to give her money since he is the husband." When women were asked the same question, only three of sixteen said they were supposed to share with their husbands, and ten agreed that it did not matter where the money came from. One woman said "it is her money and she spends it the way she thinks is appropriate. It doesn't matter how she got the money, it belongs to her and the husband has no say."

In sum, because the Luo were historically polygynous, husbands and wives used to keep their financial affairs separate. After British colonization, more families remained monogamous, men claimed more authority in the household, and most merged their plots into a single family farm. It is not clear from historical ethnography if we should expect respondents to keep all game tokens for themselves, share with their spouse, or for one gender to turn money over to the other. Qualitative interviews revealed that most women think of income that comes to them as theirs alone, while men feel they must share with their wives. In many ways, while an economist would be surprised if a woman didn't give all tokens to her husband to maximize household income, an ethnographer may be surprised if she gave him anything at all.

1.4.2 Sample Selection

The sample was drawn from five rural towns in southwestern Kenya's Nyanza Province. Maps of the area are shown in Figure 1.1. Two of the towns (Ugunja and Sega) are on the main paved road that runs through all of Kenya from Mombasa to Uganda. The other three towns (Ukwala, Sigomere, and Siaya) are on major dirt roads off the main paved road. Three

of the towns (Ugunja, Siaya, and Ukwala) are former district headquarters.[18] Subjects were married (either formally or informally),[19] currently living with their spouse, over the age of 18, and available to participate in two interviews a week apart in September or October of 2011. Polygamous families were not eligible to participate.[20]

To identify the sample, the survey team asked local administrators (village elders) to compile a list of all couples meeting the eligibility criteria in several villages within walking distance of the five towns.[21] The village elders were asked to record the names of both husband and wife and a contact phone number if possible. Of the 786 couple records collected by the village elders, 82 percent included a contact phone number. Couples were then assigned a random number to determine the order in which they were contacted to be scheduled for an interview, stratified by town. Couples that listed a phone number were scheduled for interviews by phone if possible. Couples that did not have a phone number listed, or were unable to be contacted by phone, were contacted through the village elder. Tracking lists were distributed to the elders and they were asked to invite the selected couples to arrive for an interview on the selected day. In total, 53 percent of the 786 couples provided by the village elders participated in the study. 415 couples were interviewed at baseline, and 406 couples met all of the study criteria (monogamous, living together, both partners over the age of 18). Of these, 392 had complete game records.[22]

[18] A new constitution adopted in late 2010 created administrative units known as "counties" to take the place of the former "districts." All towns and districts in this study now fall into Siaya county. However, at the time of the study old district offices were still serving many of their old official roles, and the towns remained important centers of commerce and government.

[19] A couple is considered "married" if they are considered by the village elder to be a long-term romantic couple. The beginning of the "marriage" is defined as the time the couple moved in together.

[20] Polygamous families were excluded because the household bargaining structures between three or more adults are likely to be very different from traditional models of two adult households. Table 1.2 shows the fraction of the 18+ population in Siaya by marital status in 1999.

[21] While a full census by the survey team would have been a preferable method of compiling the eligible couple list, budget constraints were limiting.

[22] Some individuals were excluded because one or more of the six spouse game decisions was missing or recorded incorrectly.

1.4.3 Experimental Design

Couples arrived at the survey site together,[23] but completed their individual surveys separately. The survey began with a questionnaire about demographics, family finances, material wealth, expenditures, transfers, savings and loans, and decision making in the household. The survey was executed in Dhuluo, the most common native language in the study area.[24] Table 1.1 shows demographic and other summary statistics from the baseline survey. The table also shows averages for Siaya District from the 1999 Kenya Census, showing that the sample is similar to the larger population. An English version of the survey can be found on my website[25] and in the appendix and the Dhuluo translation is available on request.

The interview continued with a series of dictator games. The games were played one-on-one with a trained field assistant reading from a script in the respondent's native language. The respondent was asked questions to confirm their understanding at every stage. An English version of the game scripts can be found in the appendix. Each respondent played four dictator games in total, each over three stakes. Two of the games were between the respondent and his spouse, and the other two were selected from three other possible dictator games.[26] The order of the games was randomized.[27] In the Secret Spouse game, the respondent was told that his decisions would remain secret from his spouse and could be revealed only to the project leader. In the Public Spouse game, the respondent was told that his spouse would be told of his decisions. The respondent was given tokens (bottle caps) to divide between himself and his spouse. The respondent indicated his choice by

[23] The study sites were a Town Council Hall, a boarding house for handicapped children, a polytechnic university, and a small resort.

[24] All subjects in the sample speak Dhuluo. The survey was forward and back translated by the study team.

[25] www.umich.edu/∼jesshoel

[26] Other games include the Secret Stranger game (the traditional dictator game in which a subject divides money between himself and an anonymous stranger), the Spouse Stranger game (in which the subject divides money between his spouse and an anonymous stranger), and the Stranger Stranger game (in which the subject divides money between two anonymous strangers). Results from these games are not discussed here.

[27] The spouse games were always played consecutively, with the starting game (secret or public) randomized. The order between the spouse games and the other two games selected was also randomized.

placing the bottle caps in cups labeled "Self" and "Spouse" in Dhuluo. Each game was played over 5, 10, and 25 tokens. Tokens were worth 20 shillings (about $0.22) if kept and 30 shillings ($0.32) if given away. The value of the token was increased if given away to allow the easy observation of inefficiency in the household. To assist respondents in understanding the monetary consequences of their choices, the respondent was given a sheet showing the value of a number of tokens if given or kept. A copy of this sheet can be found in Figure 1.2. After the respondent had made his choice, the field assistant repeated the choice and its monetary consequences to the respondent, and asked if that was the division he wanted. The respondent was allowed to change his choice as many times as he liked.

Respondents were informed that all of their choices in the games (12 in total) would be entered into a computer at the office and one would be chosen at random to come true. The computer would also pick random strangers for the stranger games. It was emphasized that because respondents could win any game for themselves, and could receive money from their own, their spouse's, or a stranger's game, they could be sure that their choices in the Secret Spouse game would remain secret. Winnings from the games were distributed one week later at the end of the follow-up interview.[28] Respondents were not informed of which game they or their spouse won unless one won a Public Spouse game. If a respondent or their spouse won a Public Spouse game, both were informed of the token amount, its division, and the amounts of money taken home by each. Respondents were not informed by the study team how much their spouse took home from the games in total; however, because respondents were required to attend with their spouses and likely returned to their home together, it is likely that respondents discussed their winnings with their spouse. Payouts from the games ranged from 0 to 1270 shillings. The average payout per respondent was 316 KSH. As a point of reference, the mean payout was 20% of baseline reported weekly male income, and 49% of weekly female income.

[28]The endline survey contained questions about expenditures, transfers, savings and loans, marital quality, and the respondent's responses to the study. An English copy of this survey can be found on my website and in the appendix. The Dhuluo translation is available on request.

1.5 Results

1.5.1 Efficiency

1.5.1.1 Average Behavior

Table 1.3 shows average play in the spouse games, broken out by game and gender.[29] Because tokens passed to the spouse are worth 30 KSH while tokens kept for self are worth only 20 KSH, a respondent could maximize the total income for their household by giving all tokens to their spouse. Giving 40 percent of tokens results in an even distribution of final payments (i.e. 60% of tokens*20 KSH=120 KSH, 40 percent of tokens*30 KSH=120 KSH). The first column of Table 1.3 shows the percentage of tokens passed to the spouse in each game. The table shows that far from giving everything, the mean behavior is to give a bit more than half of the money. This behavior is inefficient because by keeping some tokens for themselves, respondents are leaving money on the experimental table. On average, subjects do not maximize household income and instead forgo some earnings to retain control over some of the pot.

Result 1: *On average, people do not maximize household income.*

The second column of Table 1.3 shows the distribution of final earnings between the subject and his spouse. This column is a simple transformation of the first column (if the respondent gives x% of tokens, he gives x*30/(x*30+(1-x)*20) percent of the total realized pot), and emphasizes that respondents are on average not maximizing household income.

Result 2: *On average, people give a bit more than half to their spouse in the public game.*

[29]Further breakouts by token amount and whether the secret game was played before or after the public can be found in Table 1.10. Behavior across the stakes is quite stable. Men give 46-47 percent in the secret games regardless of token amount, and give 55-56 percent in the public games. The difference in average giving across the stakes is not statistically distinguishable from zero. Women give between 40-43 percent in the secret games, and give 47-50 percent in the public games. If there is any trend it is that women give less in the higher stakes games, but these differences are not statistically different from zero. Men give more in the game they play first, in both the secret and public games. The difference is marginally significant in the public game, but not in the secret game. Women also give more in the game they play first. The difference is not significant in the secret game, but is significant in the public game.

The third column of Table 1.3 quantifies how much money the subject foregoes by keeping some tokens for himself. The percentage of money left unclaimed is calculated as the percentage of tokens the individual kept for himself ((1-x)) multiplied by the price differential between giving and keeping (10 KSH) and scaled by the total amount of money possible from one token (30 KSH). This is a measure of the extent of inefficiency in each choice. In the public game, men sacrifice an average of 15 percent of the total possible pot by choosing to keep some tokens for themselves. Women give up 17 percent on average in the public games. This is clear evidence of inefficiency in the household on average.

Result 3: *Respondents give up substantial sums of potential household income on average to maintain control over some income.*

The decision to keep some tokens in the public game is inefficient for three reasons. First, because decisions in the public game will be revealed to the spouse, there is no incentive to keep some money in the hopes of hiding it from the spouse. Second, income from the experiment is a one-off, idiosyncratic shock, so it is unlikely to change bargaining weights in the household. There is no incentive to keep money in the public game hoping to alter the bargaining weights theorized in the Collective model. Third, income from the games is a small fraction of monthly or yearly income, and most households transfer money between husband and wife frequently, especially from husband to wife. Therefore if the respondent passed all the tokens to his spouse expecting his spouse to give some money back to him outside the game, but was surprised when his spouse did not pass back some money after the games, he could simply alter his future transfers to even out the total distribution of money. Thus, a respondent in an efficient household should give all tokens to his spouse. That respondents leave potential experimental income unclaimed is evidence against efficiency in the household on average.

1.5.1.2 Distribution of Behavior

Figure 1.3 shows histograms of men's behavior in the games, showing the percentage of tokens passed to his spouse broken out by information treatment and token amount. Panels on the left show the public games, while panels on the right show the secret games. The first row shows the 5 token games, the second shows the 10 token games, and the last row shows the 25 token games. These figures show that there is bunching in the middle of the distribution for all games, with mass points around 40, 50, and 60 percent of tokens passed. Most men seem to be dividing money roughly evenly between themselves and their wives. These figures show that very few men maximize household income by giving 100 percent of tokens to their wives. In the public game men give all tokens to their wives in 4.8 percent of observations. These figures also show that very few men maximize personal income by giving 0 percent of tokens to their wives. In the public game men keep all tokens for themselves in 0.7 percent of observations.

Panel a of Figure 1.5 shows the same information displayed as overlapping CDFs. This figure demonstrates that the distribution of giving is mostly similar across token amounts. A Pearson's chi-squared test for the independence of distributions reveals that though the distributions look similar and do not have different means, they are statistically distinct. More men choose to give 40-59% in the 10 and 25 token games than in the 5 token game, while more choose to give 50-59% in the 10 token game than the 25 token game. This is likely due to different focal points in each distribution (e.g. giving 5 tokens or 50% is a focal point in the 10 token game, while giving 12 or 13 tokens is not a focal point in the 25 token game). See Table 1.11 and its notes for details.

Figure 1.4 shows the analogous histograms for women. Again we see bunching in the middle of the distribution, with strong mass points around 40, 50, and 60 percent. Women also rarely maximize household or their own income. In the public game women give all tokens to their husbands in 2.1 percent of observations and keep all tokens in 1.3 percent of public games. Panel b of Figure 1.5 shows overlapping CDFs for women, confirming that

the distribution of giving across token amounts look mostly similar for women, while Table 1.12 again shows that the distributions are statistically distinct, with different focal points for each token amount.

Pooling choices across the three token amounts, Table 1.4 shows the percentage of observations in the public games fit into each efficiency category: extremely inefficient (giving 0-20 percent), very inefficient (giving 21-40 percent), mostly inefficient (giving 41-60 percent), mildly efficient (giving 61-80 percent), and almost efficient (giving 81-100 percent). These summary statistics confirm the patterns seen in the histograms. Very few people maximize household income.

Because the assumption of household income maximization is so resoundingly rejected in this study, the reader may be concerned that respondents did not understand the structure or consequences of the game. This hypothesis can be rejected for several reasons. First, the games scripts were developed in close collaboration with the enumerators. All of the enumerators were native Dhuluo speakers, and many grew up in towns demographically similar to those included in the study. With feedback from the enumerators, the language used in the games scripts was greatly simplified both in vocabulary and in structure so that even relatively less-educated people could understand the games. Second, the enumerator explained many times that tokens passed were worth more than tokens kept, and respondents were asked questions at every stage to check their understanding. If the respondent answered a check question incorrectly, the instructions were repeated until the respondent could answer the check correctly.[30] Third, respondents were given a sheet that showed the value of tokens passed or kept so the respondent did not have to actually compute the multiplication for himself.[31] Fourth, after the respondent had placed the tokens in the cups to indicate his choice, the enumerator repeated back his decision both by stating the allocation of tokens and stating the monetary consequences of his choice. Respondents were then given the opportunity to reallocate if they liked. Finally, inefficiency in games between spouses has

[30]See the games scripts in the appendix.

[31]A copy of this sheet can also be found in the Figure 1.2.

been observed in other studies. Kebede et al. (2011), Mani (2010), and Iverson et al. (2011) are representative examples.

Result 4: *Very few people maximize household income. This is strong evidence against efficiency in the majority of households in this sample.*

1.5.1.3 Consistency of Behavior

As a robustness check, we can observe how consistent people are in the efficiency of their choices across the three stakes of the game. That is, it is possible for a person to play one token amount very efficiently and the two others less efficiently, and we might like for this person to be counted by their majority play. Table 1.5 shows counts and the percentage of the sample that played the games perfectly consistently (all 3 stakes in the same efficiency category), mostly consistently (2 stakes in one efficiency category, and the third stake in an adjacent category), and not consistently across the token amounts.

41 percent of men played all three token amounts with the same level of efficiency, while 37 percent of women played perfectly consistently. The next section of the table shows how many people played two stakes at one efficiency level and one stake at an adjacent efficiency level. If we classify these people by their majority play, then we are able to classify 88.3 percent of men and 89.3 percent of women.

When classified by their majority type, 1.8 percent of men play the games at the lowest level of efficiency in the public game. 23.7 percent give 21-40 percent of tokens, 44.9 percent give 41-60 percent of tokens, 13.5 percent give 61-80 percent, and 4.3 percent come close to the efficient choice. The distribution across efficiency types is similar for women, but shifted to the left. 3.8 percent of women give 0-20 percent, 37.0 percent give 21-40 percent, 41.8 percent give 41-60 percent, 5.4 percent give 61-80 percent, and only 1.3 percent come close to the efficient choice.

Result 5: *Most people are consistently inefficient, and consistent in the extent of inefficiency, across the three token amounts offered.*

1.5.1.4 Efficiency: Summary

Efficiency in household decisions is the defining characteristic of the Collective model, the most popular model in the current literature. The vast majority of respondents in this sample behave inefficiently, and are consistent in their inefficient choices, suggesting that the Collective model is inappropriate for this sample.

What is causing household to behave inefficiently? Imperfect information between spouses is commonly suggested as a mechanism that causes inefficiency between spouses. Next we move on to tests of the effect of asymmetric information between spouses.

1.5.2 Information

1.5.2.1 Average Behavior

Table 1.3 shows average behavior across information conditions in the spouse dictator games. In the first column, the average percentage of tokens passed in each game is shown by gender and game, along with the standard deviation. On average, both genders give more in the public game than in the secret game. Men give on average 9.2 percentage points more in the public game, while women give 6.9 percentage points more.

Table 1.6 shows these patterns in a regression framework. The first column shows estimates of the model (without controls)

$$t_i = \mathrm{I}(male) + \mathrm{I}(secret) + \mathrm{I}(male) * \mathrm{I}(secret) + \mathrm{I}(10\_token) + \mathrm{I}(25\_token) + \mathrm{I}(secret\_first) + \mathrm{I}(secret) * \mathrm{I}(secret\_first) + \{controls\} + \epsilon_i$$

where t_i is the percentage of tokens passed by individual i and $\mathrm{I}(.)$ is the indicator function. The coefficients of interest are those on $\mathrm{I}(secret)$ and $\mathrm{I}(secret) * \mathrm{I}(secret\_first)$, but the regression also controls for gender, the stakes of the game, and whether the secret game was played before or after the public game. These results show that the difference in average giving between the secret game and public game is 8.5 percentage points, and this difference

is highly significant. While men give 7.2 percentage points more on average in both games, the difference between public and secret giving is the same across the genders.

We may expect giving in the dictator game to be correlated with observed characteristics, and perhaps the difference in giving across information conditions can be primarily explained by covariates. The second column shows this is not the case. The second column of Table 1.6 shows the same regression model with the addition of control variables, including age, education, number of children, age of youngest child, who is the primary financial decision maker, and own weekly total income. Including covariates changes the point estimate on I(*secret*) very little, and does not change the conclusion that on average, people give more in the public game. If we were to look only at averages, we would conclude that spouses in this sample respond to asymmetric information. We may further suggest that information problems are a driving cause of inefficiency in this sample.

Result 6: *On average, men and women give more in the public game than in the secret game.*

1.5.2.2 Distribution of Behavior

Table 1.3 clearly shows that on average people give more to their spouses when their decisions are public. However, averages sometimes obscure modal behavior. It is possible that while some people change their behavior between games, others may choose the same response in both games. To calculate the number of people who give more when their decisions are public, I calculate the linear difference between games as the percentage of tokens passed in the Public Spouse game minus the percentage of tokens passed in the Secret Spouse game. A positive linear difference then indicates that the respondent keeps more when their actions remain hidden.

Figure 1.6 shows the distribution of linear differences by gender and token amount. The left panels show distributions for men and the right panels show distributions for women. The first row shows differences in the 5 token games, the second shows the 10 token games,

and the final row shows differences in the 25 token games. This figure makes clear that while the average difference between the public and secret games is positive and statistically different from zero, *most* people do not change their behavior between games. Figure 1.7 shows the same information as overlapping CDFs across token amounts, showing that the distribution of the linear difference is similar across token amounts.

Subjects who give more in the public game than in the secret game will be called "Opportunists," while those who give the same amount in both games will be called "Non-Responders." Figure 1.6 also reveals that some people give less in the secret game than the public game. I will call these people "Secret Benefactors."

Table 1.7 presents the percentage of observations that give more in the public game than in the secret game (Opportunists), the percentage who make identical decisions in the public and secret games (Non-Responders), and the percentage of observations that give *more* in the secret game than in the public game (Secret Benefactors). The table shows results for all token amounts pooled. In 49 percent of observations, men do not change their behavior between games, while in only 38 percent of observations do men behave opportunistically. In 13 percent of observations, men give more in the secret game than in the public game. Similar patterns hold for women. 50 percent of observations of women do not change their behavior between the public and secret games, while only 35 percent play opportunistically. 15 percent of female observations are Secret Benefactors. Table 1.13 shows similar statistics broken out for each token amount separately. Men and Women play the games similarly across the stakes, with a stable fraction of people playing as Opportunists, Non-Responders, and Secret Benefactors across the three stakes.

While it is simplest to categorize linear differences as strictly greater than, equal to, or less than zero, Figure 1.6 shows that there are some respondents that change their behavior by only 1 or 2 tokens between games. It's possible that these small changes are simply mistakes. The second panel of Table 1.7 shows the percent of the sample that can be considered Opportunistic, Non-Responderic, and Secret Benefactors after recoding small

deviations. Specifically, if a respondent changes their behavior by ten percentage points or less between the public and secret games,[32] they are classified as Non-Responders. With this recoded classification, we see that 25 percent of men behave Opportunistically while 20 percent of women do so. Six percent of both men and women behave as Secret Benefactors.

1.5.2.3 Consistency of Behavior

In addition to accounting for small deviations within games, we can also account for small deviations across games. That is, it is possible for a person to play one token amount as an Opportunist and the two others as a Non-Responder, and we might like for this person to be counted only as a Non-Responder. We might also wonder if those who give more in the secret game than the public game could have done so by mistake, and might have only made that mistake in one stake of the three offered. Table 1.8 shows counts and the percentage of the sample that played the games perfectly consistently, mostly consistently, and not consistently across the token amounts. 24 percent of men played all three token amounts as Opportunists, 35 percent played all three as Non-Responders, and 4 percent played all three as Secret Benefactors. The next section of the table shows that many people played two stakes as one type and one stake as a different type. If we classify these people by their majority play, then we classify 33 percent of men as Opportunists, 46 percent as Non-Responders, and 9 percent as Secret Benefactors. The final section shows individuals whose behavior is inconsistent with any type: for example, some people play two games as an Opportunist and one as a Secret Benefactor, while others play each game as a different type. 12 percent of men behave inconsistently. When I classify women by their majority play, 26 percent play as Opportunists, 49 percent play as Non-Responders, and 7 percent play as Secret Benefactors. 18 percent of women cannot be classified by their majority play.

Result 7: *There is statistically and substantively significant heterogeneity across people, with most behaving as Non-Responders, a sizable minority behaving as Opportunists, and a*

[32] i.e. by only 1 token in the 5 or 10 token game, or by 1 or 2 tokens in the 25 token game

small number consistently giving more in secret.

1.6 Correlation between Efficiency in Games and Information in Surveys

The relationship between efficiency and information in the games is nuanced: while nearly everyone behaves inefficiently, fewer than half respond to experimentally induced asymmetric information. What is the relationship between efficiency and information in real life? Is heterogeneity also important in the real world? This section uses survey data on information between spouses about income and expenditures to explore the relationship between information in real life and efficiency in the games.

In the laboratory information about transfers can be varied experimentally, but in the real world, spouses are able to choose the level of information between them. That is, the perfection or imperfection of information is endogenous to the household decision-making process. For example, suppose a respondent receives an income stream that she could potentially hide. The respondent may choose to disclose the income to her spouse if she believes the revelation will bring household consumption decisions closer to her preferences, either by increasing her bargaining power or because her and her spouse's preferences are aligned. Castilla (2013) writes such a model. Under this idea, better information between spouses may reflect more cooperation, and thus be associated with higher efficiency in the games. On the other hand, if the respondent typically hides the income and behaves non-cooperatively, the respondent's spouse may choose to monitor her more closely to prevent the income hiding. Chen (2013) writes such a model, including costly monitoring and cooperative and non-cooperative types. In this framework, better information between spouses may reflect less cooperation, and thus be associated with lower efficiency in the games. Is better information associated with better or worse cooperation between spouses? Which explanation dominates is an empirical question.

To explore these ideas, I compare behavior in the games to survey measures of information in the household. The baseline survey contains detailed income and expenditure modules.[33] To measure income, respondents were asked if they received any money on each of the preceding seven days. They were asked for up to two transfers for each day. In addition to the size of the transfer, the respondent was asked who the transfer was from, what it was for, and if their spouse knew about it. With these data, I construct the fraction of income each respondent said their spouse was aware of.[34]

I construct a similar measure of spousal knowledge of expenditures. For 49 items, the respondent was asked if they purchased the item over the previous week, how much they spent, who benefited from the purchase, and whether their spouse was aware of the purchase. From these responses, I construct the fraction of the respondent's total expenditures that the respondent says his spouse knows about.[35]

Figure 1.8 shows histograms of these survey measures of information between spouses. The top row shows histograms of information about income while the bottom row shows histograms of information about expenditures. Panels on the left are husbands' reports while the panels on the right are wives' reports. 61% of men and 59% of women report that their spouses know about every income stream over the previous week. A sizable minority reported that their spouse was aware of none of their income streams, with 29% of men and 33% of women reporting complete privacy in their income. 56% of men and 49% of women say their spouse is aware of every expenditure over the past week. In contrast to income, very few respondents say their spouse is completely unaware of their purchases. Because the distribution of knowledge is so lumpy, I collapse the variable to a binary indicator variable to compare means between information groups. To examine the relationship between reports of information in survey data to efficiency behavior in the games, I code a person as reporting

[33]The English version of the survey can be found in the appendix on my website at umich.edu/∼jesshoel/surveys.html

[34]Transfers from the spouse were excluded from the numerator and denominator.

[35]Education expenditures were excluded from the calculation because education expenditures are very lumpy, and generated extreme outliers.

high information if they report their spouse knows about 100% of their income streams or expenditures.

Do people that report better information in their household behave more efficiently in the games? Table 1.9 presents regressions of the percentage of tokens given in the games on survey indicators of perfect information in the household. The first column of Table 1.9 shows a linear regression on a dummy variable indicating that the respondent reported perfect information about their income.[36] On average, information about income in the real world is positively correlated with efficiency in the games. This suggests that better information is associated with more cooperation. However, the game results suggest that it may be important to look for heterogeneity across the sample. The second column allows for differential effects of information about income in the surveys in each of the games (public and secret) and for Opportunists and Non-Responders. The results show important differences between Opportunists and Non-Responders. For Non-Responders, reporting perfect information about income in the surveys is correlated with better efficiency in both the public and secret games. That is, the behavior of Non-Responders is consistent with the idea that more cooperative couples share information. For Opportunists, however, better information in real life is associated with better efficiency in the public game, but much worse efficiency in the secret game. In other words, extreme Opportunists are likely to say that their spouses know about all of their income over the previous week, which is consistent with the idea that their spouse knows they behave non-cooperatively and monitors them accordingly. In contract, mild Opportunists are less likely to report that their spouse has perfect information about their income. The behavior of Opportunists is consistent with the idea that better information between couples can be explained by more monitoring of non-cooperative spouses.

[36]These regressions includes observations from both the public and secret games, for all three token amounts, for both men and women. The sample is restricted, however, to mostly consistent Opportunists and Non-Responders. Controls for age, education, number of children, age of the youngest child, who is the primary financial decision maker, and income over the previous week are also included, as are enumerator and date fixed effects. Standard errors are clustered at the individual level.

The third and fourth columns show analogous tests for information about expenditures. Here we see broadly similar patterns. When Non-Responders and Opportunists are pooled, information about expenditures in the real-world is positively but statistically insignificantly correlated with efficiency in the games. When we allow for differential effects in each game and for Opportunists and Non-Responders, however, we see that better information about expenditures is mildly positively associated with efficiency for Non-Responders, but only extreme Opportunists are likely to report that their spouse has perfect information about their expenditures.

In summary, on average survey measures of information between spouses are positively correlated with efficiency in the games, but heterogeneity is important in the real world too. For Non-Responders, better information between spouses is associated with greater efficiency in the games, suggesting that better information reflects better cooperation. For Opportunists, however, better information is associated with higher levels of opportunism, suggesting that for non-cooperative couples, better information reflects more monitoring. These results highlight the importance of allowing for heterogeneous types and suggest that for different households, different models are needed.

1.7 Conclusion

Households are heterogeneous. However, because of the nature of our tests of household models, and the variability of the data used to construct those tests, previous work has mostly examined only average household behavior. Testing for heterogeneity with laboratory games, however, is straightforward. Using dictator games played between married couples in the Nyanza Province of Kenya, I test for heterogeneity across households in which assumptions typical to household models fit each best. Because I use a within-subject (panel data) design, I am able to say whether an individual adheres to each assumption, allowing me to examine both the average behavior in the sample as well as detail the distribution of behavior.

First, I find that 97% of choices do not maximize household income, and instead forgo

an average of 16% of potential income in order to maintain personal control over about half of the realized pot. This is strong evidence of inefficiency in the household, and is observed nearly universally in the sample. Households are nearly homogenous in that the Collective model does not describe their behavior well.

When inefficiency is discovered or suggested between married couples, theorists often start by assuming that either imperfect information or limited contracting is causing the inefficiency. When I test the perfect information assumption, I find that allowing for heterogeneity across the population is important: while the average statistic suggests that households suffer from information problems, in fact half of the sample does not respond to experimentally induced asymmetric information. This is an important reminder that when testing between two models of the household, heterogeneity in the population can cause the average statistic to hide what is true for most of the population.

Further, average statistics can lead us to accept simple explanations when more complex theories are necessary. If we examined only average behavior in this sample, we would conclude that households do respond to asymmetric information on average, thus information problems are a probable cause of the observed inefficiency. However, when we allow for heterogeneity in information responses, we come to a much different conclusion. First, though the vast majority of this sample is inefficient, fewer than 50% of people respond to experimentally induced asymmetric information. This fact alone suggests that information problems cannot be the sole cause of inefficiency in this sample. Second, when I examine the relationship between information between spouses as measured in survey data and efficiency measured in the games, I find that better information means different things for different couples. For Non-Responders, better information in real life is associated with greater efficiency in the games, indicating better cooperation within the couple. For Opportunists, on the other hand, better information is associated with higher levels of opportunism, indicating less cooperation between the spouses. For these couples, it seems that better information is being driven by more monitoring, not more trust.

If information problems are not the driving cause of inefficiency, what is? My data hint at a specific form of limited contracting: transaction level sharing rules. While the Collective model suggests that households have a sharing rule that applies to total family income over time, with a set fraction of income over a week or month ending up with each member (Chiappori (1992)), my respondents are dividing money nearly evenly in every transaction. The histograms shown in Figures 1.3 and 1.4 show large mass points on 40, 50, and 60% of tokens passed. Rather than maximizing total income from the games and reallocating to a contracted sharing arrangement later, individuals seem to have a strong preference for a fair allocation in each transaction. This is a form of limited contracting, and appears to be a driving force of inefficiency in these games. The next generation of models of the household should consider this specific friction, and also consider that different households may respond to information differently, with some perhaps even responding to asymmetric information in surprising ways.

These results also have implications for public policy. Government sponsored cash transfer programs often go to great lengths to ensure that money is delivered only to the wife, hoping that she will retain control over it, but also deliver the funds very publicly so her husband is sure to know about the existence, amount, and timing of the transfer. Standard models of household decision-making suggest that information will improve efficiency in household decisions. This study suggests that for half of households, information does not improve efficiency, and in some households, better information is related to lower levels of efficiency. Other studies have suggested that cash transfers to women that are distributed via technologies that make income more private from their husbands are spent differently than transfer given in public (Aker et al. (2012)). To inform policy, the effect of information about cash transfers should be examined more rigorously in experiments designed to explore heterogeneity across households.

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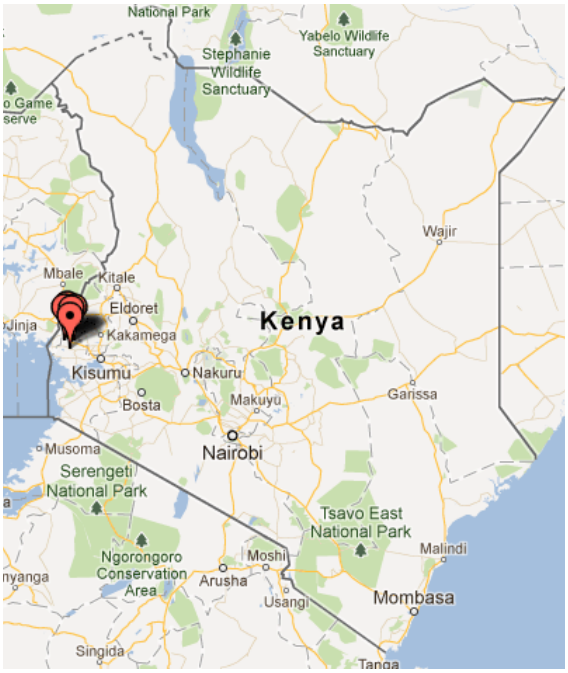
1.9 Figures

Figure 1.1: Maps of Study Site
(a) Kenya, zoomed out



(b) Nyanza and Western Provinces, zoomed in

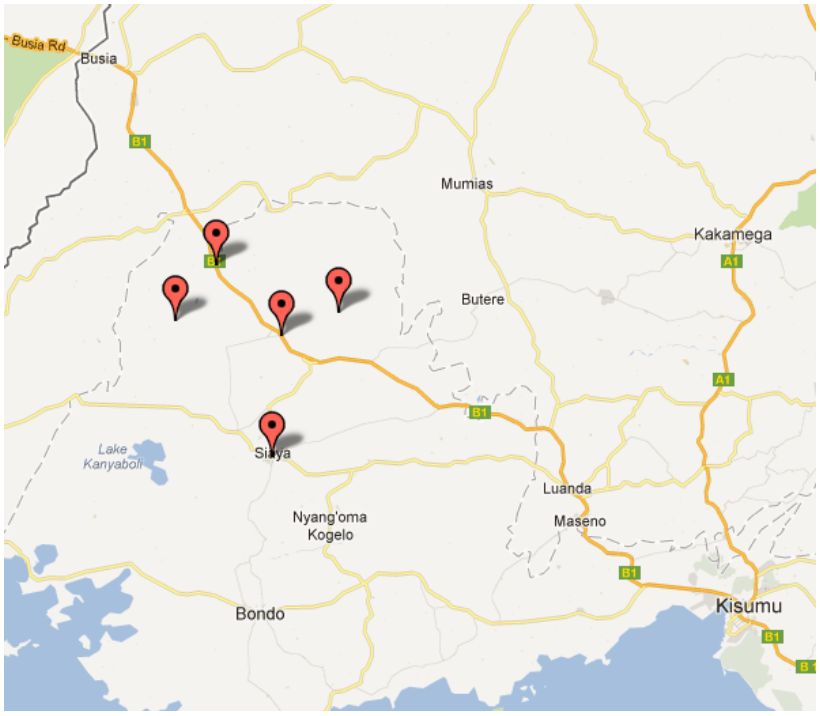
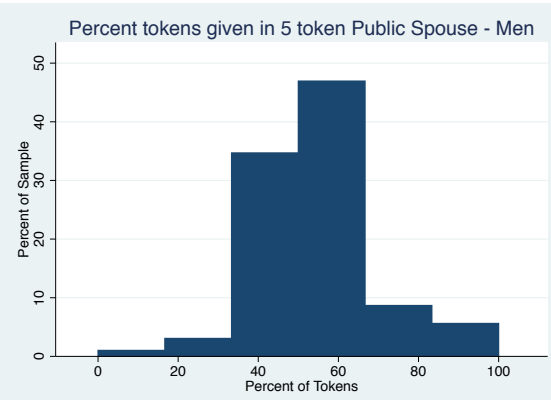


Figure 1.2: Token Value Sheet

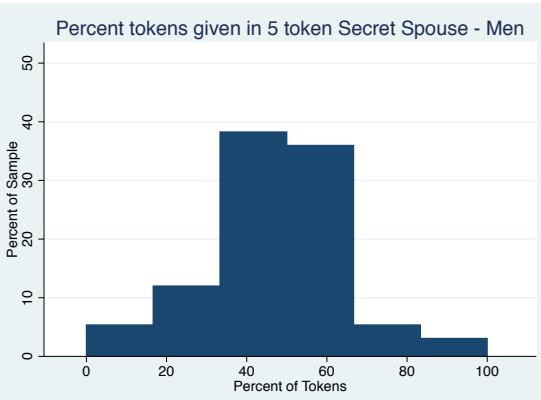
KEEP	Tokens	GIVE
0 ksh	0	0 ksh
20 ksh	1	30 ksh
40 ksh	2	60 ksh
60 ksh	3	90 ksh
80 ksh	4	120 ksh
100 ksh	5	150 ksh
120 ksh	6	180 ksh
140 ksh	7	210 ksh
160 ksh	8	240 ksh
180 ksh	9	270 ksh
200 ksh	10	300 ksh
220 ksh	11	330 ksh
240 ksh	12	360 ksh
260 ksh	13	390 ksh
280 ksh	14	420 ksh
300 ksh	15	450 ksh
320 ksh	16	480 ksh
340 ksh	17	510 ksh
360 ksh	18	540 ksh
380 ksh	19	570 ksh
400 ksh	20	600 ksh
420 ksh	21	630 ksh
440 ksh	22	660 ksh
460 ksh	23	690 ksh
480 ksh	24	720 ksh
500 ksh	25	750 ksh

Figure 1.3: Histograms of Game Play: Men

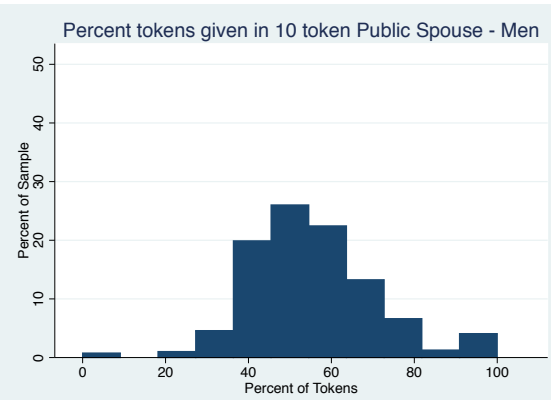
(a) 5 token Public Spouse



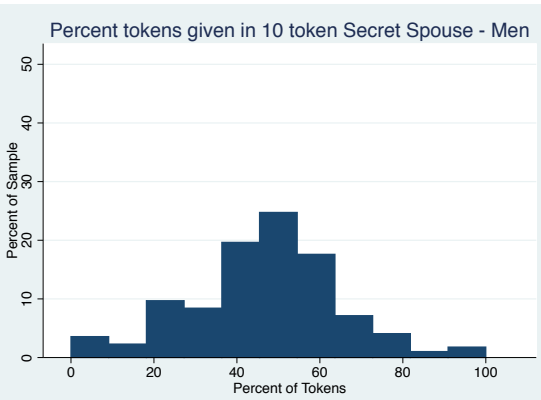
(b) 5 token Secret Spouse



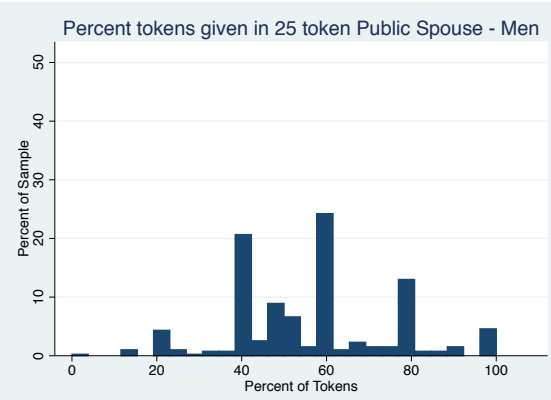
(c) 10 token Public Spouse



(d) 10 token Secret Spouse



(e) 25 token Public Spouse



(f) 25 token Secret Spouse

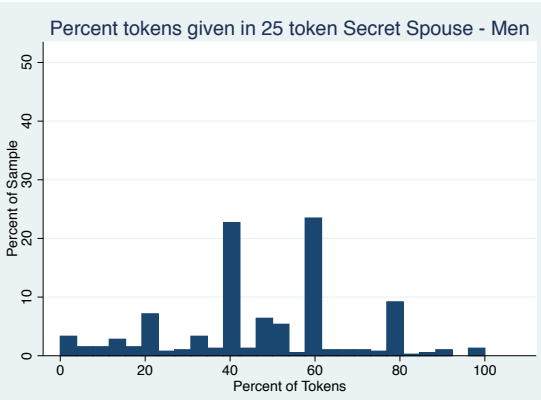
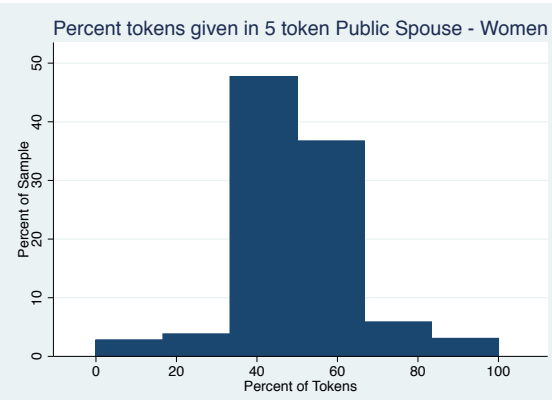
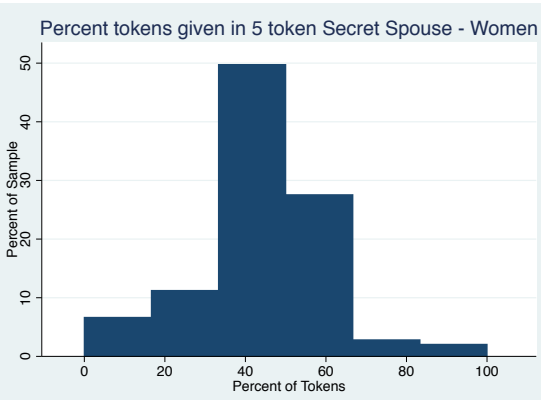


Figure 1.4: Histograms of Game Play: Women

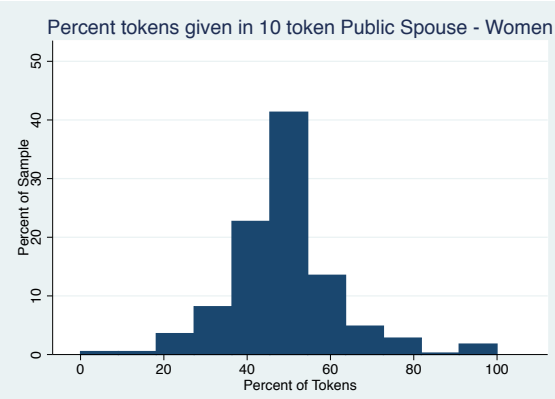
(a) 5 token Public Spouse



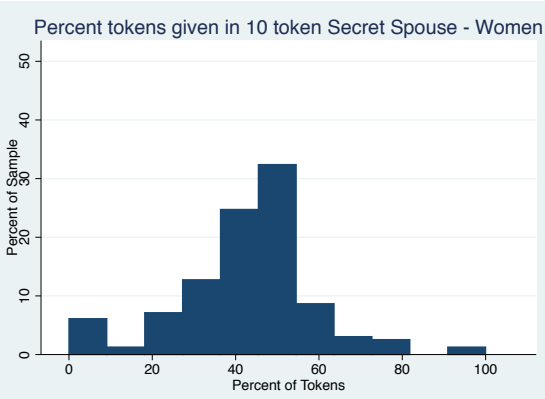
(b) 5 token Secret Spouse



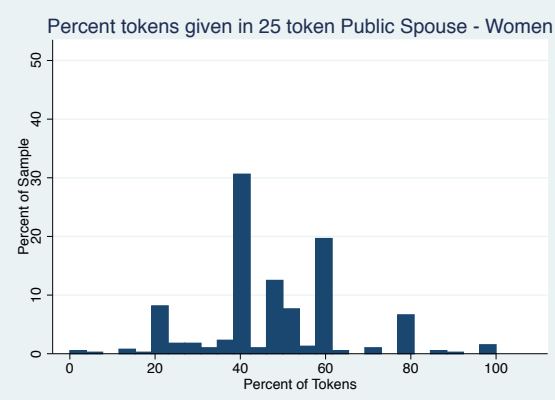
(c) 10 token Public Spouse



(d) 10 token Secret Spouse



(e) 25 token Public Spouse



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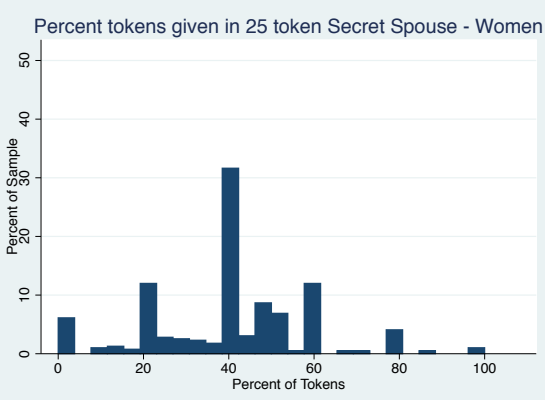
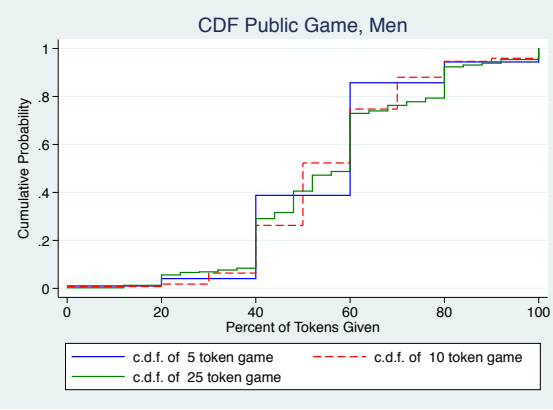
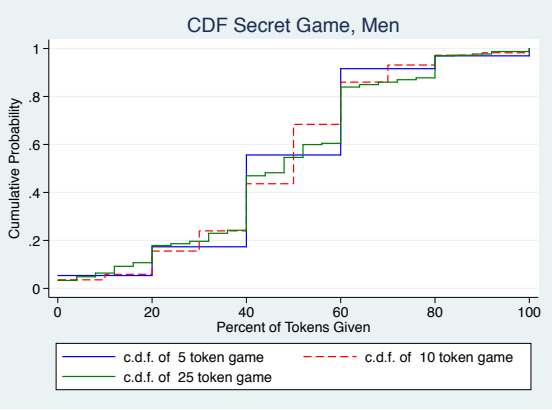


Figure 1.5: CDFs of Game Play

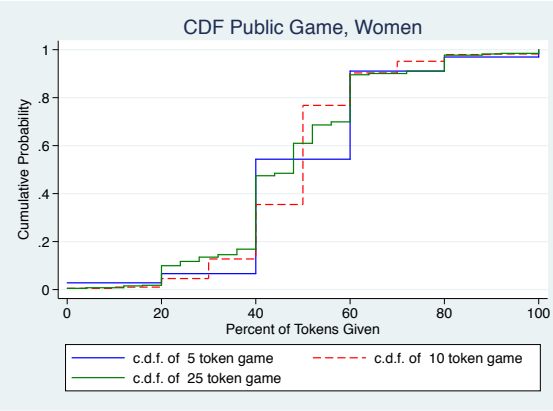
(a) Men, Public Game



(b) Men, Secret Game



(c) Women, Public Game



(d) Women, Secret Game

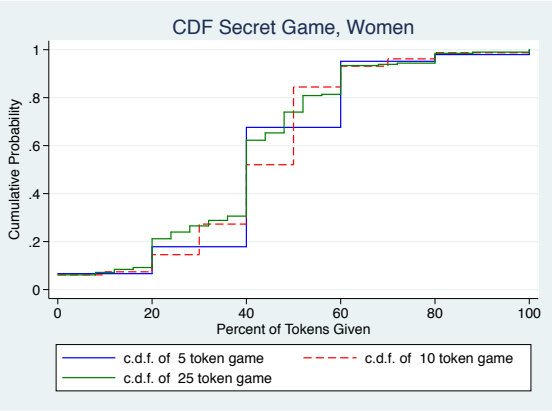
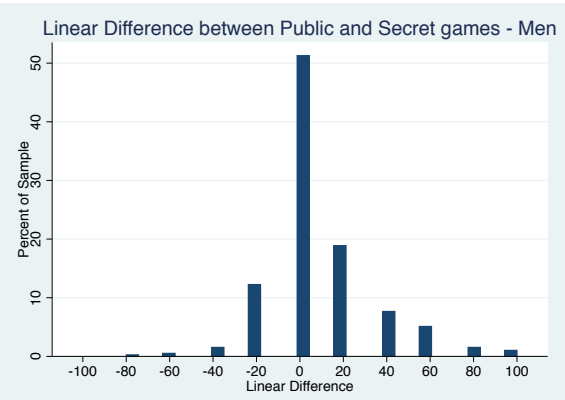
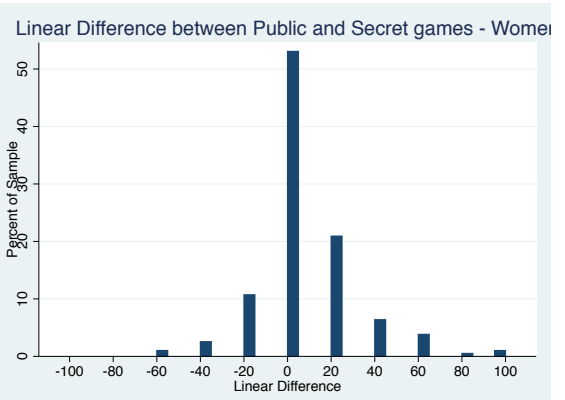


Figure 1.6: Linear Difference between Public and Secret Games

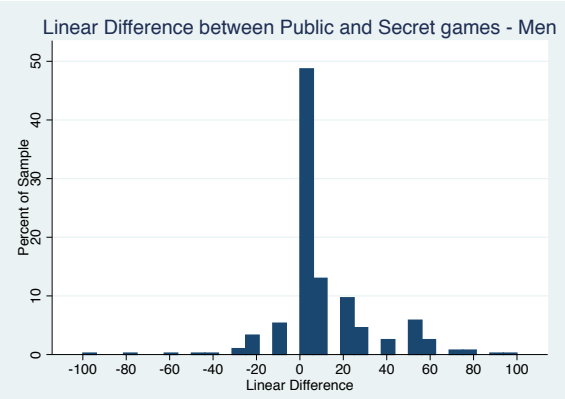
(a) 5 token Men



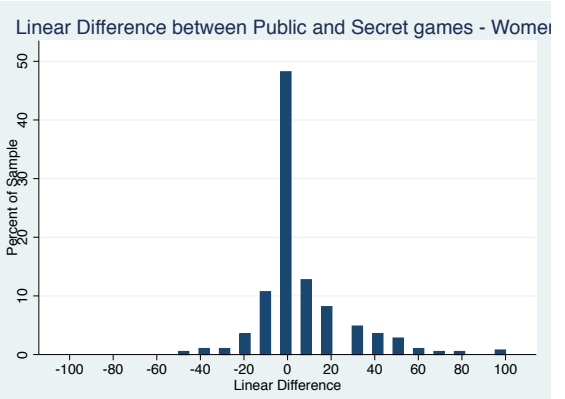
(b) 5 token Women



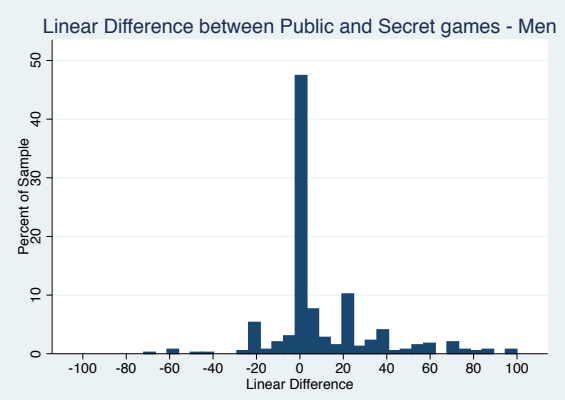
(c) 10 token Men



(d) 10 token Women



(e) 25 token Men



(f) 25 token Women

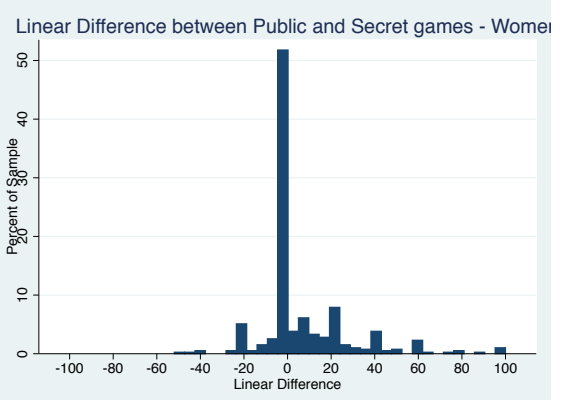


Figure 1.7: CDFs of Linear Difference

(a) Men (b) Women

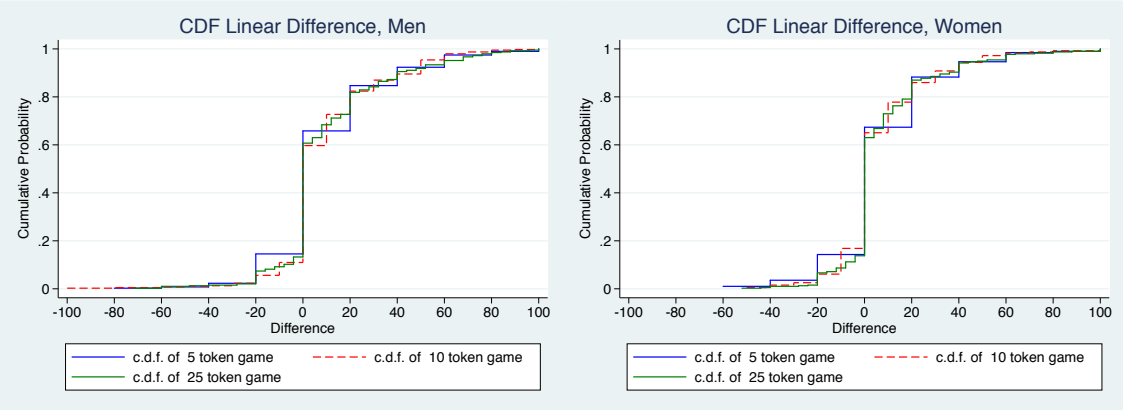
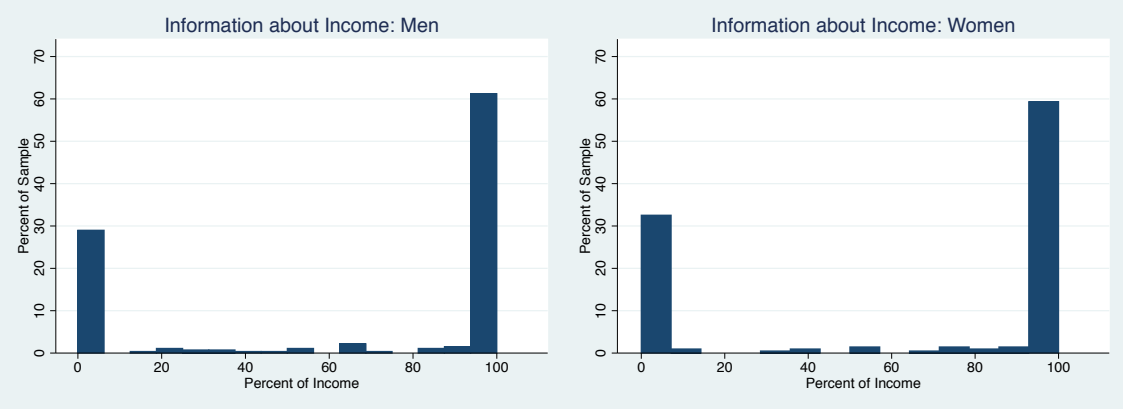
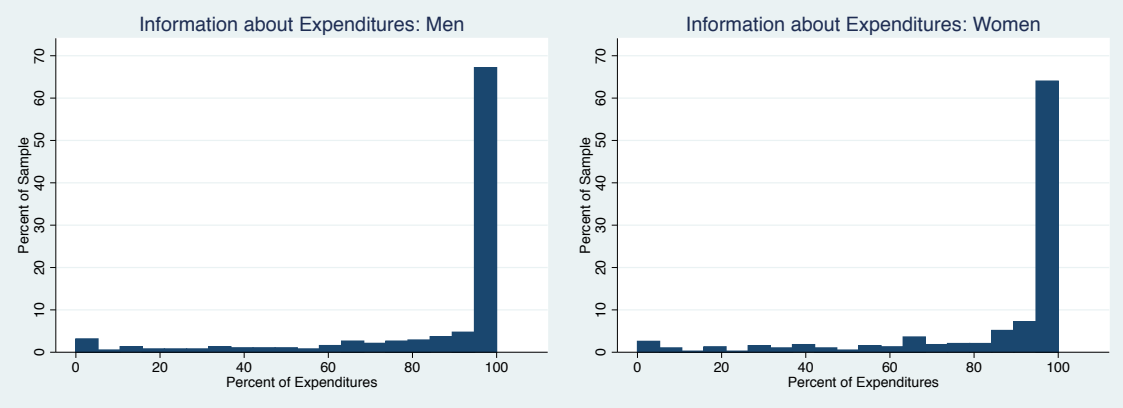


Figure 1.8: Histograms of Information between Spouses: Survey Measure

(a) Income, Men (b) Income, Women



(c) Expenditures, Men (d) Expenditures, Women



1.10 Tables

Table 1.1: Summary Statistics

	MCDM Sample		Siaya District	
	Men	**Women**	**Men**	**Women**
Age	46.04 (16.15)	36.62 (13.97)	44.30 (16.67)	36.32 (14.78)
Years of Education	7.950 (3.610)	6.460 (3.550)	5.850 (3.740)	4.750 (3.630)
Number of Children	3.840 (2.570)	3.790 (2.360)		3.840 (2.440)
Age of the Youngest Child*	7.420 (8.790)	7.250 (8.430)	4.440 (4.810)	4.030 (4.430)
"I am the primary financial decision maker"	0.470 (0.500)	0.300 (0.460)		
"We make financial decisions together equally"	0.340 (0.470)	0.340 (0.470)		
"My spouse is the primary financial decision maker"	0.150 (0.360)	0.330 (0.470)		
Primary financial decision maker missing	0.0400 (0.190)	0.0400 (0.190)		
Total Weekly Income	1570 (4778)	667.3 (2314)		
Weekly Income from Work, Indicator**	0.53 (0.50)	0.33 (0.47)	0.92 (0.26)	0.90 (0.30)
Transfer from Spouse, Indicator	0.05 (0.23)	0.41 (0.49)		
Transfer from Spouse, No Zeros, KSH	561.0 (1469)	470.0 (1145)		
Weekly Transfer to Spouse, Indicator	0.46 (0.50)	0.05 (0.23)		
Weekly Transfer to Spouse, No Zeros, KSH	470.8 (487.5)	290.7 (516.6)		

Notes: Table shows means and standard deviations in parentheses. Data for the MCDM sample taken from the baseline survey. Data for Siaya District are from the 1999 Kenya Census, complements of IPUMS-International. The census sample is restricted to those 18 years or older and in a non-polygamous union Financial data for the MCDM sample covers income, transfers, and expenditures over the week before the baseline survey. *For the Census sample, age of youngest child in the household. **For MCDM sample, indicator that the respondent reported some income from work over the past week. For the Census sample, an indicator that the respondent is employed.

Table 1.2: Fraction of the 18+ Population by Marital Status, Siaya District

	Men	**Women**
Single	0.30	0.10
Married, monogamous	0.53	0.48
Married, polygamous	0.12	0.21
Separated	0.02	0.01
Divorced	0.01	0.01
Widowed	0.02	0.19

Notes: Data are from the 1999 Kenya Census, complements of IPUMS-International.

Table 1.3: Summary Statistics: Games

	Percentage of Tokens Passed	Percentage of Money Given	Percentage of Money Left on the Table
Public Spouse: Men	55.87	65.51	14.71
	(18.26)	(24.66)	
Public Spouse: Women	48.66	58.71	17.11
	(16.64)	(24.98)	
Secret Spouse: Men	46.67	56.76	17.78
	(20.92)	(24.89)	
Secret Spouse: Women	41.77	51.83	19.41
	(18.93)	(24.32)	

Notes: The first column shows the mean percentage of tokens passed. Call this value x. The second column shows the mean percentage of total realized income given to the spouse ($\frac{30x}{30x+20(1-x)}$). The third column shows the mean amount of money left unclaimed, scaled by the total potential pot ($\frac{10(1-x)}{30}$). Standard deviations are shown in parentheses.

Table 1.4: Summary Statistics: Efficiency

Percent of tokens passed	**Percent of Observations**
Men	
Extremely Inefficient: $x <= 20$	0.04
Very Inefficient: $20 < x <= 40$	0.28
Mostly Inefficient: $40 < x <= 60$	0.46
Mildly Inefficient: $60 < x <= 80$	0.16
Almost Efficient: $80 < x <= 100$	0.06
Women	
Extremely Inefficient: $x <= 20$	0.07
Very Inefficient: $20 < x <= 40$	0.39
Mostly Inefficient: $40 < x <= 60$	0.45
Mildly Inefficient: $60 < x <= 80$	0.07
Almost Efficient: $80 < x <= 100$	0.02

Notes: tokens passed to the spouse are worth more than tokens kept for self, so the household income maximizing choice is to give 100% of the tokens to the spouse. The table shows the percentage of male and female observations that fit into different efficiency categories.

Table 1.5: Consistency: Efficiency

Percent of tokens passed		Men		Women	
		Count	Percent of Sample	Count	Percent of Sample
Pefectly Consistent	Extremely Inefficient: $x <= 20$	2	0.51	9	2.3
	Very Inefficient: $20 < x <= 40$	51	13.01	58	14.8
	Mostly Inefficient: $40 < x <= 60$	81	20.66	67	17.09
	Mildly Inefficient: $60 < x <= 80$	15	3.83	7	1.79
	Almost Efficient: $80 < x <= 100$	13	3.32	4	1.02
	Perfectly Consistent	162	41.33	145	37
Mostly Consistent	Extremely Inefficient: $x <= 20$	5	1.28	6	1.53
	Very Inefficient: $20 < x <= 40$	42	10.71	87	22.19
	Mostly Inefficient: $40 < x <= 60$	95	24.23	97	24.74
	Mildly Inefficient: $60 < x <= 80$	38	9.69	14	3.57
	Almost Efficient: $80 < x <= 100$	4	1.02	1	0.26
	Mostly Consistent	184	46.93	205	52.29
Perfectly and Mostly Consistent	Extremely Inefficient: $x <= 20$	7	1.79	15	3.83
	Very Inefficient: $20 < x <= 40$	93	23.72	145	36.99
	Mostly Inefficient: $40 < x <= 60$	176	44.9	164	41.84
	Mildly Inefficient: $60 < x <= 80$	53	13.52	21	5.36
	Almost Efficient: $80 < x <= 100$	17	4.34	5	1.28
Consistent		346	88.27	350	89.3
Not Consistent		46	11.73	42	10.7

Notes: Table shows how consistent people are in their efficiency behavior across the token amounts of the games. The first panel shows the number and fraction of people who play all three token amounts with the same efficiency behavior type. The second panel shows those who play the three games mostly consistently, by playing two of three games as one type, and the third as a proximate type. The third panel sums those who are perfectly and mostly consistent across the three stakes. The final panel shows the number and fraction of people who do and do not play the games consistently across the three stakes.

Table 1.6: Regression: Percent of tokens passed on Information

	Percentage of tokens passed	(With Controls)
Secret Game	-8.544***	-8.837***
	(1.108)	(1.224)
Male	7.168***	7.187***
	(1.072)	(1.310)
Male x Secret Game	-2.236	-2.052
	(1.395)	(1.528)
Ten Token Game	-0.319	-0.378
	(0.430)	(0.469)
Twenty Five Token Game	-0.788*	-0.684
	(0.473)	(0.506)
Secret Game First	-2.098*	-2.297**
	(1.077)	(1.157)
Secret Game First x Secret Game	3.572**	3.699**
	(1.398)	(1.532)
Constant	50.00***	45.34***
	(0.911)	(2.557)
Observations	4,704	4,122
R^2	0.071	0.085

Notes: *** p<0.01, ** p<0.05, * p<0.1. The regression includes pooled observations for men and women, public and secret games, and 3 token amounts. Female, public game, five token, public game played first is the base category. Heteroskedasticity robust standard errors are shown in parentheses, clustered at the individual level. Controls include age, education, number of children, age of youngest child, who is the primary financial decision maker, and income over the previous week.

Table 1.7: Summary Statistics: Information

Raw	Percent
Men	
Opportunists	0.38
Non-Responders	0.49
Secret Benefactors	0.13
Women	
Opportunists	0.35
Non-Responders	0.50
Secret Benefactors	0.15
Recoded	
Men	
Opportunists	0.25
Non-Responders	0.70
Secret Benefactors	0.06
Women	
Opportunists	0.20
Non-Responders	0.74
Secret Benefactors	0.06

Notes: The first column shows the fraction of people who give more in the public game than secret game (Opportunists), the fraction that give the same in both games (Non-Responders), and the fraction that give less in the public game than secret game (Secret Benefactors). The table shows information for all three token amounts pooled. The first panel shows a classification based on the simple difference. To account for small deviations that may be errors, the second panel shows the classification after collapsing observations for which the difference between public and secret was less than or equal to ten percentage points to the Non-Responder category.

Table 1.8: Consistency: Information

		Men		Women	
		Count	Percent of Sample	Count	Percent of Sample
Pefectly Consistent	Opportunist	93	23.72	60	15.31
	Non-Responder	139	35.46	117	29.85
	Secret Benefactor	15	3.83	13	3.32
	Perfectly Consistent	247	63.01	190	48.48
Mostly Consistent	Opportunist	35	8.93	43	10.97
	Non-Responder	43	10.97	77	19.64
	Secret Benefactor	19	4.85	13	3.32
	Mostly Consistent	97	24.85	133	33.93
Perfectly and Mostly Consistent	Opportunist	128	32.65	103	26.28
	Non-Responder	182	46.43	194	49.49
	Secret Benefactor	34	8.67	26	6.63
Consistent		344	87.85	323	82.4
Not Consistent		48	12.24	69	17.6

Notes: Table shows how consistent people are in their information response across the token amounts of the games. "Opportunists" are people who give more in the public game than secret game, "Non-Responders" are people who give the same in both games (Non-Responders), and "Secret Benefactors" are people who give less in the public game than secret game. The first panel shows the number and fraction of people who play all three token amounts with the same behavior type. The second panel shows those who play the three games mostly consistently, by playing two games as one type and the third game as a proximate type. The third panel sums those who are perfectly and mostly consistent across the three stakes. The final panel shows the number and fraction of people who do and do not play the games consistently across the three stakes.

Table 1.9: Regression: Percentage of Tokens Given on Information about Income or Expenditures

	Info about Income	**Info about Income**	**Info about Expenditures**	**Info about Expenditures**
Info	3.128**	4.909**	0.713	3.166*
	(1.518)	(1.979)	(1.376)	(1.835)
Info x Secret Game		1.155*		0.717
		(0.699)		(0.480)
Info x Opportunist		-0.246		-0.978
		(3.402)		(2.876)
Info x Opportunist x Secret Game		-10.98***		-8.663***
		(3.174)		(2.968)
Opportunist		7.733***		7.789***
		(2.803)		(2.300)
Secret Game		-1.491***		-1.070***
		(0.571)		(0.266)
Opportunist x Secret Game		-20.88***		-23.99***
		(2.174)		(2.239)
Constant	45.47***	46.75***	47.09***	48.85***
	(4.919)	(5.111)	(4.048)	(4.096)
Observations	2,016	2,016	3,102	3,102
R-squared	0.117	0.378	0.100	0.352

Notes: *** p<0.01, ** p<0.05, * p<0.1. Table shows linear regressions of the percentage of tokens given in the public and secret games, and includes observations for all three token amounts. The sample is restricted to only Opportunists and Non-Responders. "Info" is a dummy variable indicating that the respondent reports their spouse is aware of 100% of their income (columns 1 and 2) or expenditures (columns 3 and 4). "Opportunist" is a dummy variable indicating that the respondent gave more in the public than secret game for two of three stakes offered. All regressions include demographic and financial control variables (age, education, number of children, age of youngest child, who is the primary financial decision maker, and income over the previous week) as well as enumerator and date fixed effects. Heteroskedasticity robust standard errors are in parentheses, clustered at the individual level.

1.11 Additional Tables

Table 1.10: Detailed Summary Statistics: Games

Percentage of tokens passed	All	5 token	10 token	25 token	First	Last
Secret Spouse: Men	46.67	46.63	46.45	46.93	47.61	45.92
	(20.92)	(20.85)	(19.97)	(22.03)	(20.24)	(21.43)
Public Spouse: Men	55.87	55.20	55.84	56.55	56.69	54.83
	(18.26)	(18.08)	(17.05)	(19.58)	(18.04)	(18.5)
Secret Spouse: Women	41.77	42.96	42.14	40.19	42.44	41.18
	(18.93)	(19.28)	(18.12)	(19.3)	(19.48)	(18.44)
Public Spouse: Women	48.66	49.64	48.72	47.61	49.73	47.41
	(16.64)	(17.86)	(14.64)	(17.23)	(16.73)	(16.47)

Percentage of Money Given	All	5 token	10 token	25 token	First	Last
Secret Spouse: Men	56.76	56.72	56.54	57.02	57.68	56.02
	(24.89)	(24.89)	(24.87)	(24.91)	(24.94)	(24.83)
Public Spouse: Men	65.51	64.89	65.48	66.13	66.26	64.55
	(24.66)	(24.73)	(24.66)	(24.57)	(24.55)	(24.77)
Secret Spouse: Women	51.83	53.05	52.21	50.2	52.52	51.22
	(24.32)	(24.5)	(24.38)	(24.04)	(24.43)	(24.22)
Public Spouse: Women	58.71	59.65	58.76	57.68	59.74	57.49
	(24.98)	(25)	(24.98)	(24.94)	(25)	(24.93)

Money Left on the Table	All	5 token	10 token	25 token	First	Last
Secret Spouse: Men	17.78%	26.69 KSH	53.55 KSH	132.68 KSH	17.46%	18.03%
Public Spouse: Men	14.71%	22.40 KSH	44.16 KSH	108.63 KSH	14.44%	15.06%
Secret Spouse: Women	19.41%	28.52 KSH	57.86 KSH	149.53 KSH	19.19%	19.61%
Public Spouse: Women	17.11%	25.18 KSH	51.28 KSH	130.98 KSH	16.76%	17.53%

Table 1.11: Distribution Tests, Men

a. Men, compare to 5 token game

	Public Game			Secret Game		
Percent Given, Left-Hand End	5 token	10 token, Collapsed to 5	25 token, Collapsed to 5	5 token	10 token, Collapsed to 5	25 token, Collapsed to 5
0	4	3	5	21	23	42
20	12	22	28	47	71	53
40	136	180	158	150	174	142
60	184	140	120	141	97	107
80	34	31	63	21	20	43
100	22	16	18	12	7	5
Pearson's Chi Squared		8.14	15.35		8.11	11.34

b. Men, compare to 10 token game

	Public Game		Secret Game	
Percent Given, Left-Hand End	10 token	25 token, Collapsed to 10	10 token	25 token, Collapsed to 10
0	3	1	14	25
10	0	4	9	17
20	4	22	38	35
30	18	6	33	18
40	78	126	77	119
50	102	32	97	23
60	88	108	69	100
70	52	12	28	7
80	26	57	16	39
90	5	6	4	4
100	16	18	7	5
Pearson's Chi Squared		55.08		46.49

Notes: Table shows information to test for differences in the distribution of giving across token amounts. The first panel compares giving in the 10 and 25 token game to giving in the 5 token game. The first column of each panel shows the raw distribution in the 5 token game. The second and third columns show the distributions in the 10 and 25 token game collapsed to the categories available in the 5 token game. The left-hand end of each category is shown in the column on the far left. The final row shows Pearson's chi-squared tests of the independence of distributions across token amounts. The second panel shows analogous information for a comparison of the 10 to 25 token distribution. Results show that the distributions are statistically distinct across token amounts, mostly due to different focal points in each distribution (e.g. 5 tokens or 50% is a focal point of the 10 token distribution, while 12 and 13 tokens are not focal points of the 25 token distribution) rather than a shift in the entire distribution.

Table 1.12: Distribution Tests, Women

a. Women, compare to 5 token game

	Public Game			Secret Game		
Percent Given, Left-Hand End	5 token	10 token, Collapsed to 5	25 token, Collapsed to 5	5 token	10 token, Collapsed to 5	25 token, Collapsed to 5
0	11	4	7	26	29	36
20	15	46	59	44	78	84
40	187	251	208	195	224	199
60	144	72	83	108	46	51
80	23	12	29	11	10	18
100	12	7	6	8	5	4
Pearson's Chi Squared		28.57	23.63		18.67	18.81

b. Women, compare to 10 token game

	Public Game		Secret Game	
Percent Given, Left-Hand End	10 token	25 token, Collapsed to 10	10 token	25 token, Collapsed to 10
0	2	3	24	28
10	2	4	5	8
20	14	46	28	68
30	32	13	50	16
40	89	173	97	170
50	162	35	127	29
60	53	79	34	49
70	19	4	12	2
80	11	28	10	18
90	1	1	0	0
100	7	6	5	4
Pearson's Chi Squared		78.58		64.48

Notes: Table shows information to test for differences in the distribution of giving across token amounts. The first panel compares giving in the 10 and 25 token game to giving in the 5 token game. The first column of each panel shows the raw distribution in the 5 token game. The second and third columns show the distributions in the 10 and 25 token game collapsed to the categories available in the 5 token game. The left-hand end of each category is shown in the column on the far left. The final row shows Pearson's chi-squared tests of the independence of distributions across token amounts. The second panel shows analogous information for a comparison of the 10 to 25 token distribution. Results show that the distributions are statistically distinct across token amounts, mostly due to different focal points in each distribution (e.g. 5 tokens or 50% is a focal point of the 10 token distribution, while 12 and 13 tokens are not focal points of the 25 token distribution) rather than a shift in the entire distribution.

Table 1.13: Detailed Summary Statistics: Opportunism

Raw	Percent			
Men	All	5 token	10 token	25 token
Opportunistic	0.38	0.34	0.4	0.39
Non-Responder	0.49	0.51	0.49	0.47
Secret Benefactor	0.13	0.15	0.11	0.13
Women	All	5 token	10 token	25 token
Opportunistic	0.35	0.33	0.35	0.37
Non-Responder	0.5	0.53	0.48	0.49
Secret Benefactor	0.15	0.14	0.17	0.14

Recoded	Percent			
Men	All	5 token	10 token	25 token
Opportunistic	0.25	0.15	0.27	0.32
Same	0.7	0.82	0.67	0.59
SS	0.06	0.02	0.06	0.09
Women				
Opportunistic	0.2	0.12	0.22	0.27
Same	0.74	0.85	0.72	0.64
SS	0.06	0.04	0.06	0.09

CHAPTER II

Motives for Sharing between Spouses: Experimental Evidence from Kenya

2.1 Abstract

Inefficient behavior between spouses has been observed in laboratory experiments, field experiments, and natural experiments all around the world, especially in sub-Saharan Africa. Because efficiency is the foundational assumption of the Collective model of household behavior, theorists are now asking what variety of non-cooperative model to first pursue: one that incorporates information problems or limited contracting. The relative importance of imperfect information and limited contracting in explaining inefficiency has not been measured empirically. I write a model that incorporates inequity aversion (a form of limited contracting) with monetary utility of self and spouse, and allows for both intrinsic and extrinsic motivations for fairness. I use laboratory game data from dictator games played between spouses in rural Kenya to estimate parameters that measure the relative value of own monetary utility, spouse's monetary utility, inequity aversion in public, and inequity aversion in secret. Contrary to expectation, I find that inequity aversion (limited contracting) and information problems do not explain the majority of variance in efficiency in the games; instead, variation in the value of spouse's monetary utility is the best predictor of efficiency for both men and women. I also find that the value of spouse's monetary utility

best explains real world transfers between spouses over the previous week. This evidence suggest that rather than pursue non-cooperative models with limited contracting or information problems, theorists should explore why some people more highly value their spouse's monetary utility than others.

2.2 Introduction

The most popular model of intra-household bargaining in the literature, the Collective model, is defined by the idea of efficiency. According to a forthcoming textbook on household economics by Browning, Chiappori, and Weiss, "if each partner knows the preferences of the other and can observe their consumption behavior ... and the two interact on a regular basis then we would expect that they would find ways to exploit any possibilities for Pareto improvements. ... [the Collective model] simply posits that however resources are allocated, none are left on the table."

However, recent empirical evidence has suggested that husbands and wives do not behave efficiently, and the evidence is especially clear in Africa. Inefficiency has been observed in laboratory experiments (e.g. Hoel (2012), Iversen et al. (2011), Kebede et al. (2011), Mani (2010)), field experiments (e.g. Robinson (2012), Schaner (2012), Ashraf (2009)), and natural experiments (e.g. Udry (1996), Duflo and Udry (2004)). Because the assumption of efficiency does not well fit these samples, and because the samples are so varied, researchers must now ask: what should the next generation of household models look like?

The quote from Browning, Chiappori, and Weiss (2011) suggests that behind the explicit assumption of efficiency, household modelers have implicitly assumed perfect and complete information and perfect contracting. This leads to two natural empirical questions. First, are information problems the cause of inefficiency? Perhaps respondents behave inefficiently because they believe they can hide either their income or their decisions from their spouse,

thereby increasing their own utility. Evidence in Ashraf (2009), Chen (2013), and Castilla and Walker (2013) indicates that information tells part of the inefficiency story.

Second, does limited contracting explain inefficiency? In his seminal work, Chiappori (1988, 1992) defines efficiency in terms of a sharing rule that is attained over time; at any moment, the balance of money or utility may not perfectly achieve the agreed upon sharing rule, but over time, husbands and wives transfer resources to settle up on average. However, if a person doesn't believe that this settling up will happen, he may insist upon reaching the sharing rule in each transaction. This transaction-level sharing rule is a form of limited contracting, and is otherwise discussed under the heading of fairness norms. That so many spouses split laboratory game winnings evenly suggests that transaction-level fairness norms between spouses may cause inefficiency also. This has been suggested in Hoel (2012) and Kebede et al. (2011).

Finally, implicit in all household bargaining models is the idea that husbands and wives work together as a team, and care about the choices and utility of their spouse more than they do about other people. We conclude that a respondent will maximize their spouse's income and happiness over that of other people. This hypothesis has not been often been tested empirically, and there may be reason to think that in some households, spouses may not act like any more of a team than any pair of anonymous strangers. There is much evidence to suggest that men and women on average have different consumption preferences (e.g. Duflo (2003), Browning et al. (1994)), and due to differences in time preferences, beliefs, or risk aversion, make different savings and investment decisions (e.g. Schaner (2012), Anderson and Balland (2002), Qian (2008), de Mel, McKenzie, and Woodruff (2009), Hoffman (2009)). Further, because family structures are often larger and more diverse than the simple nuclear family, men and women may rely more on their extended families than they do on their spouses. For example, in an ethnography of the Luo tribe, the ethnic group represented in this study, Shipton (2007) reports that husbands and wives often keep their financial affairs separate, and more frequently make financial transfers with members of their own gender.

For this reason, researchers may in effect be studying the wrong relationships.

In sum, there are three potential reasons why a researcher may observe inefficiencies between husbands and wives: imperfect information, limited contracting, and relationship definition issues. As we develop the next generation of household models, theorists would not only like to know which reasons are borne out in the data, but also the relative importance of each. It is thus important to measure information, contracting, and relationship problems in a single setting with a united methodology, and test the relative importance of each. This paper fills that gap.

To gain insight into what form of non-cooperative model theorists should pursue, I designed a set of laboratory games that measure how much a respondent cares about his spouse relative to himself and relative to anonymous strangers; whether respondents care more about fairness than monetary utility in an individual transaction; whether they care differently about fairness in games against their spouse than anonymous strangers; and whether respondents care differently about fairness when they can keep their choices secret from their spouse. I played these games with 415 married couples in Siaya County, Kenya. Next, I write a model that combines monetary utility with inequity aversion to define five parameters that govern giving in the games. Using numerical optimization procedures, I minimize the squared errors of the first order conditions from the model to estimate the five parameters for each respondent individually. I am then able to describe both the difference in measured parameters on average, and also describe the distribution of motives across the sample. I also explore the demographic correlates of each motivation.

I next examine the importance of each motive in explaining inefficiency in the games using a decomposition of variance. I find that contrary to expectation, information problems and limited contracting in the form of inequity aversion explain about the same fraction of variance in giving in the games, but together explain *less* variation than does the relative value of spouse's monetary utility.

Finally, I use detailed survey data about transfers over the previous week to correlate the estimated parameters with real world behavior. I again find that, contrary to expectation, the variation in the value of spouse's monetary utility is best correlated with real world transfers between spouses.

Taken together, this evidence suggests that rather than pursue models of limited contracting or asymmetric information, theorists should explore why some people value their spouse's monetary utility more than others, and how best to measure that value.

The paper is organized as follows: Section 2.3 reviews the related literature; Section 2.4 describes the setting and experimental design; Section 2.5 outlines the model and numerical optimization of parameters; Section 2.6 presents results, first of the simple game behaviors, next of the parameter estimates, and finally of the correlations with demographic characteristics and real world behaviors; Section 2.7 concludes.

2.3 Related Literature

There are several recent papers from which this study draws inspiration. Leider et al. (2009) play anonymous and non-anonymous dictator games with Harvard undergraduates of varying social closeness to measure baseline altruism (altruism in a standard anonymous dictator game played against a stranger), directed altruism (additional giving to friends over strangers), and the importance of future interactions (additional giving when the respondent's decision would be revealed to their friend). The authors find that on average, people give 52% more to their friends than to strangers, and give 24% more when their decisions will be revealed.

Ligon and Schechter (2012) build on this work by decomposing the motives to share between households in rural Paraguay. Again using variations of dictator games, the authors measure baseline altruism, directed altruism, and further decompose the importance of future

interactions into prospective reciprocity and sanctions. Using a linear model in which they assume the four motives are additively separable, they find that baseline altruism accounts for 85.8% of mean giving in the games, directed altruism adds 5.2%, reciprocity 6.4%, and sanctions 2.5%. Ligon and Schechter also gather data on real world transfers are able to correlate preferences as measured in the games with behavior measured in survey data. They find that while the motives for reciprocity and sanctions may not account for much of the mean transfers in the games, they are statistically significantly correlated with real world gift giving.

DellaVigna et al. (2012) explore the motivations to give to door-to-door charity solicitation, testing the relative importance of altruism and social pressure. They write a model that is similar in flavor to the one in this paper. Utility is a weighted sum of utility from private consumption, altruism from gift giving, and social pressure to give. Utility in private consumption is assumed to be locally linear. Altruism is a non-linear function of gifts given. Social pressure is modeled as the linear difference between actual gift giving and expected giving. The authors structurally estimate the model using data from a field experiment in which respondents in Chicago were asked to give money to a local children's hospital. The study team randomized the delivery of flyers indicating when the solicitation would occur, giving respondents the opportunity to adjust their schedules to avoid the social pressure of an in-person solicitation. Structural estimates suggest that participants experience $3.80 worth of social pressure from an in-person solicitation.

Several sets of authors have also used experimental methods to examine sharing within families and test features of household bargaining models. Peters et al. (2004) play voluntary contribution games with families at Cornell and find that people contribute more when playing with family rather than strangers. Unur et al. (2007) play dictator games with couples, other relations, and strangers in Ohio, and find that spouses transfer more to each other than to other family members or to strangers. Cochard et al. (2009) play prisoner's dilemma games with couples and strangers in Toulouse, France, finding a cooperation rate

of 73% within couples and 42.5% between strangers. Chao and Kohler (2007) play triple dictator games and trust games in Malawi between spouses, family members, neighbors, and strangers. In the triple dictator games (a game in which the amount kept for self is valued at parity but the amount given to the partner is tripled), the authors find the average percent given to a partner is 35% while to spouses the percentage rises to 40%. Men transfer 8.7 percentage points more to their wives than women do to their husbands, but this difference is not statistically significant. These studies suggest that people have different preferences for sharing with their spouse than with strangers. Exploring the role of information, Jakiela and Ozier (2012) vary the degree of observability in trust games to examine the preference to hide income from relatives. They find that women strategically hide income when playing the game in the presence of their relatives instead of strangers. Their sample is not varied enough to look for the effect of the presence of the husband alone.

Other studies have used games to test the foundations of household bargaining models explicitly. Iversen et al. (2011) play a novel hybrid of the trust and dictator games with couples in Southeastern Uganda to examine the assumptions of household decision models. They find that respondents do not maximize household income and that respondents behave opportunistically, giving more in public and behaving less efficiently in secret. This suggests that the Collective model is inappropriate for the sample, and that information problems may be a contributing factor. Mani (2010) also finds against efficiency in South India using voluntary contribution games played between couples. However, she does not find that information matters, with respondents behaving similarly when their decisions are revealed or kept secret. Mani also suggests that fairness norms are important, because some subjects made choices that reduced their own income in order to also reduce their spouse's. In a study related to Iversen et al. (2011), Kebede et al. (2011) use a very similar set-up with couples in Ethiopia, again finding against the efficiency assumption central to the Collective model. Because respondents often contribute exactly half of their endowment, the authors suggest that fairness norms may be important.

2.4 Experimental Design

2.4.1 Sample Selection

The sample was drawn from five rural towns in southwestern Kenya's Nyanza Province. Maps of the area are shown in Figure 2.1. Two of the towns (Ugunja and Sega) are on the main paved road that runs through all of Kenya from Mombasa to Uganda. The other three towns (Ukwala, Sigomere, and Siaya) are on major dirt roads off the main paved road. Three of the towns (Ugunja, Siaya, and Ukwala) are former district headquarters.[1] Subjects were married (either formally or informally),[2] currently living with their spouse, over the age of 18, and available to participate in two interviews a week apart in September or October of 2011. Polygamous families were not eligible to participate.[3]

To identify the sample, the survey team asked local administrators (village elders) to compile a list of all couples meeting the eligibility criteria in several villages within walking distance of the five towns.[4] The village elders were asked to record the names of both husband and wife and a contact phone number if possible. Of the 786 couple records collected by the village elders, 82 percent included a contact phone number. Couples were then assigned a random number to determine the order in which they were contacted to be scheduled for an interview, stratified by town. Couples that listed a phone number were scheduled for interviews by phone if possible. Couples that did not have a phone number listed, or were unable to be contacted by phone, were contacted through the village elder. Tracking lists

[1] A new constitution adopted in late 2010 created administrative units known as "counties" to take the place of the former "districts." All towns and districts in this study now fall into Siaya county. However, at the time of the study old district offices were still serving many of their old official roles, and the towns remained important centers of commerce and government.

[2] A couple is considered "married" if they are considered by the village elder to be a long-term romantic couple. The beginning of the "marriage" is defined as the time the couple moved in together.

[3] Polygamous families were excluded because the household bargaining structures between three or more adults are likely to be very different from the traditional model of a two adult household. In the 1999 Kenyan census, 12% of men and 20% of women over the age of 18 in the Nyanza Province reported that they were in polygamous marriages. By contrast, 54% of men and 53% of women over 18 said they were in single-spouse marriages.

[4] While a full census by the survey team would have been a preferable method of compiling the eligible couple list, budget constraints were limiting.

were distributed to the elders and they were asked to invite the selected couples to arrive for an interview on the selected day. In total, 53 percent of the 786 couples provided by the village elders participated in the study. 415 couples were interviewed at baseline, and 406 couples met all of the study criteria (monogamous, living together, both partners over the age of 18). Of these, 371 men and 368 women had complete data for all variables used in this study.[5]

2.4.2 Experimental Design

Couples arrived at the survey site together,[6] but completed their individual surveys separately. The survey began with a questionnaire about demographics, family finances, material wealth, expenditures, transfers, savings and loans, and decision making in the household. The survey was executed in Dhuluo, the most common native language in the study area.[7] Table 2.2 shows demographic and financial summary statistics from the baseline survey. An English version of the survey can be found in the appendix and on my website[8] and the Dhuluo translation is available on request.

The interview continued with a series of dictator games. The games were played one-on-one with a trained field assistant reading from a script in the respondent's native language. The respondent was asked questions to confirm their understanding at every stage. An English version of the script can be found in the appendix. Each respondent played four dictator games in total, each over three stakes. In the two spouse games, the respondent was given tokens (bottle caps) to divide between himself and his spouse. The respondent indicated his choice by placing the bottle caps in cups labeled "Self" and "Spouse" in Dhuluo. In the

[5]Some individuals were excluded because one or more of the six spouse game decisions was missing or recorded incorrectly.

[6]The study sites were a Town Council Hall, a boarding house for handicapped children, a polytechnic university, and a small resort.

[7]All subjects in the sample speak Dhuluo. The survey was forward and back translated by the study team.

[8]www.umich.edu/∼jesshoel

Secret Spouse game, the respondent was told that his decisions would remain secret from his spouse and could be revealed only to the project leader. In the Public Spouse game, the respondent was told that his spouse would be told of his decisions. The other two were selected from three other possible dictator games. Other games include the Secret Stranger game (the traditional dictator game in which a subject divides money between himself and an anonymous stranger), the Spouse Stranger game (in which the subject divides money between his spouse and an anonymous stranger), and the Stranger Stranger game (in which the subject divides money between two anonymous strangers). The order of the games was randomized.[9] Each game was played over 5, 10, and 25 tokens. Tokens were worth 20 shillings (about $0.22) if kept and 30 shillings ($0.32) if given away. The value of the token was increased if given away to allow the easy observation of inefficiency in the household. To assist respondents in understanding the monetary consequences of their choices, the respondent was given a sheet showing the value of a number of tokens if given or kept. A copy of this sheet can be found in Figure 2.2. After the respondent had made his choice, the field assistant repeated the choice and its monetary consequences to the respondent, and asked if that was the division he wanted. The respondent was allowed to change his choice as many times as he liked.

Respondents were informed that all of their choices in the games (12 in total) would be entered into a computer at the office and one would be chosen at random to come true. The computer would also pick random strangers for the stranger games. It was emphasized that because respondents could win any game for themselves, and could receive money from their own, their spouse's, or a stranger's game, they could be sure that their choices in the Secret Spouse game would remain secret. Winnings from the games were distributed one week later at the end of the follow-up interview.[10] Respondents were not informed of which game they

[9]The spouse games were always played consecutively, with the starting game (secret or public) randomized. The order between the spouse games and the other two games selected was also randomized.

[10]The endline survey contained questions about expenditures, transfers, savings and loans, marital quality, and the respondent's responses to the study. An English copy of this survey can be found on my website and in the appendix. The Dhuluo translation is available on request.

or their spouse won unless one won a Public Spouse game. If a respondent or their spouse won a Public Spouse game, both were informed of the token amount, its division, and the amounts of money taken home by each. Respondents were not informed by the study team how much their spouse took home from the games in total; however, because respondents were required to attend with their spouses and likely returned to their home together, it is likely that respondents discussed their winnings with their spouse. Payouts from the games ranged from 0 to 1270 shillings. The average payout per respondent was 316 KSH. As a point of reference, the mean payout was 20% of baseline reported weekly male income, and 49% of weekly female income.

2.5 Model

In any decision in these games, an individual must balance three motives: the monetary interests of player 1, the monetary interests of player 2, and the individual's desire for fairness between the two. Based on the inequity aversion models of Fehr and Schmidt (1999) and Bolton and Ockenfels (2000), we then model utility as:

$$U(x;\alpha,\beta,\lambda) = [\alpha(1-x) + \beta(x * \frac{3}{2})] - \lambda(\frac{2}{5} - x)^2 \tag{2.1}$$

where x is the percentage of tokens given to player 2, α is the monetary utility weight on player 1, β is the monetary utility weight on player 2, and λ is the weight on inequity aversion. The utility function captures the idea that player 1 gains utility from the monetary outcome of the game ($\alpha(1-x)$), as does player 2 ($\beta(x * \frac{3}{2})$, where the percentage of tokens given to player 2 is multiplied by $\frac{3}{2}$ due to the rules of the game). In a game played between the respondent and a stranger, we call placing weight on the monetary interests of player 2 baseline altruism. In a game between the respondent and his spouse, we call the weight on player 2 direct altruism. The player may also be averse to monetary consequences that

are uneven. This is modeled as aversion to inequity $(-(\frac{2}{5}-x)^2$,[11] where $\frac{2}{5}$ is the percentage of tokens given that leaves both players with the same monetary reward, and the distance from this allocation is penalized at in increasing rate). The balance between the monetary utility incentives and inequity aversion is captured in λ.

The first order conditions of this simple model are then

$$-\alpha + \beta\frac{3}{2} + 2\lambda(\frac{2}{5} - x) = 0 \tag{2.2}$$

$$\Rightarrow x = \frac{2}{5} + \frac{1}{\lambda}(\frac{5}{4}\beta - \frac{1}{2}), \tag{2.3}$$

where α is dropped because $\alpha + \beta$ is assumed to equal 1. [12]

Table 2.1: Base Parameters to Model Parameters

Game	α	β	λ
Secret Stranger	$\frac{1}{1+A}$	$\frac{A}{1+A}$	λ_A
Spouse Stranger	$\frac{P}{P+A}$	$\frac{A}{P+A}$	λ_A
Stranger Stranger	$\frac{1}{2}$	$\frac{1}{2}$	λ_A
Secret Spouse	$\frac{1}{1+P}$	$\frac{P}{1+P}$	λ_P
Public Spouse	$\frac{1}{1+P}$	$\frac{P}{1+P}$	λ_{Public}

The model points to two factors that govern giving in any game: β, the relative weight of the monetary utility of player 2, and λ, the relative weight of inequity aversion. In each of the five games played in this study, β and λ are determined by five parameters, shown in Table 2.1. The weight on monetary self interest is normalized to 1. A is the weight on an anonymous stranger's monetary interest relative to the weight on the self, and is akin to baseline altruism. P is the weight on spouse's monetary interest. Note that a respondent may have many reasons why they place different weight on their spouse's monetary income

[11] The difference between the actual allocation and the fair allocation is squared as in Bolton and Ockenfels (2000) to allow for a penalty that increases with deviation.

[12] It is also possible to model utility over income in the log. I used linear utility for several reasons that are detailed in Section 2.11. In short, we generally use log utility because we think the marginal utility of income is decreasing. While the stakes of these games do vary, and the games are played over real money, the stakes may not be large enough for the curvature in the utility function to be noticeable. This hypothesis is borne out in the experimental data because people play the games remarkably consistently across the three stakes. Finally, the predictions from the parameterized log model did not fit the data as closely.

than on a stranger's. Perhaps the respondent enjoys the things his spouse purchases directly, or gains utility from the utility his spouse or his children gain from his spouse's purchases. The respondent may even place more weight on his spouse's income than on his own. In the terminology of Ligon and Schechter (2012), the difference between P and A is a measure of directed altruism to the spouse.

In addition to monetary utility and the relative weights contained in β, the model also includes λ, the weight of inequity aversion relative to monetary utility. Importantly, respondents may assign different fairness norms to different games. Konow (2000) shows that respondents make different allocations in dictator games between self and stranger than games in which the respondent makes an allocation between two strangers. Because the stranger games (Secret Stranger, Spouse Stranger, and Stranger Stranger) are all played against anonymous strangers who will not know of the respondent's behavior, decisions in these games should be governed by the respondent's internal preference for fairness alone: λ_A. A respondent may have different preferences over games played against his spouse, and thus governed by a different preference parameter: λ_P. Finally, a respondent may behave differently when their spouse will find out about their choices, because in addition to their own preferences for fairness, a respondent may want to curry favor, avoid sanction, or signal to their spouse through their public choice. Decisions in the Public Spouse game are thus governed by λ_{Public}. The difference between λ_P and λ_{Public} is analogous to Leider et al. (2009)'s value of the prospect of future interactions, or Ligon and Schechter (2012)'s motives of sanctions and reciprocity.

2.5.1 Numerical Optimization

Numerical methods were used to choose the set of five parameters $(P, A, \lambda_A, \lambda_P, \lambda_{Public})$ that best fit the experimental data from the five games for each respondent: Public Spouse, Secret Spouse, Secret Stranger, Spouse Stranger, and Stranger Stranger.

Specifically, the loss function is specified as the sum of squared errors in the first order conditions for each game over each token amount. For example, the loss in the 5 token Public Spouse game is $x - \frac{2}{5} - \frac{1}{\lambda_{Public}} * (\frac{5}{4}\frac{P}{1+P} - \frac{1}{2})$, where x is the percent of tokens given. The loss in the Spouse Stranger game is $x - \frac{2}{5} - \frac{1}{\lambda_A} * (\frac{5}{4}\frac{A}{P+A} - \frac{1}{2})$.

To fit with the spirit of the model, all parameters were constrained to be greater than or equal to zero. Because each parameter is a ratio of the importance of one factor to another, all parameters were also constrained to be less than or equal to 5 so that extreme values were avoided. The inequity aversion weights were also constrained to be greater than 0.1.

Minimization was performed using MATLAB's fmincon function, using the interior point algorithm, starting from 1 for each parameter. Results were nearly identical with the sqp algorithm. The active-set algorithm provided similar, but less well-fitting results.

Figure 2.3 shows scatter plots of actual behavior in the games against model fitted values, with correlation coefficients shown in the bottom left hand corner. The correlation between predicted and actual behavior is 0.699 in the Stranger Stranger game, and ranges from 0.848 to 0.881 in the other four games.

2.6 Results

2.6.1 Behavior in the Games

Table 2.3 shows basic summary statistics of giving across the five games for men and women separately, presenting means, standard deviations, and t-statistics of the difference between genders. Figure 2.4 shows histograms of behavior in the 25 token games by game and gender.[13]

First note that there are significant differences in average giving across the genders for

[13]Behavior in the 5 and 10 token games is very similar to behavior in the 25 token game. See Section 2.11 for details.

some games. There are no significant differences in giving in the Secret Stranger game (the standard dictator game) or Stranger Stranger game (in which the respondent divides money between two strangers), but men give significantly less in the Spouse Stranger game (in which the respondent divides money between his spouse and a stranger) and significantly more in the Secret and Public Spouse games (in which the respondent divides money between himself and his spouse). All further analysis will be split by gender because the raw summary statistics suggest that the genders are behaving differently.

Next notice two facts in Figure 2.4. First, there is a great deal of heterogeneity in behavior in the games. Second, many people give exactly 40% in the games, especially in the stranger games. Giving 40% of tokens is equivalent to an exactly even split of the final pot. This suggests that for some, inequity aversion is important. While there isn't as strong of a mass point on 40% in the spouse games, the distribution is fullest in the middle. This suggests that for transactions between spouses too, fairness may matter.

Table 2.4 shows game behavior summary statistics in greater detail, in a table similar to Ligon and Schechter (2012)'s Table 2. Along the diagonal of the table, means and standard deviations of male giving in each of the games are repeated. Above the diagonal, the table shows F-statistics and p-values of a test of a difference between mean giving in the row and column games. For example, male giving in the Public Spouse game is significantly higher than male giving in the Secret Spouse game, with an F-statistic of 73.11. Table 2.5 shows the same is true for women, though the difference is smaller. Below the diagonal, the table provides information about the distributions of the differences between the games. The top line in each cell shows the number of observations in which the respondent gave less:the same:more in the row game than in the column game. Men gave less in the Secret Spouse game than in the Public Spouse game in 446 games, while they gave the same in 578 games, and in 152 decisions, a man actually gave *more* in the secret game than in the public game.[14] The second row of the cells below the diagonal show the conditional mean difference between

[14]The table includes choices over all three token amounts offered.

the Public and Secret Spouse game giving, conditional on giving less:more in the row game than column game.

These tables and figures illustrate why a non-linear model of behavior is necessary. For example, both men and women give more than 40% on average in the Public and Secret Spouse games. This suggests that the weight on the monetary utility of the spouse is greater than the weight on self on average (i.e. $P > 1$). However, there is no difference in mean giving between the Secret Stranger and Spouse Stranger games, suggesting that respondents value their own and their spouse's utility equally (i.e. $P = 1$). To reconcile these two facts, a non-linear model that incorporates monetary utility and inequity aversion is needed.

The mean differences also hide potentially important heterogeneity. While mean giving is statistically significantly higher in the Stranger Stranger game than the Secret Stranger game, suggesting that people value their own monetary utility more highly than that of a stranger (i.e. $A < 1$), 33% of male choices and 38% of female choices give the same amount in both games, suggesting that for these individuals $A = 1$. Mean giving is statistically significantly higher in the Public Spouse game than in the Secret Spouse game on average, suggesting that incentive motives matter (i.e. $\lambda_P \neq \lambda_{Public}$). However, 49% of male choices and 50% of female choices give the same in both games, indicating that for half of the sample, incentive motives don't matter. Examining heterogeneous behaviors may lead to different conclusions about the correct model for a particular household. Further, because the parameters are estimated for each respondent individually, the later sections can explore how potentially heterogeneous parameters can explain heterogeneity in real world transfers.

2.6.2 Estimated Parameters

Figures 2.5 and 2.6 show histograms of the estimated parameters, while Table 2.6 shows numerical summary statistics.

2.6.2.1 Basic Parameter Patterns

Hypothesis 1: Relationship Respondents care more about their spouses than they do about anonymous strangers.

Panels a and b of Figure 2.5 show the distribution of the parameter P, the respondent's weight on his spouse's monetary utility relative to his own. Parity is 1. Panels c and d show the distribution of A, the respondent's weight on an anonymous stranger's monetary utility relative to his own. Parity is again 1. The final row shows the distribution of the linear difference between P and A, how much more the respondent cares about his spouse's monetary utility than he does about a stranger's. The difference between P and A is analogous to directed altruism as discussed in Ligon and Schechter (2012) and Leider et al. (2009). These figures clearly show that most people care more about their spouse's utility than a stranger's, and many care much more. The first three rows of Table 2.6 show this information numerically. 77% of men more heavily weight their spouse's monetary utility than an anonymous stranger's, while 74% of women behave this way. The mean difference between P and A is 0.62 for men and 0.29 for women. Both of these mean differences are statistically different from zero, and they are significantly different from each other. A Kolmogorov-Smirnov test for equality of distributions across genders is rejected (D=0.20, p=0.0). However, note that the relative weight of a stranger's utility to own utility is not statistically different between men and women (t-stat of difference between means: -0.48; D-statistic for difference between distributions: 0.06). While men and women both weight strangers equally on average (and significantly less than themselves), men on average put a higher weight on their spouse's utility than on their own, while women weight their husband's utility equal to their own on average. This difference between men and women is statistically significant (t-statistic of difference between means: -5.82; D-statistic of difference between distributions (0.18). While 49% of men weight their own utility more highly than they do their spouse's, 63% of women do.

For household bargaining models, this means that the assumption that husbands and wives treat each other more favorably than they do strangers is supported for most people. However, on average, this difference is stronger for men than it is for women. Moreover, women on average treat their husband's utility as equal to their own, while men treat their wives more favorably.

Hypothesis 2: Contracting Respondents do not care about transaction level fairness, and instead maximize monetary utility.

To test this hypothesis we examine the parameter λ_P, the relative weight of inequity aversion to monetary utility in the Secret Spouse game. If respondents cared only about monetary utility, and had no inequity aversion at the transaction level, the parameter λ_P would very close to zero. If a respondent places equal weight on monetary utility and fairness, λ_P would be 1. If a respondent cares more about fairness than monetary utility in the games, λ_P would be larger than 1. Panels c and d of Figure 2.6 show histograms of λ_P by gender while Table 2.6 shows summary statistics for the estimated parameters. On average, both men and women place a substantially higher weight on fairness than on monetary utility. Specifically, the mean weight on inequity aversion relative to monetary utility is 2.42 for both men and women, with t-statistics of a difference between mean and parity of 16.34 and 15.95 respectively. 73% of men weight inequity aversion more highly than monetary utility, while 71% of women do. There is no statistical difference between the genders on average (t-statistic -0.03) or in distribution (D-statistic: 0.05).

This is strong evidence that for the majority of the sample, people care more about inequity at the transaction level than they do about maximizing the size of the pie. That is, respondents seem to be acting as if they do not believe that they will be able to redistribute game winnings between themselves later to achieve a fair allocation over time. Instead, they are insisting on a certain allocation in each transaction. For household bargaining models, this suggests that limited contracting is a problem for most couples.

Interestingly, there is no difference in the mean weight on inequity aversion between the Secret Stranger game and the Secret Spouse game. That is, on average, people care similarly about fairness in games against their spouse as they do in game against a stranger. In fact, 43% of men and 40% of women care *more* about fairness in games played against their spouse than they do in games played against strangers. This is further evidence that for some people, limited contracting in the form of a transaction-level sharing rule is important.

Hypothesis 3: Information Respondents act as if their is perfect information in their household, and behave similarly when their decisions will and will not be revealed to their spouse.

To test this hypothesis we examine the difference between λ_P, the relative weight of inequity aversion to monetary utility in the Secret Spouse game, and λ_{Public}, the relative weight of inequity aversion to monetary utility in the Public Spouse game. This is analogous to measuring incentive motives (sanctions and reciprocity in Ligon and Schecheter (2012) and prospect of future interactions in Leider et al. (2009)). Panels g and h of Figure 2.6 show histograms of this difference for men and women, while the last row of Table 2.6 shows the information numerically. The mean difference between λ_P and λ_{Public} positive and statistically different from zero for both men and women.

However, the interesting test is not whether the *average* is different from zero, but rather *how many* are different from zero. A deviation on either side of zero is suggestive of information problems in the household, because both positive and negative deviations suggest that the respondent behaves differently when their spouse will not find out what they did. 34% of men behave as if they have perfect information in their household, while 28% of women do. 39% of men weight inequity more heavily in the secret game than they do in the public game, and 37% of women do. 22% of men weight inequity more heavily in the public game than they do in the secret game, while 29% of women do. This suggests that for most people, information problems are also important.

There is also an interesting correlation between symptoms of information problems (i.e. that $\lambda_P \neq \lambda_{Public}$) and the weight on spouse's monetary utility (P). Figure 2.7 shows a scatter plot of the linear difference between λ_P and λ_{Public} by P. While the mean monetary utility weight on the spouse is 1.92 for men with $\lambda_P = \lambda_{Public}$, it is 1.17 for men with $\lambda_P > \lambda_{Public}$ and 1.07 for men with $\lambda_P < \lambda_{Public}$.[15] For women, the mean P for those with $\lambda_P = \lambda_{Public}$ is 1.28, while it is 0.98 for those with $\lambda_P > \lambda_{Public}$, and 0.91 for those with $\lambda_P < \lambda_{Public}$.[16] This suggests that people who demonstrate information problems in their home also demonstrate less interest in the monetary utility of their spouses.

2.6.2.2 Correlation with Demographics

Tables 2.7 and 2.8 show the demographic correlates of the estimated parameters for men and women respectively. Each parameter is scaled by 100 for easy reading of the coefficients.

First, we examine the demographic correlates of P, the relative weight of spouse's monetary utility to own monetary utility. For men, age is positively and marginally statistically significantly related to P until age 55, after which point P declines with age. The other demographic correlates are not significantly correlated with P.

Increasing education is negatively correlated with A, the relative weight of a stranger's monetary utility to one's own. Wife's education is significantly negatively correlated with altruism. This is interesting given that previous work has found that people are more generous toward strangers in the dictator game when they are more highly educated (Jakiela et al. (2012)). However, note that education and wife's education are positively correlated with λ_A, the weight of inequity aversion in the stranger games. The correlation is not significant, but does suggest that additional education does not make one feel more altruistic

[15]The mean P is statistically significantly higher for those with $\lambda_P = \lambda_{Public}$ (t-statistics 6.95 and 7.15), while the mean P is not statistically different between those with positive or negative deviations (t-statistic 0.82).

[16]Again the mean P is statistically significantly higher for those with $\lambda_P = \lambda_{Public}$ (t-statistics 3.40 and 3.97) while the mean P is not different between those with positive or negative deviations (t-statistic 0.82).

towards strangers, but rather increases the desire to treat them "fairly."

Whether the respondent is working is positively correlated with A, and with the inequity aversion parameters λ_A and significantly positively associated with λ_P. That is, working men are more altruistic to strangers, and also care more about fairness with both strangers and their spouses. Working men are however more likely to demonstrate information problems in their household (i.e. it is less likely that $\lambda_P = \lambda_{Public}$), but not significantly so.

Women's demographics are not strong predictors of their estimated parameters. The only variable that is statistically significantly associated with female parameters is her number of children. Women with more children have lower estimates of P and A, the relative weight of spouse's and stranger's monetary utility to own. A woman's husband's education is positively associated with information problems, but only marginally significantly so.

While the correlations are not statistically significant, women also display the same patterns between education and stranger giving that men do. Women's education and her husband's education are negatively correlated with A, the weight on a stranger's monetary utility, but positively correlated with λ_A, her weight on inequity aversion in the stranger games.

2.6.2.3 Analysis of Variance in Game Giving

To begin to answer the question of which motive explains most of inefficiency between spouses, I examine which parameter explains most of the variance in giving in the games. Specifically, we can think of giving in the Secret Spouse game as the best game measure of efficiency between spouses. Because household income is maximized when a respondent gives *everything* to their spouse in the Secret Spouse game, the efficient choice is to transfer everything. Thus, explaining the variance in giving is analogous to explaining the variance in efficiency.

Table 2.9 shows OLS regressions of the percentage of tokens given on demographic charac-

teristics, token amount fixed effects, and the estimated parameters for men. The order of addition of the parameters was chosen to maximize the R^2 in each round. P, the monetary weight on spouse's utility, explains far more of the variance than the other parameters, increasing the R^2 from 0.02 with just demographics and fixed effects to 0.40. P is strongly positively related to efficiency. λ_P enters next, increasing the R^2 an additional 0.05. Increased weight on inequity aversion is negatively related with efficiency. Next, indicators for a difference between λ_P and λ_{Public} are entered (i.e. indicators of information problems), both alone and interacted with an indicator for $P > 1$. These variables also add 0.05 to the R^2.[17] Finally, an interaction term between λ_P and $I(P > 1)$ was added, but without increasing the R^2.

In sum, for men, the weight put on his spouse's monetary utility explains more of the variance (38%) than do other motives. Inequity aversion and information problems each explain an additional 5% of the variance.

Table 2.10 shows a similar procedure for women. For women also, P explains more of the variance in giving in the Secret Spouse game than do other parameters, increasing the R^2 from 0.01 to 0.34 over a model with demographic correlates and token amount fixed effects. For women, the information problem indicators were best added next, explaining an additional 4% of the variance in efficiency. Finally, λ_P and its interaction with $I(P > 1)$ were added, explaining an additional 3% of the variance in giving.

This analysis of variance has interesting conclusions for household bargaining models. While much of the literature has focused on non-cooperative models that include limited contracting or imperfect information, neither of these factors explains much of the variance in efficiency in the laboratory games. For women, information problems explain a bit more of the variance than does inequity aversion, but both pale in comparison to the contribution of P, the woman's weight on her husband's monetary utility. For men, information problems and

[17] Regressions were also run adding these sets of variables separately, with and without the interaction with $I(P > 1)$, and they were best added together.

limited contracting explain the same fraction of variance in efficiency in the Secret Spouse game, but again P explains far more.

2.6.2.4 Correlations with Real World Transfers

While the estimated parameters are interesting in and of themselves, and are further informative in the extent to which they explain efficiency in the laboratory games, the parameters are most interesting in their relationship to real world transfers. In addition to the laboratory games each respondent played, they were also asked for information in a detailed survey. Respondents were asked to report money that came into their hands and left their pockets for each of the previous seven days. The survey included only the previous seven days and no more to reduce recall error. Respondents could report up to two flows in and two out for each day. For each transfer, respondents were asked who the money came from or went to and why. With these data, I am able to construct measures of transfers between spouses (for any reason) and transfers with other members of the community in the form of gifts and loans.

Table 2.11 shows four specifications of the relationship between estimated parameters and transfers from men to their wives over the previous week. We focus on transfers *to* the spouse because transfers from women to men are more rare.[18] All regressions include controls for demographics (age, education, spouse's education, number of children, and whether the respondent is working) and total household non-education expenditures per household member over the previous week.[19]

[18]In Table 2.2 we see that 47% of men made a transfer to their wife over the previous week while only 5% received a transfer.

[19]In addition to transfers, respondents were asked to report their and their spouse's expenditures over the previous week. In individual regressions, I use the respondent's report of total household expenditures. Following the recommendations of Beegle et al. (2012), I used a 7-day recall subset list of items, including 28 food items and 21 non-food items. I started with the list of items included in their survey, and modified for the local context. The MCDM surveys can be found on my website (umich.edu/∼jesshoel) and in the appendix. Education expenditures were excluded because they are very lumpy. 73% of respondents report no educational expenditures over the previous week, while 5% of respondents report 2000 KSH or more spent on education over the previous week. Average non-education expenditures over the previous week are only

The first specification includes only P, the relative weight on spouse's monetary utility, and λ_P, the relative weight on inequity aversion in the Secret Spouse game. P is highly significantly positively related to spouse transfers in this specification. λ_P is positively but not significantly related to spouse transfers. The second column adds indicator variables for whether λ_{Public} is larger or smaller than λ_P. Recall that any difference between these two parameters is indicative of information problems in the household. $\lambda_P = \lambda_{Public}$ is the omitted category. Neither indicator is statistically significantly related to spouse transfers, but both are negatively related to spouse transfers, especially when the weight on inequity aversion is larger in public than secret. The coefficient on P remains large and significant.

The third specification adds A, the relative weight of stranger's monetary utility, and λ_A, the weight of inequity aversion in the stranger games. We might think that transfers between spouses and transfers in the external community could be either complements or substitutes, thus these additional parameters may affect transfers between spouses. Though neither is significantly related to transfers from men to their wives, A is negatively correlated with giving while λ_A is positively related. The coefficient on P remains large and highly significant in this specification.

The final column adds interaction terms between the estimated parameters. We may expect that λ_P, spousal inequity aversion, has a different effect if the respondent values his spouse's monetary utility greater than his own (i.e. if $P > 1$). For example, if a respondent values his spouse's monetary utility less than his own ($P < 1$), he could tend to give more as his preference for fairness increases. If he valued his spouse's utility more than his own, he could tend to give *less* as his preference for fairness increased. However, for male transfers with male parameters, neither coefficient is statistically significant.

Taken together, these results suggest that P, the weight on spouse's monetary utility, is the

2079 KSH. To avoid outliers due to lumpy education expenditures, education is excluded from the analysis. The number of people in the household is defined as the number of people who ate from the cooking pot last night.

most predictive of transfers from men to women over the previous week. This is consistent with the finding that P explained most of the variance in efficiency in the laboratory games.

Table 2.12 shows identical regressions for women's reports of transfers from their husbands. As with the male reports, P is associated with higher transfers between spouses, though the relationship is weaker by female reports with female parameters. As in the male table, λ_P is positively but not significantly correlated with higher transfers in all but the final specification.

In the fourth column, we see that greater female inequity aversion in the spouse games is significantly associated with higher transfers to women from their husbands, but only for women with $P < 1$. For women with $P > 1$, or those who value their husband's monetary utility greater than their own, greater inequity aversion is not significantly related transfers over the previous week. This is exactly the pattern we would expect: respondents who value their spouse's monetary utility less than their own and have low inequity aversion will make fewer transfers; those with low value of spouse's monetary utility but higher inequity aversion will transfer more, until the spouse and self are even; those who value their spouse's monetary utility highly make high transfers regardless of their inequity aversion.

Deviations between λ_P and λ_{Public} are again negatively associated with giving, but not significantly so in most specifications. In the final specification, we see that when women care more about inequity in secret than public ($\lambda_P > \lambda_{Public}$) and they care less about their spouse's monetary utility than their own ($P < 1$), there are fewer or smaller transfers between spouses.

In the female table, we start to see that there may be some complementarities between spousal giving and community giving. A, the relative weight of stranger's monetary utility, is negatively associated with transfers to women from their husbands with a t-statistic of -1.65. λ_A, the relative weight of inequity aversion in the stranger games, is also negatively associated with spousal transfers, with a t-statistic of -1.84.

Next we examine the relationship between the estimated parameters and transfers to other people in the community. We should expect these relationships to be weaker because people make transfers to others in the community far less often than they make transfers to their spouses. While 47% of men transferred money to their wives over the previous week, only 8% received gifts from others, 10% gave gifts, 1% borrowed money, and 3% lent money. For women, 40% received money from their husbands over the previous week, while 8% received gifts, 12% gave gifts, 1% borrowed money, and 2% lent money. For this reason, we examine logistic regression models of whether such a transfer occurred in the previous week, reporting odds ratios for changes in the parameters.

Table 2.13 shows odds ratios from logistic regressions for men.[20] To compare with the OLS results reported earlier and logit results for other transfers, the first column shows results for transfers from men to their wives. Note that some coefficients were dropped because they perfectly determine success or failure. In smaller samples in which the mean outcome variable is close to 0 or 1, this is to be expected.

While A, the relative weight of the monetary utility of strangers, is not statistically significant for any transfer, men who have higher values of λ_A, the relative weight of inequity aversion in the stranger games, are more likely to have received or given a gift in the past week. This indicates that people who care about "fairness" are more likely to engage in gift exchange. The relationship between λ_A and the likelihood of transfers is not different if A is greater than 1, further suggesting that "fairness" is the driving motive for transfers in the community.

P, the relative weight of the monetary utility of one's spouse, is significantly positively associated with receiving gifts, and is less strongly but still positively associated with borrowing and lending money. While we wouldn't necessarily expect that the spouse parameters would be related to transfers with the larger community, it is not altogether surprising that there may be interactions. Men who care more about their wives' monetary utility are also more

[20]Table 2.15 shows OLS regressions of the amount of transfer on parameters.

likely to engage with the financial community. If that engagement allows him to make larger or more frequent transfers to his wife, then this pattern makes sense.

λ_P, the weight of inequity aversion in the Secret Spouse game, is significantly negatively related to gifts received. It is significantly negatively related to gifts given for those with $P < 1$ (those who value their own monetary utility more highly than their wife's), but has an indistinguishable effect for those who value their spouse more highly (interacted odds-ratio: 1.06). This suggests that those who feel more strongly about "fairness" with their wives engage in fewer transfers in their larger community.

Men who value inequity aversion more in secret than public are more likely to have received a gift in the past week, but only if $P < 1$ (interacted odds-ratio: 1.65, p-value of test for difference from 1=0.55). That is, men who do not value their wives monetary utility as highly as their own and display information problems in their house are more likely to have received a gift from the wider community over the previous week.

Table 2.14 shows identical logistic regressions for women.[21] Again, the table displays odds ratios. Interestingly, the estimated parameters are highly significantly correlated with receiving transfers from the spouse,[22] but not with engaging in transfers with the larger community.

2.7 Conclusion

Using variations of the dictator game played between married couples in Siaya County, Kenya, I measure the relative value of spouse's and stranger's monetary utility, the relative value of transaction-level inequity aversion (a form of limited contracting) to monetary utility, and whether inequity matters differently in secret or when a respondent's decisions will be revealed to their spouse (a symptom of information problems). I write a model that

[21] Table 2.16 shows OLS regressions of the amount of transfer on parameters.

[22] The patterns seen in the logit regressions of the existence of spousal transfers are identical to the patterns seen in the OLS regressions on the amount of spousal transfers.

incorporates monetary utility, inequity aversion, and the potential for inequity to matter differently in secret and public, and use numerical optimization techniques to estimate the parameters of the model for each individual.

As in previous studies, I find evidence that both limited contracting and information problems are present in this sample. The value of inequity aversion is 2.42 times the value of monetary utility in a secret dictator game played against the spouse. People play secret and public spouse games differently, with only 34% of men and 28% of women acting as if there is perfect information in their households. However, that these problems exist is not news. To explore the relative importance of each, I use a decomposition of variance to show that inequity aversion and information problems account for about the same fraction of variance in efficiency in the secret dictator game, together they account for a far smaller fraction of variance than does the variation in the value of spouse's monetary utility. That is, while limited contracting and information problems are present in this sample, they do not matter nearly as much as how much a person cares about his spouse's income.

I correlate the estimated parameters with real world transfers between spouses over the previous week, and again find that the value of spouse's monetary utility is much more highly correlated with transfers than are measures of limited contracting or information problems.

For household bargaining models, this suggests that rather than focus on limited contracting or information problems, theorists should explore *why* some people care more about their spouse's income than others.

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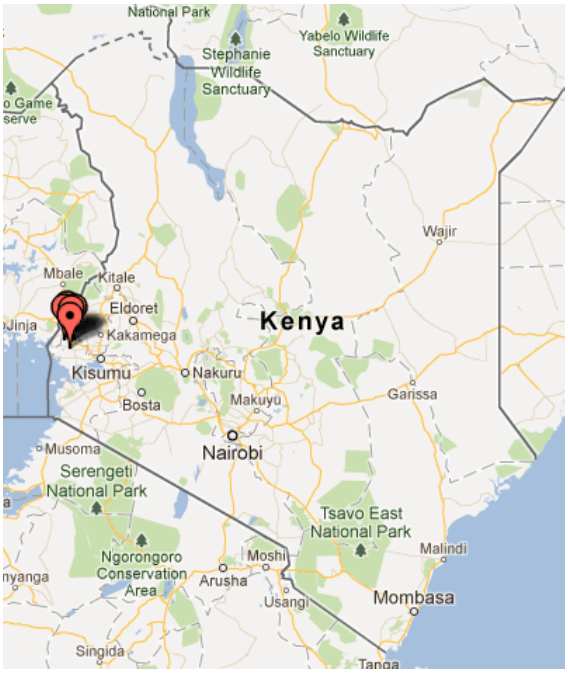
2.9 Figures

Figure 2.1: Maps of Study Site
(a) Kenya, zoomed out



(b) Nyanza and Western Provinces, zoomed in

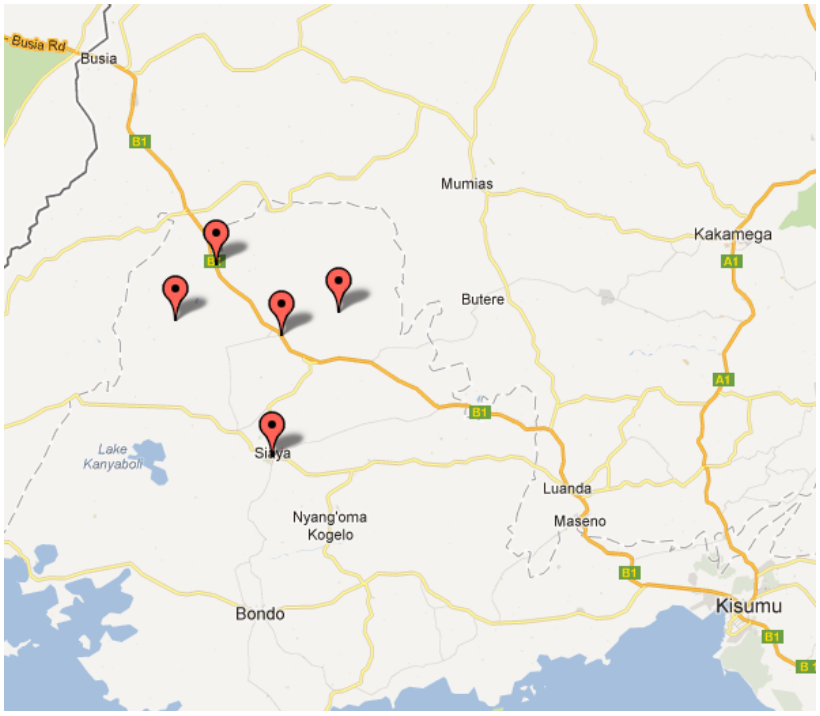
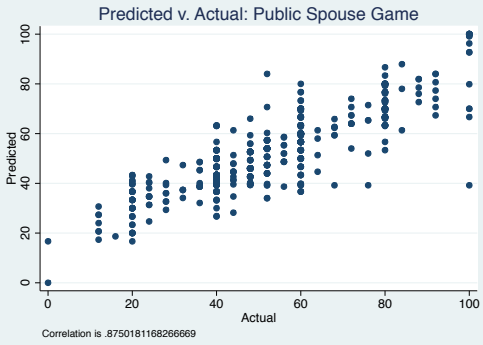


Figure 2.2: Token Value Sheet

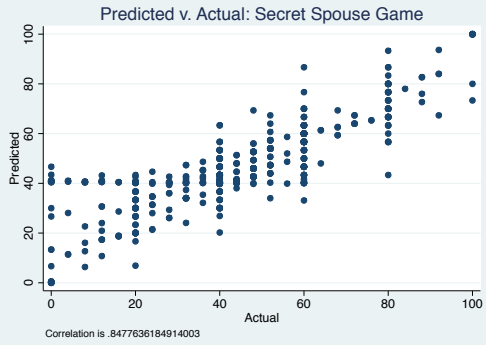
KEEP	Tokens	GIVE
0 ksh	0	0 ksh
20 ksh	1	30 ksh
40 ksh	2	60 ksh
60 ksh	3	90 ksh
80 ksh	4	120 ksh
100 ksh	5	150 ksh
120 ksh	6	180 ksh
140 ksh	7	210 ksh
160 ksh	8	240 ksh
180 ksh	9	270 ksh
200 ksh	10	300 ksh
220 ksh	11	330 ksh
240 ksh	12	360 ksh
260 ksh	13	390 ksh
280 ksh	14	420 ksh
300 ksh	15	450 ksh
320 ksh	16	480 ksh
340 ksh	17	510 ksh
360 ksh	18	540 ksh
380 ksh	19	570 ksh
400 ksh	20	600 ksh
420 ksh	21	630 ksh
440 ksh	22	660 ksh
460 ksh	23	690 ksh
480 ksh	24	720 ksh
500 ksh	25	750 ksh

Figure 2.3: Scatter Plots of Actual v. Modeled Giving, 25 token games

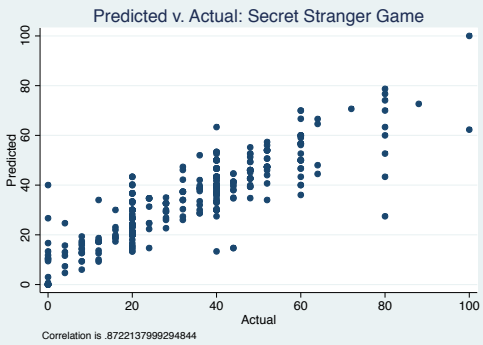
(a) Public Spouse



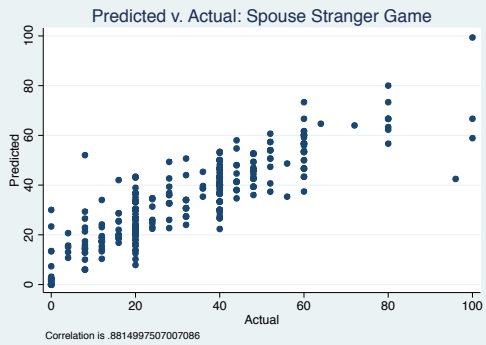
(b) Secret Spouse



(c) Secret Stranger



(d) Spouse Stranger



(e) Stranger Stranger

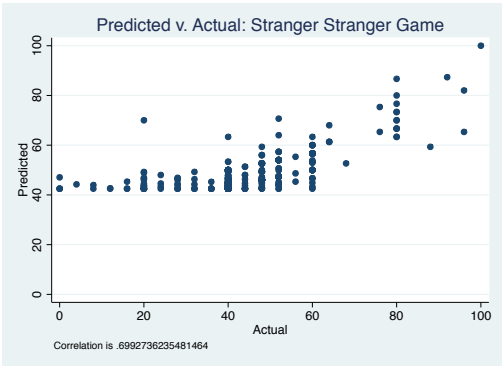
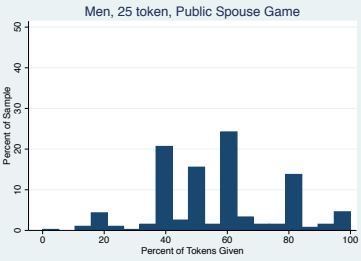
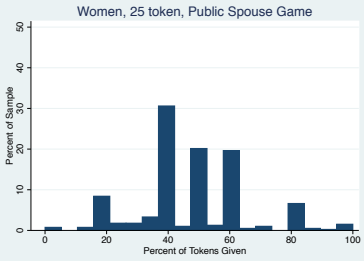


Figure 2.4: Histograms of Giving by Game and Gender, 25 token games

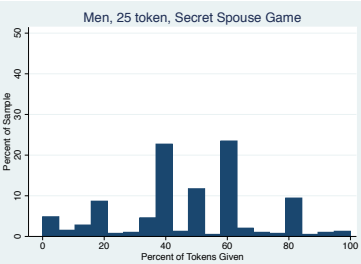
(a) Men, Public Spouse



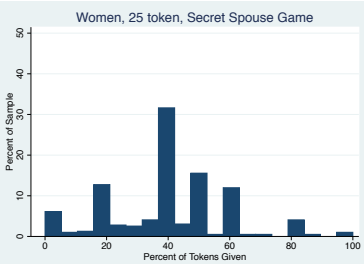
(b) Women, Public Spouse



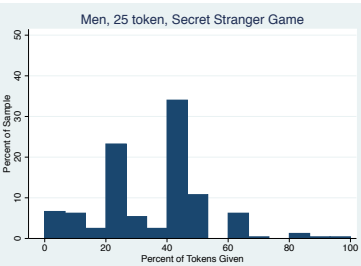
(c) Men, Secret Spouse



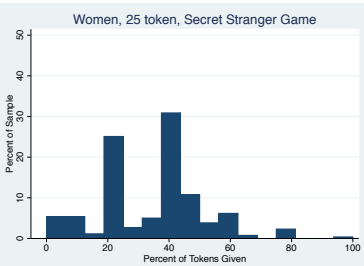
(d) Women, Secret Spouse



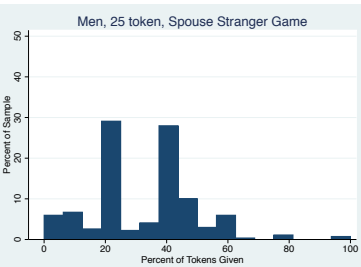
(e) Men, Secret Stranger



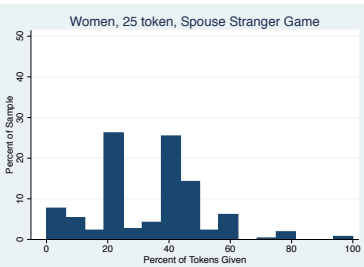
(f) Women, Secret Stranger



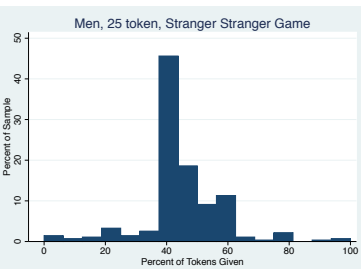
(g) Men, Spouse Stranger



(h) Women, Spouse Stranger



(i) Men, Stranger Stranger



(j) Women, Stranger Stranger

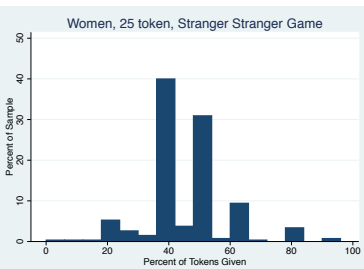
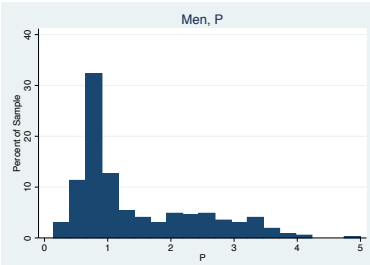
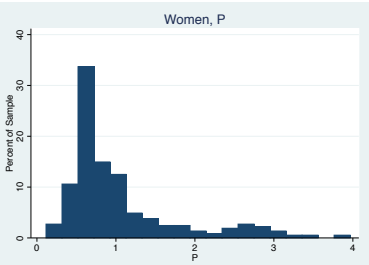


Figure 2.5: Histograms of Parameters by Gender 1

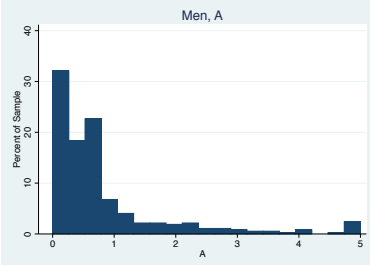
(a) Men, P



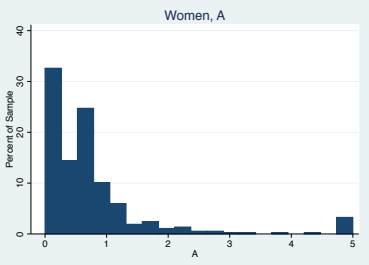
(b) Women, P



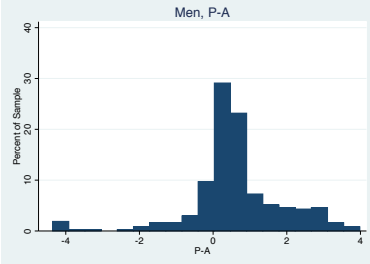
(c) Men, A



(d) Women, A



(e) Men, P-A



(f) Women, P-A

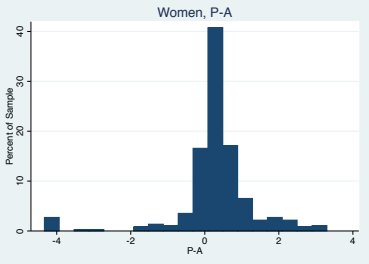
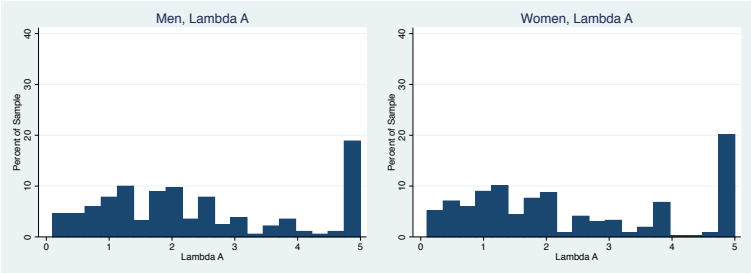
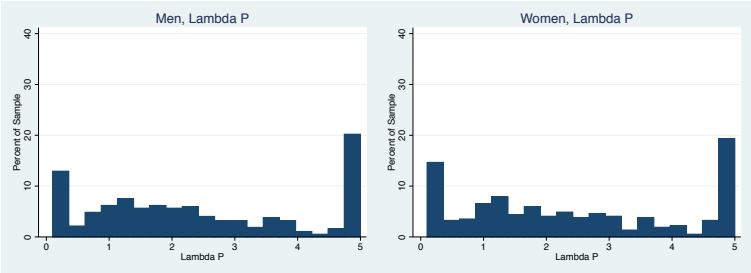


Figure 2.6: Histograms of Parameters by Gender 2

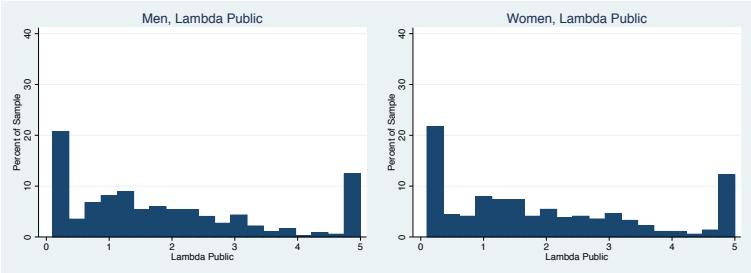
(a) Men, λ_A (b) Women, λ_A



(c) Men, λ_P (d) Women, λ_P



(e) Men, λ_{Public} (f) Women, λ_{Public}



(g) Men, λ_P - λ_{Public} (h) Women, λ_P - λ_{Public}

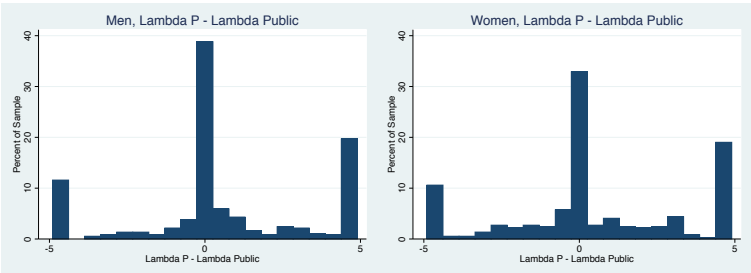
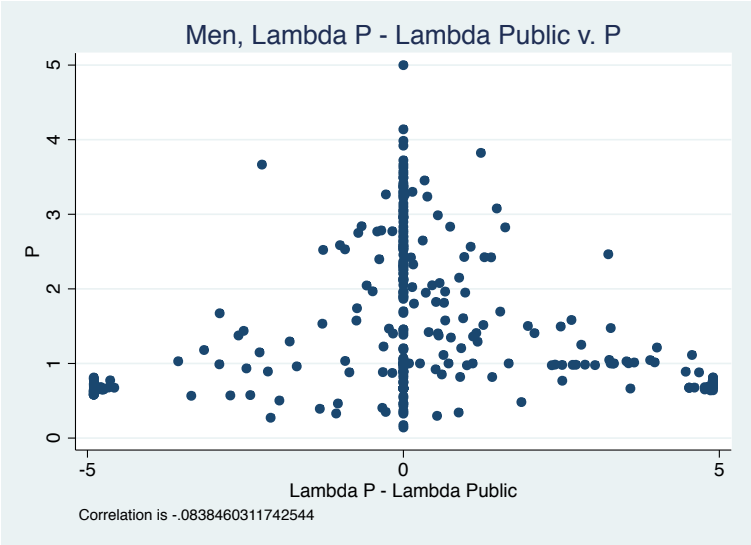
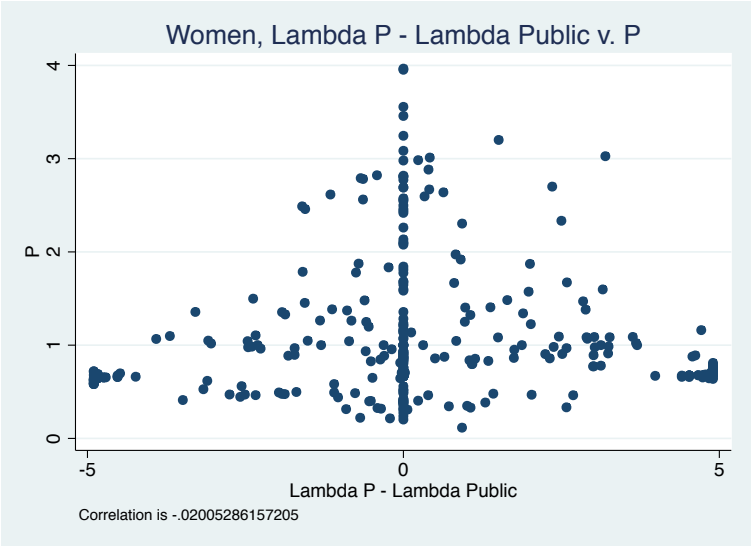


Figure 2.7: Scatterplots of λ_P-λ_{Public} by P

(a) Men



(b) Women



2.10 Tables

Table 2.2: Summary Statistics: Demographic and Financial Characteristics

Variable	**Men**	**Women**	***t-stat***
Age	45.82	36.37	*-8.55*
	(16.13)	(13.8)	
Education	8.01	6.50	*-5.73*
	(3.63)	(3.54)	
Number of Children	3.78	3.76	*-0.13*
	(2.56)	(2.34)	
Working?	0.54	0.34	*-5.64*
	(0.5)	(0.47)	
Expenditures per capita	516.1	417.2	*-2.02*
	(787.3)	(517.1)	
To Spouse	221.1	15.64	*-9.11*
	(409.7)	(139.9)	
I(To Spouse>0)	0.47	0.05	*-14.66*
	(0.5)	(0.22)	
From Spouse	31.70	151.8	*4.76*
	(372.8)	(310)	
I(From Spouse>0)	0.05	0.40	*12.4*
	(0.23)	(0.49)	
Gifts Received	24.03	11.83	*-1.53*
	(141.9)	(55.81)	
I(Gifts Received>0)	0.08	0.08	*0.03*
	(0.26)	(0.27)	
Gifts Given	18.53	12.3	*-1.15*
	(83.94)	(61.69)	
I(Gifts Given>0)	0.10	0.12	*0.87*
	(0.3)	(0.32)	
Borrowed	180.00	0.65	*-1.24*
	(2778)	(10.52)	
I(Borrowed>0)	0.01	0.01	*-0.37*
	(0.1)	(0.09)	
Lent	27.12	3.18	*-1.62*
	(282.4)	(29.52)	
I(Lent>0)	0.03	0.02	*-0.89*
	(0.18)	(0.15)	
N	371	368	

Notes: Table shows summary statistics of demographic and financial characteristics for men and women. The first row shows means and a t-statistic of the difference between means by gender. The second line shows standard deviations. "Working" is an indicator that the respondent reported positive earnings from work over the previous week. "Expenditures" is total household non-education expenditures per household member over the previous week as reported by the respondent in Kenyan Shillings. Household members are those who ate from the cooking pot last night. Transfers are over the previous week in Kenyan Shillings. Gifts and lending do not include transfers between spouses.

Table 2.3: Mean Giving by Game and Gender

	Men	**Women**	*t-stat*
Secret Stranger	34.26 (17.09)	35.72 (17.53)	*1.58*
Spouse Stranger	32.73 (17.03)	35.04 (18.47)	*2.50*
Stranger Stranger	45.07 (12.51)	45.72 (13.20)	*0.98*
Secret Spouse	46.49 (21.16)	42.08 (18.92)	*-5.18*
Public Spouse	55.93 (18.31)	48.82 (16.65)	*-9.57*

Notes: Tables show mean percentage of tokens given by game and gender, along with standard deviations in parentheses. The third column shows t-statistics of a test for mean differences between genders.

Table 2.4: Summary of Game Play: Men

	Public Spouse	**Secret Spouse**	**Secret Stranger**	**Spouse Stranger**	**Stranger Stranger**
Public Spouse	55.87 (18.26)	*73.11* *(0)*	*310.6* *(0)*	*327.12* *(0)*	*121.36* *(0)*
Secret Spouse	446:578:152 - 31.67:21.79	46.67 (20.92)	*104.55* *(0)*	*115.17* *(0)*	*2.02* *(0.16)*
Secret Stranger	497:179:46 - 32.10:20.22	368:220:134 - 28.52:20.57	34.11 (16.89)	*1.17* *(0.28)*	*98.07* *(0)*
Spouse Stranger	596:153:57 - 33.92:22.53	484:199:123 - 30.43:21.85	104:173:77 - 18.62:19.17	32.92 (17)	*142.98* *(0)*
Stranger Stranger	436:260:126 - 26.63:20.00	322:244:256 - 24.47:24.48	49:123:196 - 22.90:25.40	54:145:257 - 19.37:25.83	45.1 (12.56)

Notes: The cells on the diagonal show the mean and standard deviation of the percentage of tokens given in each game. These means and standard deviations include all token amounts over which the respondent played. The cells above the diagonal show F-tests and p-values for a test that the mean percentages given in the row and column games are the same (errors clustered on ID). The first row of the cells below the diagonal show the number of observations in which the respondent gave less (the same, more) in the row game than in the column game (respectively) for a token amount. The second row of the cells below the diagonal show the mean difference conditional on being less (more).

Table 2.5: Summary of Game Play: Women

	Public Spouse	**Secret Spouse**	**Secret Stranger**	**Spouse Stranger**	**Stranger Stranger**
Public Spouse	48.66 (16.64)	*58.97* *(0)*	*152.49* *(0)*	*149.67* *(0)*	*11.79* *(0)*
Secret Spouse	410:590:176 - 28.10:19.39	41.77 (18.93)	*27.32* *(0)*	*36.03* *(0)*	*14.47* *(0)*
Secret Stranger	428:241:108 - 26.59:17.96	343:269:165 - 25.28:22.99	35.69 (17.54)	*0.4* *(0.53)*	*87.27* *(0)*
Spouse Stranger	458:221:98 - 27.18:20.29	340:268:169 - 24.76:22.89	111:179:88 - 20.41:21.50	34.98 (18.17)	*96.84* *(0)*
Stranger Stranger	303:296:196 - 23.39:19.67	216:290:289 - 22.72:25.63	43:150:203 - 23.35:24.59	61:128:210 - 21.84:25.34	45.71 (13.01)

Notes: The cells on the diagonal show the mean and standard deviation of the percentage of tokens given in each game. These means and standard deviations include all token amounts over which the respondent played. The cells above the diagonal show F-tests and p-values for a test that the mean percentages given in the row and column games are the same (errors clustered on ID). The first row of the cells below the diagonal show the number of observations in which the respondent gave less (the same, more) in the row game than in the column game (respectively) for a token amount. The second row of the cells below the diagonal show the mean difference conditional on being less (more).

Table 2.6: Summary Statistics: Estimated Parameters

Estimated Parameter	**Men**	**Women**	***t-stat***
Key	Mean (Std. Dev.) <:=:> Parity *t-stat from Parity*		*Men v. Women*
P Monetary Utility of Spouse relative to Self. Parity is 1.	1.41 (0.96) 49.49 : 2.04 : 43.11 *8.29*	1.05 (0.71) 63.01 : 2.04 : 28.83 *1.36*	*-5.82*
A Monetary Utility of Stranger relative to Self. Parity is 1.	0.8 (1.05) 73.21 : 1.02 : 20.41 *-3.76*	0.76 (0.99) 74.49 : 1.79 : 17.6 *-4.64*	*-0.48*
P-A Relative weight of Spouse minus Stranger. Parity is 0.	0.62 (1.27) 15.31 : 2.04 : 77.3 *9.36*	0.29 (1.07) 18.11 : 1.53 : 74.23 *5.22*	*-3.78*
$\lambda_{\mathbf{A}}$ Relative weight of Inequity Aversion, Stranger Games. Parity is 1.	2.44 (1.56) 20.15 : 0 : 74.49 *17.78*	2.41 (1.64) 24.23 : 0 : 69.64 *16.5*	*-0.25*
$\lambda_{\mathbf{P}}$ Relative weight of Inequity Aversion, Secret Spouse Game. Parity is 1.	2.42 (1.68) 21.43 : 0 : 73.21 *16.34*	2.42 (1.71) 22.7 : 0 : 71.17 *15.95*	*-0.03*
$\lambda_{\mathbf{Public}}$ Relative weight of Inequity Aversion, Public Spouse Game. Parity is 1.	1.87 (1.57) 32.65 : 0 : 61.99 *10.72*	1.94 (1.61) 32.4 : 0 : 61.48 *11.24*	*0.59*
$\lambda_{\mathbf{A}} - \lambda_{\mathbf{P}}$ Inequity Aversion, Stranger v. Secret Spouse. Parity is 0.	0.01 (2.19) 43.11 : 0.26 : 51.28 *0.1*	-0.01 (2.27) 40.05 : 0.77 : 53.06 *-0.12*	*-0.16*
$\lambda_{\mathbf{P}} - \lambda_{\mathbf{Public}}$ Inequity Aversion, Secret v. Public Spouse. Parity is 0.	0.55 (2.87) 22.19 : 33.67 : 38.78 *3.71*	0.48 (2.87) 28.83 : 27.81 : 37.24 *3.21*	*-0.34*

P: Monetary Utility Weight of Spouse
A: Monetary Utility Weight of Stranger
λ_A: Inequity Aversion Weight - Stranger Games
λ_P: Inequity Aversion Weight - Secret Spouse Game
λ_{Public}: Inequity Aversion Weight - Public Spouse Games

Notes: Table shows summary statistics of estimated parameters and differences between estimated parameters for men and women. The first row shows means and a t-statistic of the difference between means by gender. The second line shows standard deviations. The third line shows the percentage of the sample with parameters less than : equal to : or greater than parity, where parity is either 0 or 1 for each variable. The fourth line shows a t-statistic of the difference between the mean and parity.

Table 2.7: Demographic Correlates: Men

	OLS **P*100**	OLS **A*100**	OLS $\lambda_{\mathbf{A}} * \mathbf{100}$	OLS $\lambda_{\mathbf{P}} * \mathbf{100}$	Logit, OR $\mathbf{I}(\lambda_{\mathbf{P}} = \lambda_{\mathbf{Public}})$
Age	4.002*	0.651	-0.344	-2.077	1.015
	(2.088)	(2.255)	(3.364)	(3.655)	(0.0469)
Age Squared	-0.0364*	-0.0103	0.00487	0.0201	1.000
	(0.0210)	(0.0227)	(0.0338)	(0.0367)	(0.000460)
Education	2.329	-2.608	3.865	0.0978	0.952
	(1.744)	(1.883)	(2.809)	(3.053)	(0.0364)
Number of Children	-1.708	2.017	-5.636	3.158	0.989
	(2.177)	(2.351)	(3.506)	(3.810)	(0.0484)
Spouse Education	-1.796	-3.830*	2.276	2.556	1.042
	(1.852)	(2.000)	(2.983)	(3.242)	(0.0426)
Working?	-2.959	22.61*	23.98	42.91**	0.804
	(11.01)	(11.89)	(17.73)	(19.27)	(0.195)
Constant	44.86	99.93**	210.5***	237.7***	0.361
	(46.95)	(50.70)	(75.62)	(82.18)	(0.379)
Observations	371	371	371	371	371
R-squared	0.020	0.038	0.035	0.023	

P: Monetary Utility Weight of Spouse
A: Monetary Utility Weight of Stranger
λ_A: Inequity Aversion Weight - Stranger Games
λ_P: Inequity Aversion Weight - Secret Spouse Game
λ_{Public}: Inequity Aversion Weight - Public Spouse Games

Notes: *** p<0.01, ** p<0.05, * p<0.1. The first four columns of the table shows OLS regressions of estimated parameters (scaled by 100 for easy reading) on demographic characteristics. The final column shows odds-ratios from a logit regression of whether $\lambda_P = \lambda_{Public}$ on demographic characteristics.

Table 2.8: Demographic Correlates: Women

	OLS	OLS	OLS	OLS	Logit, OR
	P*100	**A*100**	$\lambda_{\mathbf{A}} * \mathbf{100}$	$\lambda_{\mathbf{P}} * \mathbf{100}$	$\mathbf{I}(\lambda_{\mathbf{P}} = \lambda_{\mathbf{Public}})$
Age	1.100	3.660	-2.239	0.732	1.088
	(1.603)	(2.231)	(3.697)	(3.863)	(0.0559)
Age Squared	-0.0132	-0.0415	0.0368	0.00734	0.999
	(0.0186)	(0.0259)	(0.0429)	(0.0448)	(0.000598)
Education	1.127	-1.604	3.551	4.687	1.033
	(1.397)	(1.945)	(3.222)	(3.367)	(0.0448)
Number of Children	-3.750**	-6.232**	6.011	-6.011	0.995
	(1.826)	(2.541)	(4.211)	(4.401)	(0.0563)
Spouse Education	-1.921	-1.207	0.390	-3.042	0.936*
	(1.255)	(1.746)	(2.894)	(3.024)	(0.0362)
Working?	-7.417	-4.503	-2.318	10.86	0.761
	(7.944)	(11.06)	(18.32)	(19.14)	(0.191)
Constant	109.8***	50.70	218.5***	217.3***	0.112**
	(30.62)	(42.61)	(70.61)	(73.78)	(0.110)
Observations	368	368	368	368	368
R-squared	0.021	0.024	0.015	0.014	

P: Monetary Utility Weight of Spouse
A: Monetary Utility Weight of Stranger
λ_A: Inequity Aversion Weight - Stranger Games
λ_P: Inequity Aversion Weight - Secret Spouse Game
λ_{Public}: Inequity Aversion Weight - Public Spouse Games

Notes: *** p<0.01, ** p<0.05, * p<0.1. The first four columns of the table shows OLS regressions of estimated parameters (scaled by 100 for easy reading) on demographic characteristics. The final column shows odds-ratios from a logit regression of whether $\lambda_P = \lambda_{Public}$ on demographic characteristics.

Table 2.9: Relationship between Efficiency in Games and Parameters: Men

	0	1	2	3	4
P		13.70***	12.88***	9.707***	9.867***
		(0.522)	(0.508)	(0.622)	(0.708)
λ_P			-2.869***	-5.784***	-5.619***
			(0.290)	(0.497)	(0.607)
$I(P > 1) * \lambda_P$					-0.346
					(0.732)
$I(\lambda_P < \lambda_{Public})$				-18.16***	-18.12***
				(1.838)	(1.841)
$I(\lambda_P > \lambda_{Public})$				1.872	1.217
				(1.783)	(2.259)
$I(P > 1) * I(\lambda_P < \lambda_{Public})$				20.95***	21.08***
				(2.361)	(2.379)
$I(P > 1) * I(\lambda_P > \lambda_{Public})$				-0.524	0.546
				(1.768)	(2.872)
Demographic Controls	yes	yes	yes	yes	yes
Token Amount Fixed Effects	yes	yes	yes	yes	yes
Constant	35.05***	28.18***	35.51***	47.59***	47.49***
	(6.116)	(4.809)	(4.670)	(4.642)	(4.648)
Observations	1,113	1,113	1,113	1,113	1,113
R-squared	0.021	0.397	0.446	0.497	0.497
Added R-squared		0.376	0.049	0.051	0.000

Notes: *** p<0.01, ** p<0.05, * p<0.1. Table shows OLS regressions of the percentage of tokens given in the Secret Spouse game (a measure of efficiency) on demographic correlates, token amount fixed effects, and the estimated parameters. Demographic correlates include age, education, spouse's education, number of children, whether the respondent is working, and total non-education household expenditures per household member. Parameters were added in the order that maximized R^2 at each stage.

Table 2.10: Relationship between Efficiency in Games and Parameters: Women

	0	1	2	3
P		15.37***	13.36***	13.83***
		(0.662)	(0.783)	(0.848)
λ_P				-2.579***
				(0.482)
$I(P > 1) * \lambda_P$				-2.122***
				(0.715)
$I(\lambda_P < \lambda_{Public})$			-7.443***	-12.70***
			(1.376)	(1.524)
$I(\lambda_P > \lambda_{Public})$			-6.290***	-2.060
			(1.264)	(1.708)
$I(P > 1) * I(\lambda_P < \lambda_{Public})$			12.94***	19.28***
			(1.982)	(2.134)
$I(P > 1) * I(\lambda_P > \lambda_{Public})$			-1.097	3.934
			(1.844)	(2.859)
Demographic Controls	yes	yes	yes	yes
Token Amount Fixed Effects	yes	yes	yes	yes
Constant	40.17***	23.28***	30.24***	34.60***
	(4.767)	(3.970)	(4.044)	(4.019)
Observations	1,104	1,104	1,104	1,104
R-squared	0.013	0.339	0.382	0.413
Added R-squared		0.326	0.043	0.031

Notes: *** p<0.01, ** p<0.05, * p<0.1. Table shows OLS regressions of the percentage of tokens given in the Secret Spouse game (a measure of efficiency) on demographic correlates, token amount fixed effects, and the estimated parameters. Demographic correlates include age, education, spouse's education, number of children, whether the respondent is working, and total non-education household expenditures per household member. Parameters were added in the order that maximized R^2 at each stage.

Table 2.11: OLS - Real World Spouse Transfers: Men

	To Spouse	**To Spouse**	**To Spouse**	**To Spouse**
A			-32.29	-11.09
			(19.96)	(29.95)
λ_A			9.806	19.65
			(13.31)	(15.41)
$I(A > 1) * \lambda_A$				-24.97
				(24.96)
P	69.40***	55.21**	63.05***	44.98
	(21.16)	(23.15)	(23.68)	(32.32)
λ_P	15.99	4.064	4.850	-12.49
	(12.08)	(18.56)	(18.82)	(27.71)
$I(P > 1) * \lambda_P$				31.84
				(33.41)
$I(\lambda_P > \lambda_{Public})$		-17.09	-14.48	43.29
		(59.55)	(60.37)	(101.2)
$I(\lambda_P < \lambda_{Public})$		-98.46	-90.97	-115.2
		(62.11)	(62.19)	(81.27)
$I(P > 1) * I(\lambda_P > \lambda_{Public})$				-90.94
				(126.7)
$I(P > 1) * I(\lambda_P < \lambda_{Public})$				25.64
				(106.0)
Constant	-67.00	8.548	13.38	10.78
	(192.6)	(198.3)	(199.6)	(202.6)
Observations	371	371	371	371
R-squared	0.157	0.163	0.170	0.174

P: Monetary Utility Weight of Spouse
A: Monetary Utility Weight of Stranger
λ_A: Inequity Aversion Weight - Stranger Games
λ_P: Inequity Aversion Weight - Secret Spouse Game
λ_{Public}: Inequity Aversion Weight - Public Spouse Games

Notes: Table shows OLS regression of transfers over the past week on estimated parameters. Dependent variable is transfers to spouse over the previous week in Kenyan Shillings. Regressions also include controls for demographic characteristics (age, age squared, education, spouse's education, number of children, and whether the respondent is working) and total household per capita non-educational expenditures over the previous week as reported by the respondent.

Table 2.12: OLS - Real World Spouse Transfers: Women

	From Spouse	**From Spouse**	**From Spouse**	**From Spouse**
A			-19.09	-37.65
			(16.27)	(22.88)
λ_A			-10.34	-19.57*
			(9.650)	(10.64)
$I(A > 1) * \lambda_A$				28.09
				(20.67)
P	41.73*	37.37*	40.33*	56.41*
	(21.89)	(22.46)	(23.32)	(30.28)
λ_P	9.761	19.32	19.04	39.65**
	(9.084)	(14.59)	(14.72)	(17.56)
$I(P > 1) * \lambda_P$				-44.69*
				(25.81)
$I(\lambda_P > \lambda_{Public})$		-63.96	-65.98	-146.8**
		(47.78)	(48.14)	(61.24)
$I(\lambda_P < \lambda_{Public})$		-23.43	-27.33	-12.94
		(44.63)	(44.68)	(53.31)
$I(P > 1) * I(\lambda_P > \lambda_{Public})$				196.0*
				(101.6)
$I(P > 1) * I(\lambda_P < \lambda_{Public})$				-4.684
				(75.54)
Constant	218.0*	248.6*	280.9**	274.7*
	(131.0)	(137.0)	(139.3)	(139.9)
Observations	368	368	368	368
R-squared	0.118	0.122	0.129	0.144

P: Monetary Utility Weight of Spouse
A: Monetary Utility Weight of Stranger
λ_A: Inequity Aversion Weight - Stranger Games
λ_P: Inequity Aversion Weight - Secret Spouse Game
λ_{Public}: Inequity Aversion Weight - Public Spouse Games

Notes: Table shows OLS regression of transfers over the past week on estimated parameters. Dependent variable is transfers from spouse over the previous week in Kenyan Shillings. Regressions also include controls for demographic characteristics (age, age squared, education, spouse's education, number of children, and whether the respondent is working) and total household per capita non-educational expenditures over the previous week as reported by the respondent.

Table 2.13: Logit - Real World Community Transfers: Men

	To Spouse	**Gifts Received**	**Gifts Given**	**Borrowed**	**Lent**
A	1.043	0.878	0.919	0.912	1.845
	(0.172)	(0.405)	(0.292)	(2.380)	(0.709)
λ_A	1.123	1.399**	1.347**	0.876	1.094
	(0.0976)	(0.213)	(0.189)	(0.374)	(0.247)
$I(A > 1) * \lambda_A$	0.807	0.696	0.907		0.653
	(0.112)	(0.238)	(0.208)		(0.280)
P	1.172	2.436**	0.538*	2.809	3.439*
	(0.213)	(0.941)	(0.175)	(2.597)	(2.480)
λ_P	0.980	0.615*	0.613**	0.173	2.302
	(0.151)	(0.163)	(0.149)	(0.349)	(1.318)
$I(P > 1) * \lambda_P$	1.031	0.711	1.723*	0.896	0.223*
	(0.194)	(0.363)	(0.539)	(1.718)	(0.188)
$I(\lambda_P > \lambda_{Public})$	0.916	9.320**	3.569		0.125
	(0.519)	(9.886)	(3.148)		(0.218)
$I(\lambda_P < \lambda_{Public})$	0.403*	0.766	0.392		12.58
	(0.189)	(0.723)	(0.296)		(20.98)
$I(P > 1) * I(\lambda_P > \lambda_{Public})$	0.820	0.177	0.261		36.17
	(0.581)	(0.235)	(0.300)		(87.75)
$I(P > 1) * I(\lambda_P < \lambda_{Public})$	1.819		4.794*		
	(1.105)		(4.488)		
Constant	1.616	0.000209***	1.043	0	6.90e-07**
	(1.871)	(0.000573)	(1.831)	(1.01e-09)	(4.64e-06)
Observations	371	344	371	97	344

P: Monetary Utility Weight of Spouse
A: Monetary Utility Weight of Stranger
λ_A: Inequity Aversion Weight - Stranger Games
λ_P: Inequity Aversion Weight - Secret Spouse Game
λ_{Public}: Inequity Aversion Weight - Public Spouse Games

Notes: *** p<0.01, ** p<0.05, * p<0.1. Table shows odd-ratios from logit regression of an indicator for a transfer over the previous week on the estimated parameters. Dependent variables are indicators for transfers to spouse, gifts received, gifts given, money borrowed and money lent. Except for the first, dependent variables do not include transfers between spouses. Regressions also include controls for demographic characteristics (age, age squared, education, spouse's education, number of children, and whether the respondent is working) and total household per capita non-educational expenditures over the previous week as reported by the respondent.

Table 2.14: Logit - Real World Community Transfers: Women

	From Spouse	**Gifts Received**	**Gifts Given**	**Borrowed**	**Lent**
A	0.662**	0.919	1.070	29,676	0.415
	(0.120)	(0.330)	(0.249)	(237,762)	(0.364)
λ_A	0.804***	0.963	0.907	4.381	0.994
	(0.0668)	(0.144)	(0.115)	(5.160)	(0.283)
$I(A > 1) * \lambda_A$	1.407**	0.927	1.146		1.815
	(0.221)	(0.295)	(0.236)		(0.695)
P	1.587**	0.940	0.699	1.22e-07	1.894
	(0.359)	(0.412)	(0.249)	(1.31e-06)	(1.601)
λ_P	1.501***	1.006	1.083	0.176	0.881
	(0.210)	(0.261)	(0.251)	(0.297)	(0.399)
$I(P > 1) * \lambda_P$	0.656**	1.706	1.523	4.248	0.652
	(0.129)	(0.576)	(0.429)	(11.58)	(0.577)
$I(\lambda_P > \lambda_{Public})$	0.296**	1.351	0.436	240.8	0.590
	(0.144)	(1.323)	(0.374)	(1,361)	(0.872)
$I(\lambda_P < \lambda_{Public})$	1.044	3.570	2.567		0.417
	(0.420)	(2.801)	(1.510)		(0.503)
$I(P > 1) * I(\lambda_P > \lambda_{Public})$	4.520*	0.0701	1.051	66.51	
	(3.498)	(0.117)	(1.291)	(575.4)	
$I(P > 1) * I(\lambda_P < \lambda_{Public})$	0.970	0.384	0.609		
	(0.536)	(0.351)	(0.448)		
Constant	1.319	1.632	0.0643*	0	0.0642
	(1.499)	(2.956)	(0.104)	(0)	(0.200)
Observations	368	368	368	206	299

P: Monetary Utility Weight of Spouse
A: Monetary Utility Weight of Stranger
λ_A: Inequity Aversion Weight - Stranger Games
λ_P: Inequity Aversion Weight - Secret Spouse Game
λ_{Public}: Inequity Aversion Weight - Public Spouse Games

Notes: *** p<0.01, ** p<0.05, * p<0.1. Table shows odd-ratios from logit regression of an indicator for a transfer over the previous week on the estimated parameters. Dependent variables are indicators for transfers from spouse, gifts received, gifts given, money borrowed and money lent. Except for the first, dependent variables do not include transfers between spouses. Regressions also include controls for demographic characteristics (age, age squared, education, spouse's education, number of children, and whether the respondent is working) and total household per capita non-educational expenditures over the previous week as reported by the respondent.

Table 2.15: OLS - Real World Community Transfers: Men

	Gifts Received	**Gifts Given**	**Borrowed**	**Lent**
A	-3.774	0.159	-48.70	0.717
	(11.08)	(6.488)	(218.2)	(21.96)
λ_A	8.509	4.985	-149.2	-5.487
	(5.700)	(3.339)	(112.3)	(11.30)
$I(A > 1) * \lambda_A$	-6.781	-2.389	-31.60	0.198
	(9.231)	(5.408)	(181.9)	(18.31)
P	-4.748	-8.833	540.9**	20.61
	(11.95)	(7.003)	(235.6)	(23.71)
λ_P	-21.48**	-6.501	31.33	24.32
	(10.25)	(6.002)	(201.9)	(20.32)
$I(P > 1) * \lambda_P$	13.69	5.127	-176.2	-36.05
	(12.36)	(7.239)	(243.5)	(24.51)
$I(\lambda_P > \lambda_{Public})$	61.21	6.339	-304.5	-68.06
	(37.41)	(21.92)	(737.2)	(74.19)
$I(\lambda_P < \lambda_{Public})$	-49.62*	-25.21	-120.6	107.0*
	(30.06)	(17.61)	(592.3)	(59.60)
$I(P > 1) * I(\lambda_P > \lambda_{Public})$	-78.47*	-7.560	-221.8	127.7
	(46.86)	(27.45)	(923.5)	(92.93)
$I(P > 1) * I(\lambda_P < \lambda_{Public})$	14.80	26.57	-463.9	-97.86
	(39.22)	(22.97)	(772.9)	(77.78)
Constant	-135.0*	93.17**	203.9	264.3*
	(74.92)	(43.89)	(1,476)	(148.6)
Observations	371	371	371	371
R-squared	0.059	0.076	0.046	0.065

P: Monetary Utility Weight of Spouse
A: Monetary Utility Weight of Stranger
λ_A: Inequity Aversion Weight - Stranger Games
λ_P: Inequity Aversion Weight - Secret Spouse Game
λ_{Public}: Inequity Aversion Weight - Public Spouse Games

Notes: Table shows OLS regression of transfers over the past week on estimated parameters. Dependent variables are gifts received, gifts given, money borrowed and money lent in Kenyan Shillings. Dependent variables do not include transfers between spouses. Regressions also include controls for demographic characteristics (age, age squared, education, spouse's education, number of children, and whether the respondent is working) and total household per capita non-educational expenditures over the previous week as reported by the respondent.

Table 2.16: OLS - Real World Community Transfers: Women

	Gifts Received	**Gifts Given**	**Borrowed**	**Lent**
A	-0.576	4.698	0.466	-4.150*
	(4.310)	(4.636)	(0.826)	(2.289)
λ_A	0.906	-1.244	0.682*	-0.698
	(2.004)	(2.155)	(0.384)	(1.064)
$I(A > 1) * \lambda_A$	0.523	-1.539	-0.812	5.982***
	(3.893)	(4.187)	(0.746)	(2.068)
P	5.649	-13.58**	0.101	0.212
	(5.705)	(6.136)	(1.093)	(3.030)
λ_P	1.674	1.467	-0.539	-0.709
	(3.307)	(3.557)	(0.633)	(1.757)
$I(P > 1) * \lambda_P$	-0.865	20.41***	0.342	-1.779
	(4.861)	(5.229)	(0.931)	(2.582)
$I(\lambda_P > \lambda_{Public})$	1.084	0.518	3.234	-2.799
	(11.54)	(12.41)	(2.210)	(6.128)
$I(\lambda_P < \lambda_{Public})$	10.32	20.25*	-0.552	-7.732
	(10.04)	(10.80)	(1.923)	(5.334)
$I(P > 1) * I(\lambda_P > \lambda_{Public})$	-9.876	-41.60**	-2.360	1.137
	(19.15)	(20.59)	(3.667)	(10.17)
$I(P > 1) * I(\lambda_P < \lambda_{Public})$	18.46	-1.937	1.012	1.899
	(14.23)	(15.31)	(2.726)	(7.559)
Constant	17.40	-11.05	-1.772	10.09
	(26.35)	(28.34)	(5.047)	(14.00)
Observations	368	368	368	368
R-squared	0.063	0.113	0.033	0.055

P: Monetary Utility Weight of Spouse
A: Monetary Utility Weight of Stranger
λ_A: Inequity Aversion Weight - Stranger Games
λ_P: Inequity Aversion Weight - Secret Spouse Game
λ_{Public}: Inequity Aversion Weight - Public Spouse Games

Notes: Table shows OLS regression of transfers over the past week on estimated parameters. Dependent variables are gifts received, gifts given, money borrowed and money lent in Kenyan Shillings. Dependent variables do not include transfers between spouses. Regressions also include controls for demographic characteristics (age, age squared, education, spouse's education, number of children, and whether the respondent is working) and total household per capita non-educational expenditures over the previous week as reported by the respondent.

2.11 Why not Log Utility?

Log utility over income is often preferred to a linear specification because we think that income may be subject to diminishing marginal utility. It is certainly possible to amend the model presented in this paper to accommodate log utility. The utility function and first order conditions are then:

$$U(x;\mu,\alpha,\beta,\lambda) = \mu[\alpha \ln(1-x) + \beta \ln(x * \frac{3}{2})] - \lambda(\frac{2}{5} - x)^2 \tag{2.4}$$

$$0 = x^3 - \frac{7}{5}x^2 + [\frac{2}{5} - \frac{\alpha+\beta}{2}\frac{\mu}{\lambda}]x + \frac{\beta}{2}\frac{\mu}{\lambda} \tag{2.5}$$

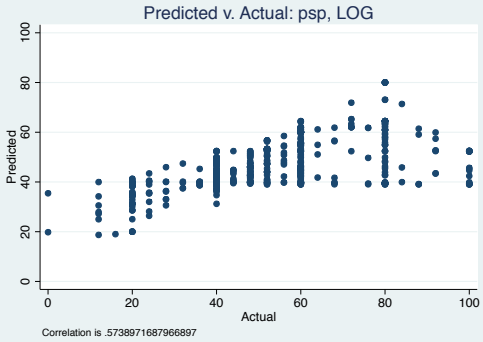
I don't prefer this specification for two reasons. First, the predictions of the log specification of the model do not fit the data as well. Figure 2.8 below shows a scatter plot of predicted values from the log model against the real data. It is clear they do not fit as closely as does the linear specification.

Further, the log specification is needed only when the diminishing marginal utility of income is strong enough to induce people to make different decisions in games over high stakes than over low ones. This is ultimately an empirical question. Figure 2.9 quantifies how consistent people are in their decisions across the token amounts offered in the Public Spouse game. The figure shows a histogram of the sum of the absolute differences from mean giving. If a person were to give 40% for each of the three token amounts offered (5, 10, and 25), this score would be zero. The figure shows that 26% of men and 18% of women are perfectly consistent across the token amounts.

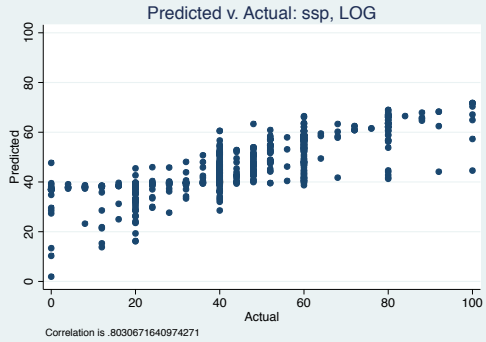
However, there could be reason to think that person could make slightly different decisions across the token amounts and should not be considered inconsistent. First, suppose a person would like to give 51% of tokens in each game. 51% is not an option in the 5, 10, or 25 token

Figure 2.8: Scatter Plots of Actual v. Modeled Giving, 25 token games, LOG specification

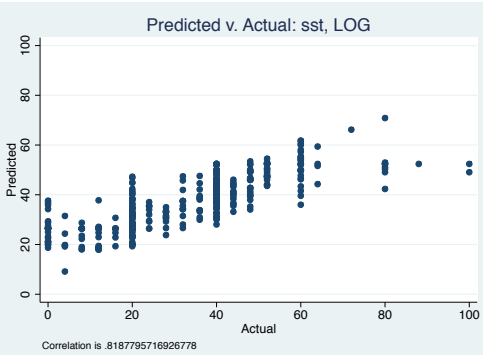
(a) Public Spouse



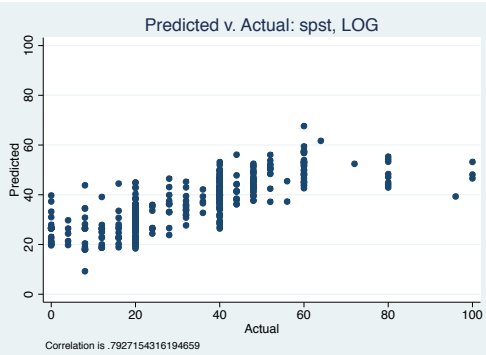
(b) Secret Spouse



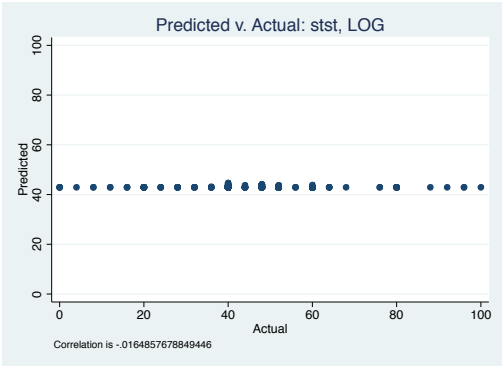
(c) Secret Stranger



(d) Spouse Stranger



(e) Stranger Stranger



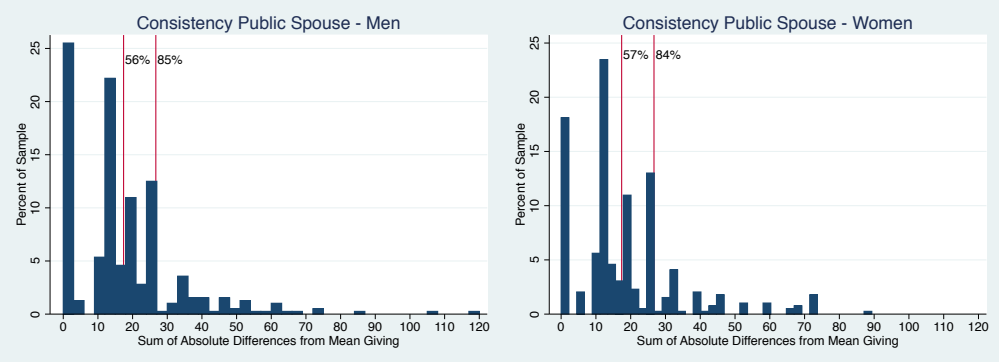
game. Due to rounding error, that respondent could choose 60%, 50%, and 52% in the 5, 10, and 25 token games respectively, and we might still like to call him consistent. The first red line in the figures shows the maximum error possible due to rounding. 56% of men and 57% of women are consistent in their behavior across the stakes up to rounding error.

Finally, we might like to allow for a person to make a mistake by one token in one game

and still be considered consistent. Suppose that a person gives 60% in each of the 10 and 25 token games, but only 40% in the 5 token game. The difference between 40 and 60% in the 5 token game is only one token. We may not want to call such a small difference evidence of inconsistency and might prefer to allow for the possibility of a mistake by one token. The second red line in the figures shows the maximum error possible due to a one token mistake. 85% of men and 84% of women are consistent in their behavior across the states up to a one token mistake.

Figure 2.9: Consistency

(a) Men (b) Women



Notes: The figures show the sum of absolute differences from mean giving in the Public Spouse game for men and women. The first red line in the figures shows the maximum error possible due to rounding. The second red line in the figures shows the maximum error possible due to a one token mistake.

In sum, though a log specification is possible to write and estimate, I do not prefer it for two reasons. First, actual giving in the games is less well correlated with predictions from a log-specification model than a linear-specification. Second, we theoretically prefer a log-specification because the diminishing marginal utility of income may lead people to make different decisions in high stakes games than low stakes games. However, in these games, people play remarkably consistently across the token amounts offered, thus the theoretical motivation for the log is mitigated.

CHAPTER III

Gender Differences in Asset Reporting

3.1 Abstract

Asset tallies are frequently used to target social programs and study or control for the effect of wealth. Information about durable goods is most often taken from any adult member of the household. However, the hypothesis that household members report identical numbers of assets has not been tested. Using a unique dataset of asset tallies taken from husbands and wives separately, and again from the couple jointly, I show that husbands and wives in the Nyanza Province of Kenya do report different numbers of assets and that these differing reports have substantial impacts on poverty measures like predicted expenditures and principal component scores. Were these asset indices used to target social programs, different households would receive services if husbands' reports were used instead of wives'. Comparing the individual reports to the joint report shows that uncertainty, rounding, information, and definitional errors all play a role in gender differences in asset reports. Finally, the joint report is more similar to each individual report than are husbands' and wives' reports to each other, suggesting that practitioners should survey the couple together to achieve the most consistent information about asset ownership.

3.2 Introduction

Asset tallies are an extremely common features of household surveys. Communities and policy makers use asset tallies to target poverty alleviation programs.[1] Poverty scorecards are increasingly used to target social programs like microfinance, and most commonly use logit regressions of expenditures on asset indicators to generate coefficients.[2] Researchers use asset indices as proxies for household wealth, on both the right and left hand side of regression models.[3] Asset tallies are often preferred to other measures of household welfare under the assumption that assets can be measured with less error.[4] Most often, the asset tally is taken as a part of a household survey or roster, with information being taken from any adult member of the household.[5] Implicit in this practice is the idea that because assets are easy to observe, any household member would report the same number of assets as any other, regardless of their relationship to the household head, characteristics, or gender. Husbands and wives may not know or agree on how much was spent on tomatoes over the previous week, but surely they must remember and concur on the number of cows in the

[1] Coady, Grody, and Hoddinott (2004) classify the use of asset indices to target social programs as a proxy means test, and discuss case studies of its use in Chile, Colombia, Mexico, Armenia, Indonesia, and Turkey. The authors suggest that proxy means tests are/were being developed for new programs in Argentina, Costa Rica, Ecuador, Jamaica, Honduras, and Nicaragua. Schady and Araujo (2008) discuss how a school-encouragement conditional cash transfer program in Ecuador used a principal component index of household assets, educational attainment, and other household characteristics to target the program. Skoufias, Davis, and Behrman (1999) discuss how Mexico's PROGRESA program was targeted, describing an income prediction model that uses household assets and other household characteristics as predictors.

[2] See microfiance.com.

[3] See Filmer and Scott (2012) for a thorough overview.

[4] "There is likely to be much less recall bias or mismeasurement in questions such as whether the household owns a television, than in recalling consumption expenditures over the past week per expenditure item" (McKenzie 2005).

[5] From the Demographic Health Survey 6 Interviewer Manual: "To complete the Household Questionnaire, you will need to find a suitable respondent. Any adult member of the household who is capable of providing information needed to fill in the Household Questionnaire can serve as the respondent. ... Generally you will ask a single individual in the household for the information you will need to complete the household questionnaire. However, as appropriate, you may need to consult other members of the household for specific information." The Living Standards Measurement Survey records durable goods information from the "best-informed household member" (Grosh and Glewwe (1995)). In the 2008/9 Kenyan Demographic and Health Survey (DHS), 70% of asset tallies were collected from women. The relationship of the respondent to the head of the household in the DHS is detailed in Table 3.1. Of the men that were surveyed, 87% were the head of their household, while 45% of female respondents were household heads.

front yard.

However, the hypothesis that all household members report the same number of assets has not been tested empirically. Using 360 matched pairs of husbands and wives in Siaya County, Kenya, I demonstrate that spouses do not report identical numbers of assets, and that their differing reports have substantial impacts on the indices and welfare rankings that are commonly constructed from asset tallies. I focus on the reports of heads of households and their spouses because they are the most common respondents in large surveys like the DHS.

There are four reasons why we might expect different household members to report different numbers of assets. First, husbands and wives may intentionally hide assets from one another, and differing reports may reflect truly different information sets. I will call this an information error. Second, people may be confused about ownership in general, for example due to animal fostering.[6] Thus, differing reports may reflect not different information sets, but rather noise due to uncertainty. This type of error I will call an uncertainty error. Importantly, if the ownership of an item is unclear, then enumerator verification of assets will not solve the problem of uncertainty error. Third, when a respondent is uncertain, one gender or the other may systematically round up and thus over-report some types of assets due to experimenter demand effects.[7] This error I will call rounding error. Finally, husbands and wives may not agree on the definition of an asset. In pilot work for this study, I was told that a man will count as a bicycle anything that can be sold as a bicycle, while a woman will count only that which can be *used* as a bicycle. In addition to information, uncertainty, and rounding errors, I call this last cause of gender differences in asset reports definitional

[6]Animal fostering is the practice of sending an animal to be cared for on a different plot by a relative or friend. How the practice is implemented in Luoland, the location of this study, is discussed in detail in the Section 3.3.1.

[7]By experimenter demand effects I mean that respondents may report greater or fewer numbers of assets because they are trying to make the enumerator feel a certain way about them. For example, a respondent may want the enumerator to believe he is wealthy, and thus will overstate his assets. On the other hand, a respondent may want the enumerator to believe he is poor so the enumerator will assign him to receive program benefits, and thus will understate his assets.

error.

To test whether husbands and wives do report different numbers of assets, asset tallies were collected from each spouse separately during a baseline survey. Respondents were asked how many of several types of assets the household owned, including durable consumer goods (bicycles, motorcycles, watches, radios, TVs, stoves, and cellphones), livestock (cattle, sheep, goats, and chickens), and grain stores (maize, beans, and rice). I first demonstrate differences in simple means and counts, showing that husbands report higher numbers of nearly every asset in the survey, and significantly higher numbers of bicycles, motorcycles, watches, radios, stoves, maize, and beans. To estimate the impact of gender differences in asset reports on common measures of poverty, I use a predicted expenditure model and principal components to show that husbands' and wives' differing reports generate markedly different asset index scores, and different rankings of households in the sample. If a social program were to be targeted using an asset index, different households would receive the program were the asset report to be taken from husbands or wives.

When household-level asset tallies are aggregated to measure community-level welfare, gender disparities in asset reporting could be exacerbated if certain households are more or less likely to front a female respondent. Table 3.2 shows demographic summary statistics for the Nyanza Province in the 2008/9 Kenyan DHS broken out into male respondents in male-headed households and female respondents in male-headed households. If the gender of the respondent were random, we would expect that the summary statistics would be similar for male respondents and female respondents in male-headed households. However, when a male-headed household fronts a female respondent, she reports more household members, and more and younger children. She is also younger and less educated than her male respondent counter-part. This pattern suggests that the gender of the respondent may not be randomly assigned, so if the genders report assets differently, aggregated statistics from asset reports may be biased.

That husbands and wives report different numbers of household assets leaves us with two questions: why, and what can we do about it? Asset tallies are used primarily because they are thought to be a more consistent measure of a household's poverty status than other data. Therefore, the priority is to create a consistent measure of assets. The data show that husbands and wives apart do not give a consistent measure of assets owned. Perhaps together they do better. In addition to the individual baseline asset tallies taken from husbands and wives, couples in this study returned for an endline survey one week later, and sitting together, were asked to enumerate their assets jointly. Not surprisingly, I show that the joint asset tally is more similar to each individual's report than are the husband and wife's reports to each other, both in terms of means, principal component scores, and household rankings. Thus, practitioners should consider taking asset tallies from couples together, rather than relying on only one spouse to report assets for the household.

Differences between husbands, wives, and the joint report also open a window into *why* there are gender differences in asset reports. Women appear to systematically underreport durable consumer goods (bicycles, watches, radios), while male reports more often match the joint endline report. This is consistent with definitional error. Men overreport grain stores (maize and beans) relative to both female and joint reports. This is an indicator of either information errors between the couple, as men could truthfully report high grain stores in private but report lower stores when sitting next to their wives, or rounding error, as men could overstate their stores in their individual interviews due to experimenter demand effects. Tallies of livestock (cattle and chicken especially) show that there may be general confusion over their numbers or ownership, with no statistically significant differences in means between men, women, and joint reports, but substantial differences across reports. This is a symptom of uncertainty error. While these patterns should not be taken as strong evidence of the importance of any one type of error over another, they do suggest that there may be reason to believe that husbands and wives report systematically different numbers of assets, and thus that asset tallies taken from only one person may be no more of a reliable

measure of household welfare than other data.

Section 3.3 describes the study setting and data collection design. Section 3.4 explores simple differences between male and female reports, both across and within couples. Section 3.5 uses predicted expenditure models to demonstrate the effect of gender differences in asset reports on household poverty scores and rankings within the community. Section 3.6 uses principal component analysis, arguably the most prevalent statistical method used to generate asset indices, to demonstrate further the effect of gender differences in reporting. Section 3.7 describes the differences between individual and joint reports of assets, and explores the implications for practitioners and researchers. Section 3.8 concludes.

3.3 Setting and Design

3.3.1 Ethnography

Though Western scholars may think that asset enumeration would be a straightforward task, there are reasons to think that tallying items owned may be more complicated in this region of Kenya, and perhaps in Africa more broadly. There are several reasons why asset enumeration may be difficult or unreliable in Luoland. First, because the Luo are historically polygamous, "husbands and wives try strikingly hard to keep their financial affairs separate" (Shipton (2007)). Traditionally, livestock are exchanged at the time of a new marriage, thus Luo men may attempt to hide their ownership of livestock or the assets that can be used to purchase livestock from their wives. This intentional misinformation between spouses could cause informational errors in asset reports.

Second, it is commonplace for individuals to borrow or lend livestock to relatives and friends in a practice called "fostering." When an animal is fostered, it is sent to stay on another's compound, sometimes many miles away. Fostering occurs for obvious agronomic reasons, including to take advantage of another's more open land for grazing, to move herds where

labor is abundant, and to diversify the risk of disease and theft. However, animal fostering may make ownership unclear and disputable. Fostering relationships may last for years, or even across generations.[8] Over such a period, ownership over an animal sometimes becomes murky to the direct parties involved, and may be even less clear to the spouses and offspring of the original parties. In an informal survey of 107 households in Kanyamkago sub-location in 1981-82, Shipton reports that among animal lenders, 71 percent expected the animal would eventually be returned. Of those receiving fostered animals, 80 percent expected to return the animal. That neither of these percentages is equal to 100, and that they do not match, suggests that ownership of fostered animals may not be entirely clear. Moreover, ownership of the offspring of fostered animals is dictated by subtle and arguable guidelines.[9] If a fostered animal dies, what number and type of animal the borrower owes the lender may not be clear.[10] Finally, if the borrower suffers an unexpected shock, like a raid or crop failure, responsibilities to return the fostered animal may come into question.[11] In sum, animal fostering may cause uncertainty over the ownership of livestock living on or off the family compound, causing noise and thus uncertainty errors in asset reports.

In addition, respondents may be prone to experimenter demand effects, especially when ownership is uncertain. A respondent may over or understate an asset in an individual interview because they believe that is what the enumerator wants to hear, or because they would like the enumerator to have a certain impression of them. For example, a respondent may overstate his ownership of an asset because he wants the enumerator to think him

[8] "Animal credits and debts, that is, are both fully heritable" (Shipton (2007)).

[9] "Who keeps the offspring of borrowed or fostered stock depends on the reason for the initial loan. In Kanyamkago, offspring of a cow lent for the lender's convenience will belong, like the milk and manure, to the borrower - a common arrangement. But if the cow is lent for the benefit of the borrower, the offspring are returned to the lender. Some borrowers and lenders agree to divide the offspring equally in alternation" (Shipton (2007)).

[10] "Luo people like to insist that a borrowed cow must be repaid with a cow, and a bull with a bull. In a pinch, however, elders say that a bullock or decrepit old bull will do in return for a strong bull in its prime, and a female calf or old cow suffices in return for a milk cow in her peak. Switching the ages of animals between loan and return is more acceptable than switching the sexes. The same applies with sheep or goats" (Shipton (2007)).

[11] "Where a borrower's harvest fails completely, he or she feels no compunction to return the loan - this is a risk of the lender" (Shipton (2007)).

wealthy. On the other hand, a respondent could understate his asset ownership because he wants the enumerator to think him relatively poor and thus deserving of social assistance. Even in situations in which the enumerator does not actually have any control over social assistance programs, the respondent may believe he does. These enumerator demand effects together could cause rounding error.

In addition to intentional concealment, uncertainty over ownership, and experimenter demand effects, there is a fourth reason why men and women may report different numbers of assets: the definition of the good. During pilot work for this project, I mentioned my peculiar findings to a group of masters of statistics students at Maseno University. While I was confused about how husbands and wives could report different numbers of highly visible assets like bicycles, the students I spoke with had a simple explanation: a man counts as a bicycle anything that can be sold as a bicycle, while a woman will only count something that can be used as a bicycle. In sum, there are four distinct types of errors that may account for gender differences in asset reports: informational errors, uncertainty errors, rounding errors, and definitional errors.

3.3.2 Sample Selection

The sample was drawn from five rural towns in southwestern Kenya's Nyanza Province. Maps of the area are shown in Figure 3.1. Two of the towns (Ugunja and Sega) are on the main paved road that runs through all of Kenya from Mombasa to Uganda. The other three towns (Ukwala, Sigomere, and Siaya) are on major dirt roads off the main paved road. Three of the towns (Ugunja, Siaya, and Ukwala) are former district headquarters.[12] Subjects were married (either formally or informally),[13] currently living with their spouse, over the age of

[12] A new constitution adopted in late 2010 created administrative units known as "counties" to take the place of the former "districts." All towns and districts in this study now fall into Siaya county. However, at the time of the study old district offices were still serving many of their old official roles, and the towns remained important centers of commerce and government.

[13] A couple is considered "married" if they are considered by the village elder to be a long-term romantic couple. The beginning of the "marriage" is defined as the time the couple moved in together.

18, and available to participate in two interviews a week apart in September or October of 2011. Polygamous families were not eligible to participate.[14]

To identify the sample, the survey team asked local administrators (village elders) to compile a list of all couples meeting the eligibility criteria in several villages within walking distance of the five towns.[15] The village elders were asked to record the names of both husband and wife and a contact phone number if possible. Of the 786 couple records collected by the village elders, 82 percent included a contact phone number. Couples were then assigned a random number to determine the order in which they were contacted to be scheduled for an interview, stratified by town. Couples that listed a phone number were scheduled for interviews by phone if possible. Couples that did not have a phone number listed, or were unable to be contacted by phone, were contacted through the village elder. Tracking lists were distributed to the elders and they were asked to invite the selected couples to arrive for an interview on the selected day. In total, 53 percent of the 786 couples provided by the village elders participated in the study. 415 couples were interviewed at baseline, and 406 couples met all of the study criteria (monogamous, living together, both partners over the age of 18). Of these, 360 had complete records.

3.3.3 Survey Design

Couples arrived at the survey site together,[16] but completed their individual surveys separately. The survey began with a questionnaire about demographics, family finances, expenditures, transfers, savings and loans, and decision making in the household. The survey was

[14]Polygamous families were excluded because the household bargaining structures between three or more adults are likely to be very different from the traditional model of a two adult household. In the 1999 Kenyan Census, 12% of men and 21% of women 18 years and older in Siaya District reported that they were in polygamous unions. Fenske (2012) documents the decline of polygamy in Kenya and Africa more broadly.

[15]While a full census by the survey team would have been a preferable method of compiling the eligible couple list, budget constraints were limiting.

[16]The study sites were a Town Council Hall, a boarding house for handicapped children, a polytechnic university, and a small resort.

executed in Dhuluo, the most common native language in the study area.[17] Table 3.3 shows demographic and other summary statistics from the baseline survey. The table also shows averages for Siaya District from the 1999 Kenya Census, showing that the sample is similar to the larger population. An English version of the survey can be found on my website[18] and the Dhuluo translation is available on request.

The asset tally was included after basic demographics and an experiment check,[19] and before survey measures of household bargaining power. Translated into Dhuluo, the prompt read: "Now I would like to ask you about the things your family owns. Please tell me about the place where you currently stay, and the things you, your spouse, and your children own. You should include things at your current place and another home, but be sure to tell me about only things that YOU own." The tally asked for the number of bicycles, motorcycles, watches, radios, televisions, kerosene stoves, cell phones, sheep, cattle, goats, chickens, and kilograms of maize, beans, and rice.

Couples were asked to return to the survey site exactly one week later to complete an endline survey. The endline survey again asked about expenditures, transfers, savings and loans, and new questions were asked about marital quality and the experiment implemented at baseline. In addition, at the end of the individual baseline surveys, the couple was joined together for a couple endline survey. The couple was then asked jointly about the assets in their household. While it would have been preferable to visit the couple's home to directly observe their physical assets, budget constraints were limiting. However, large nationally representative surveys also have limited resources, and may not be able to directly observe assets either. The joint endline survey asked of both members of the couple, however, may be a more accurate or reliable measure of household assets than an individual's report. 309 of the 360 baseline couples have complete endline asset data.

[17] All subjects in the sample speak Dhuluo. The survey was forward and back translated by the study team.

[18] www.umich.edu/∼jesshoel

[19] The check asked if the respondent had heard about the study from anyone before arriving, and what they knew of the procedure.

3.4 Simple Comparisons

Table 3.4 shows reported assets for men and women, along with a comparison of reports within couple. Columns 1 and 2 show average reports for men and women, along with standard deviations. Column 3 shows a Welch's t-test for differences between these means. Column 4 shows the percentage of couples that differ in their asset report. Column 5 shows the conditional mean difference for those couples that disagree. Column 6 shows the percentage of households in which only the man reports the asset present, while column 7 shows the percentage of households in which only the woman reports the asset present.

On average, men report more of nearly all assets, and report significantly more bicycles, motorcycles, watches, radios, stoves, maize, and beans. More than a quarter of couples disagree on the number of bicycles, watches, radios, stoves, phones, cattle, sheep, chickens, maize, and beans in their homes. When they disagree, they often disagree by a substantial amount: 1.2 bicycles (1.8 std), 73 kilograms of maize (0.7 std), 21 kilograms of beans (1.1 std), 2 cattle (1.2 std), 2.2 sheep (1.7 std), or 6.5 chickens (0.5 std) on average. In many households, spouses disagree on whether their household even owns an asset. 14 percent of men say they own a bicycle while their wives report no such asset; 7 percent of women report a bicycle when their husband reports none. 12 percent of men and 7 percent of women report owning cattle when their spouses report none. 22 percent of men and 10 percent of women report owning maize, and 23 percent of men and 8 percent of women report owning beans when their spouses report no grain stores.

Figures 3.2, 3.3, and 3.4 show histograms of the linear difference between husband and wife reports. A positive (negative) difference reflects that the husband reported more (fewer) of the asset than did the wife. Panel c of Figure 3.2 shows the plot for reports of bicycles. While most (66%) couples agree on the number of bicycles in couple owns, 63 (34) husbands (wives) report one more bicycle than does their spouse. Further, some respondents report more than one additional bicycle, with 19 husbands (5.3% of the sample) reporting 2, 3, or

4 more bicycles than do their wives. 5 wives (1.4% of the sample) report 2 more bicycles than do their husbands.

Panel d of Figure 3.3 shows a similar plot for reports of maize stores. 34% of (122) couples agree exactly on the number of kilograms of maize the couples owns. 55.6% of couples disagree by 20 kilograms or less, but more than 40% of couples disagree by more than 20 kilograms. 10% of husbands report at least 100 kilograms more maize stores than do their wives.

Simple comparisons of asset tallies across husbands and wives reveal substantial differences in asset reports by gender. Men report more of nearly every asset in the sample, often statistically significantly more of the asset. Some couples even disagree on the existence of an asset in the household. In the next sections, the relationship between asset reports and common measures of poverty is explored.

3.5 Predicted Expenditures

Asset indices constructed from predicted expenditures are sometimes used to target social programs (Coady et al. (2004)). While direct means testing (i.e. asking a household directly about their income and expenditures) is preferable, it is not always possible because collecting expenditure data is time consuming and expensive. It is therefore common to collect expenditure data from only a sub-sample of a population, create an asset index from a regression of expenditures on asset tallies, and use the predicted expenditure asset index to assess poverty in the larger population. For example, Mark Schreiner and co-authors at microfinance.com have generated expenditure-based poverty scorecards for 50 countries, with the stated purpose that they be used by pro-poor organizations to target social programs to those who live on less than $1 per day. However, if the genders systematically report different numbers of assets, poverty scorecards constructed from those reports could be biased. If one

gender systematically over or underreports assets, they will generate systematically higher or lower scores. Further, gendered differences in reporting of both assets and expenditures may generate different coefficients of regressions of expenditures on assets. That is, men and women may require different scorecards.

Researchers interested in the effect of expenditures or incomes on outcomes sometimes use assets as instruments. Filmer and Scott (2012) suggest that expenditures instrumented by assets will capture the long-term component of expenditures and difference out temporary income shocks. For example, Behrman and Knowles (1999) use assets and other household characteristics to instrument for the long-term component of expenditures and incomes to look at their effect on school enrollment. However, if the genders report systematically different numbers of assets, their use as an instrument for *household* expenditures is questionable.

I collected expenditure data from all men and women in my sample separately, asking them about their own expenditures over the previous week and their spouse's expenditures. Collecting personal diaries, while likely the most accurate form of expenditure measurement, were prohibitively expensive. Following the recommendations of Beegle et al. (2012), I used a 7-day recall subset list of items, including 28 food items and 21 non-food items. I started with the list of items included in their survey, and modified for the local context. The my surveys can be found on my website.[20]

Differing asset reports from men and women could influence the construction of a poverty score from a predicted expenditure based asset index in three ways. First, differing patterns of male and female reports combined with different spending patterns could change the coefficients in the asset index. Second, coefficients relating expenditures to assets may not be dissimilar, but differing asset reports may lead to quite different predicted household expenditures. Finally, different predicted expenditures could cause markedly different classifications of households into poverty groups, either via predicted expenditures falling beneath

[20] umich.edu/∼jesshoel

a poverty line, or via differing rankings of households. Social programs are often targeted at the poorest 10 or 20% of households, so different household rankings can have a substantial impact on which households become beneficiaries.

A Blinder-Oaxaca decomposition can distinguish between the first and second potential problems. Table 3.5 shows OLS regressions of expenditures on asset tallies and demographics,[21] and a Blinder-Oaxaca decomposition of the contribution of differing coefficients, differing endowments, and their interactions for both assets and demographics. Household expenditures are the respondent's report of both their own and their spouse's expenditures over the previous week, excluding education expenditures,[22] and the asset report is also taken from the respondent. The first column shows an OLS regression for all respondents pooled, with standard errors clustered at the couple level. The second and third columns show results for men and women separately. The final column shows stars for significantly different coefficients for men in women from a pooled regression with interaction terms. Standard errors in this regression are again clustered at the couple level.

The final column of Table 3.5 shows that few coefficients are significantly different for men and women. When a woman reports an additional kilogram of maize, it is positively correlated with expenditures, while mens' reports of maize are not significantly correlated with expenditures. While a man's report of an additional TV is associated with 255 KSH in additional household expenditures, a woman's report is not significantly correlated with household expenditures. Aside from TVs, maize, and beans, there are no statistical differences in coefficients for men and women for the other 13 assets included in this model.

[21] OLS regressions that exclude demographics are available from the author. Models of expenditures often examine the effect of assets on *log* expenditures. Log expenditure regressions are available from the author. The main text discusses linear expenditures because R^2 measures are substantially higher in the linear models than in the log models. Tobit regressions, accounting for potential left censoring of expenditures at zero, are also available from the author. However, as only 7 of 720 observations of total expenditures are equal to zero, the main text discusses OLS regressions.

[22] 73% of respondents report no educational expenditures over the previous week, but because education expenditures are by nature lumpy, some households report large expenditures on education. 5% of respondents report 2000 KSH or more spent on education over the previous week, while average non-education expenditures over the previous week are only 2079 KSH. To avoid outliers due to lumpy education expenditures, education is excluded from the analysis.

The third panel of the table confirms the idea that the differences in coefficients between men and women are small: a Blinder-Oaxaca decomposition shows that differences in coefficients on assets do not statistically significantly contribute to the differences between male and female reported expenditures. The interaction between asset coefficients and asset endowments are also not important to the difference. However, because women report fewer assets, asset endowments contribute -44 KSH to the difference in predicted household expenditures, and this difference is significant at the 90% level.[23]

The effect of asset reports on predicted expenditures can be seen clearly in the classification of households above and below the poverty line, and in rankings of households by predicted expenditures. Figure 3.5 shows a scatter plot of OLS predicted expenditures by husbands' and wives reports', using the gender separated regression shown in Columns 2 and 3 of Table 3.5. The scatter plot shows that while husband's and wive's reports are correlated (correlation coefficient 0.4541), they are far from perfectly correlated. The figure also shows red lines drawn at predicted expenditures of 700 KSH per week, or $1 per day per capita. This demonstrates that while there are some couples under the poverty line by both the husband's and wife's predicted expenditures (66.4%), many are beneath the poverty line by only one spouse's report (24.7% by only the husband's report, 3.7% by only the wife's report). Table 3.6 shows tabulations of predicted expenditures broken into less than one, one to two, two to three, and more than three times the $1 per day per person poverty line.

Another way to compare spouse's reports is to compare the ranking of households by husbands' predicted expenditures and wives' predicted expenditures. Figure 3.6 shows a scatter plot of the rankings of the 360 couples in the sample by predicted expenditures. Again the rankings by husband's and wife's reports are positively correlated (correlation coefficient 0.5096) but the scatter plot reveals they are far from perfectly correlated. Table 3.7 shows

[23]In tables not shown here but available from the author, a linear model that excludes demographic controls also shows that asset endowments and not asset coefficients are the main contributor to differences in predicted expenditures. Log models show more strongly that asset endowments are the most important factor in differing predicted expenditures.

husbands' and wives' rank by quintile, demonstrating that while a husband with predicted expenditures in the lowest quintile (under the red line in Figure 3.6) is most likely to have a wife in the lowest quintile (8.1 of the 20% of the sample in the lowest quintile), a few have wives in the *highest* quintile (1.4%).

Exploring the relationship between asset reports and expenditures shows that gender differences in asset reports have substantial impacts on commonly used measures of poverty. Though gender differences do not statistically significantly impact the coefficients in an expenditure prediction model, they do have impacts on whether a household is expected to be above or below the poverty line, and even more substantial impacts on the ranking of households within a community. If a policy maker were to target a social program to the poorest 20% of households, she would construct a very different list from male and female asset reports.

3.6 Principal Component Analysis

When expenditure data is not available, asset indices are often created using principal component analysis. Popularized by Filmer and Pritchett (2001), principal component analysis finds the linear combination of asset indicators that accounts for the greatest sample variance of all possible linear combinations of indicators. The first principal component coefficients are then used to derive an asset index I will call the principal component score. Principal component derived asset indices are now widely used, including in the creation of the wealth index in the Demographic and Health Surveys.

Asset indices derived from principal components are attractive for several reasons. Most importantly, principal component scores require only the measurement of asset ownership while other measures of poverty usually require the measurement of income or expenditures, both of which are relatively expensive to gather and thought to measured with greater

error. For example, Sahn and Stifel (2003) argue that an asset index derived from factor analysis (a close relative of principal components) is a better predictor of child health and nutrition when compared to expenditures, which they say were measured with greater error. Previous studies have thus used principal component scores to control for economic status when income or expenditure data are not available (e.g. Rao and Ibanez (2005)). Second, a principal component score is a uni-dimensional measure of a household's wealth. It is unwise to regress an outcome of interest (such as rate of diarrhea disease) on assets directly (such as access to a pit latrine) because a specific asset could have a direct impact on the outcome in addition to its indirect impact as a proxy for wealth. By providing a uni-dimensional proxy for household wealth, a principal component score avoids some of this bias. Researchers have used this logic to study the effect of wealth on health and education in many contexts. For example, Bollen et al. (2002) use a principal component score to examine the effect of wealth on fertility and Filmer and Pritchett (2001) examine the relationship between wealth and school enrollments. Third, Filmer and Pritchett (2001) argue that because the first principal component explains the maximum variance in the asset variables, it can be thought to be the best measure of long-run wealth. For this reason, principal component or factor analysis scores can be used to study poverty rates across time and space (e.g. Sahn and Stifel (2000)) or inequalities within groups (e.g. McKenzie (2005)).

That the genders report different numbers of assets interferes with the logic for using principal components in each of the three arguments offered above. First, it is not clear that the measurement error due to gendered differences in reporting of assets is any less problematic than the measurement error inherent in consumption or expenditure data. Second, if male and female reports produce different principal component scores, then their use as a proxy for *household* wealth is called into question. Finally, the propensity to survey women over men may vary across time and space, thus if women and men report systematically different numbers of assets, the comparison of asset indices across time and space is invalid. For example, women in observant Muslim communities may be less likely to answer an initial

household survey because they are not comfortable speaking with strangers.

Table 3.8 shows coefficients on each asset for the first principal component, with the analysis run first on the pooled sample, and next on each gender separately.[24] As in the expenditures prediction models, the coefficients on each asset do not vary much across the genders. However, as with predicted expenditures, differing reports across genders have a substantial impact on household categorization. Figure 3.7 shows a plot of husbands' and wives' principal component index scores. While the scores are positively correlated (correlation coefficient 0.5160), they are far from perfectly correlated. The mismatch between husband and wife reports are exacerbated when principal component scores are used to categorize households into wealth categories. Figure 3.8 shows the 360 households in the sample in rank order by their principal component score, with rank determined by either husband or wife's asset reports. Red lines are drawn to indicate the lowest quintile of the asset index. Table 3.9 tallies this information numerically. While 47% of men whose asset reports put them in the bottom quintile of the principal component index also have wives in the bottom quintile (9.4 of the 20% in the lowest quintile), some (0.8%) have wives in the *highest* index quintile. Some women in the lowest quintile have husbands in the highest quintile (1.9%).

3.7 Differences between Individual and Joint Reports

At the baseline survey, each respondent was asked to tally the household's assets separately. At the endline survey one week later, the couple was seated together and asked to enumerate the household's assets. Because the endline survey was only one week later, it is unlikely that the household accumulated assets between the baseline and endline asset tallies. Mean expenditures on grain over the week between baseline and endline surveys was 236 KSH, 62 KSH on farming and livestock, and 14 KSH on furniture and appliances.

[24]McKenzie (2005) suggests that distributions of principal component scores should be checked for truncation and bunching. Figure 3.11 shows that these issues are not a problem in these data.

Not surprisingly given the results above, the joint report differed from both the husband's and wife's individual reports. Table 3.10 shows asset summary statistics for the joint report compared to baseline male and female data. The first and second columns show means and standard deviations of male and female asset reports for the couples that also have endline data.[25] The third column shows this joint report. The fourth column shows Welch's t-tests for differences between the joint report and the men(women)'s reports. For example, the difference between mean male and joint reports of bicycles are not statistically different (t-stat: 0.52) while mean female reports are significantly lower than mean joint reports (t-stat: -2.91). The first row of the fifth column shows first the percentage of couples for which the joint report matches only the husband's:wife's report. 19.4% of households had a joint report of bicycles that matched the husband's report only; 10.7% of joint reports matched the wife's report only. The second line of the fifth column shows the percentage of households for which the joint report matches both:neither of the husband's and wife's report. 62.5% of households had a joint, husband, and wife report of bicycles that were identical. 7.4% of couples had a joint report that did not match either of their individual reports. The first row of the sixth column shows the percentage of male reports that were initially higher than the joint report (10% of men reported more bicycles in their individual report than were reported in the joint interview) along with the conditional mean difference (of men who reported more bicycles, they reported on average 1.27 more). The first row of the seventh column shows the same information for women (7% of women reported more bicycles in their individual interview than were recorded in the joint report, reporting an average or 1.05 additional bicycles). The second row of each column shows the percentage of male (female) reports that were lower than the joint report (8% of men and 20% of women reported fewer bicycles in their individual interviews than were recorded in the joint report) along with the conditional mean difference.

There are some goods for which male, female, and joint tallies are all quite similar. 92.2% of

[25] 309 of the 360 baseline couples have complete endline data.

households have matching joint, husband, and wife reports of motorcycles. 94.8% of households agree perfectly on the amount of rice stores. Reports are more than 70% consistent for sheep, goats, and TVs.

There are other goods for which male or female reports are systematically different than the joint report. Women report significantly fewer bicycles on average than the joint report, while average male reports are not statistically different from the joint report. In households with disagreement, 19.4% of the male reports match the joint report, with 20% of women reporting less than the joint report by an average of 1.1 bicycles. Similarly, women report significantly fewer watches and radios than the joint report suggest. With these assets also, 18.4% of the joint reports of watches and 17.2% of radios match the male report, with 20% and 18% of women reporting an average of 1.23 fewer watches and 1.22 fewer radios respectively. These patterns are consistent with the idea that for these types of items, women report only those items that can be used while men report items that can be sold.

There is also a set of goods that men appear to systematically overreport. Average male baseline reports of maize and beans are significantly higher than the joint reports. Only 29.8% of households agree perfectly on their maize stores. Of those that disagree, far more joint reports match the wife's original report (21%) than match the husband's original report (11.7%). Of men whose report does not match the joint, 76% report more maize than the joint report by an average of 68 kilograms. The pattern is similar for bean stores. Only 7.4% of male reports match the joint report, while 19.7% of wife reports match the joint report. Of men whose report differs from the joint report, 78% report more beans than the joint report by an average of 19 kilograms. Taken together, it appears that some men systematically overstate grain stores relative to women's and joint reports. This could be due to information errors, if men truthfully report their grain stores in an individual interview but conceal some stores when asked sitting next to their wives, or rounding error if men overstate grain stores in their individual interview due to experimenter demand effects.

For another set of goods, there does not seem to be a systematic adjustment up or down for either gender, but there does seem to be a fair bit of confusion. Only 18.8% of households have perfect agreement about the number of chickens in their household. The joint reports seem to be a mix of original male reports (20.7%), original female reports (23.6%), and a compromise between the two (36.9%). This pattern is also true for reports of cattle. While a greater fractions of households agree on their cattle ownership outright (57%), the remaining adjustments are an even mix of original male reports (16.2%), original female reports (12.3%), and a compromise between the two (14.6%). While many people in the sample are adjusting their reports, it does not appear that either men or women are systematically under or over reporting cattle or chickens. Rather, there appears to be confusion over ownership. This pattern fits with the idea that uncertainty over ownership could be generated by animal fostering, and asset reports in these categories are perhaps less reliable.

Overall, however, the joint report is more similar to both male and female reports than husbands' and wives' are to each other. Figure 3.9 shows scatter plots of first principal component scores for husbands, wives, and joint asset reports, constructed from the principal component coefficients shown in Table 3.11. The figures demonstrate that while husband and wife principal component scores are not that strongly positively correlated (correlation coefficient 0.517), the joint principal component score is more highly correlated with both baseline husband report (0.7734) and baseline wife report (0.7234).

Figure 3.10 shows the same patterns when households are ranked by their principal component scores, with husband and wife rank correlation coefficient at 0.521, husband and joint report at 0.7486, and wife and joint report at 0.666. Further, when households are grouped into quintiles by their principal component score rank (as is often done to target social support programs), joint ranks are more likely to categorize households similarly to either the husband or wife rank than are husband's and wive's ranks to each other. Table 3.12 shows that when husband and wife quintile categories are compared, only 38% of couples end up in the same category by both reports. 74% of couples end up in either the same or a prox-

imate category by both husband and wife reports. However, when joint report categories are compared to husband reports, 49% end up in the same category and 87% end up in the same or a proximate category. For women, these statistics are 45% and 83%. In short, asset reports taken from the couple together are more similar to either gender's individual report than are husband's and wive's reports to each other. Practitioners should consider that if they want an asset tally that is most similar to what an individual husband or wife would say alone, they should collect the tally from the couple together.

3.8 Conclusion

Asset tallies are frequently used to construct poverty scores and assign social support programs, under the thought that asset tallies can be collected with less measurement error than other measures of poverty. Information about assets is often collected from any adult member of the household without regard to that person's gender. However, men and women may report different numbers of assets for several reasons. First, husbands and wives may intentionally hide assets from one another, causing information errors in an asset tally taken from only one individual. Second, people may be confused about ownership in general, for example due to animal fostering, generating uncertainty error. Third, people may round up or round down their report due to experimenter demand effects. Finally, husbands and wives may not agree on whether an item qualifies in the asset category, causing definitional errors.

Surveying matched pairs of husbands and wives in Siaya County, Kenya, I gather reports from husbands and wives individually, and again jointly with the couple sitting next to one another. I find that husbands and wives do not report identical numbers of assets in their individual surveys, and that their differing reports have substantial impacts on indices generated with predicted expenditure and principal components models. Further, the rankings of households in the sample by either the husband's or wife's asset report vary greatly. If a social program were to be targeted using an asset index, different households

would receive the program were the asset report to be taken from husbands or wives.

That husbands and wives report different numbers of household assets leaves us with two questions: why, and what can we do about it?

Women appear to systematically underreport durable consumer goods (bicycles, watches, radios), while male reports match the joint report. This is a symptom of definitional error. Men overreport grain stores (maize and beans) relative to both female and joint reports. This could be an indicator of information errors between the couple, as many men report high grain stores in private but much lower stores when sitting next to their wives. It could also be a symptom of rounding error if men overstate grain stores in their individual interviews due to experimenter demand effects. Tallies of livestock (cattle and chicken) show that there may be general confusion over their numbers or ownership, with no statistically significant differences in means between men, women, and joint reports, but substantial differences across reports.

I demonstrate that the joint asset tally, taken with husbands and wives sitting together, is more similar to each individual's report than are the husband and wife's reports to each other. This pattern is true when measured by means, principal component scores, and household rankings. Practitioners should thus consider taking asset tallies from couples together to gather the most consistent measure of household asset ownership.

3.9 References

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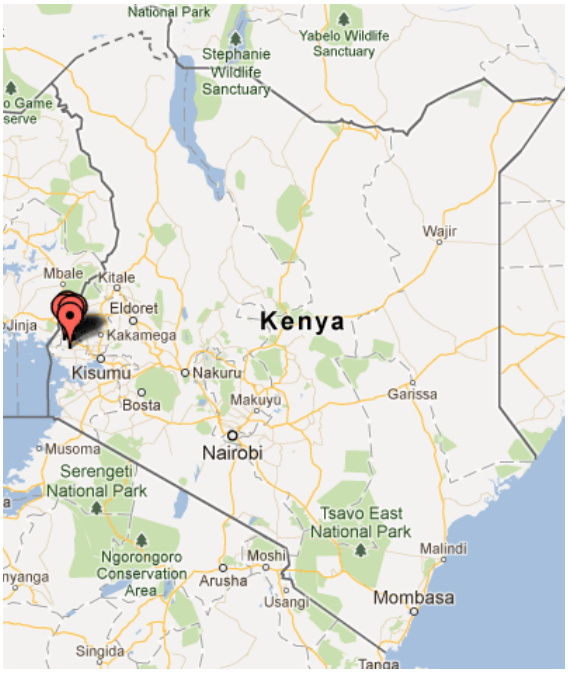
International Food Policy Research Institute Working Paper.

3.10 Figures

Figure 3.1: Maps of Study Site
(a) Kenya, zoomed out



(b) Nyanza and Western Provinces, zoomed in

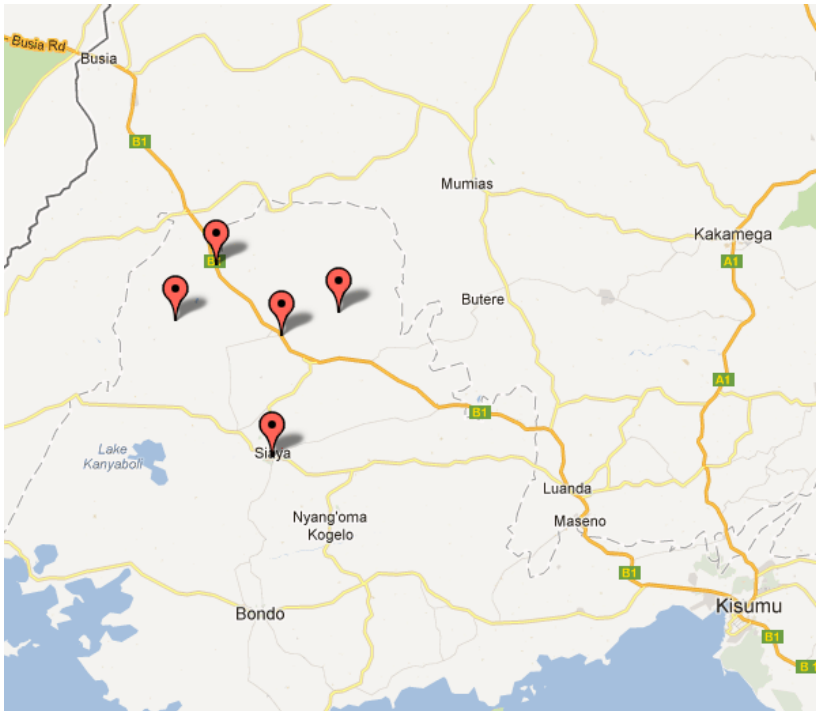
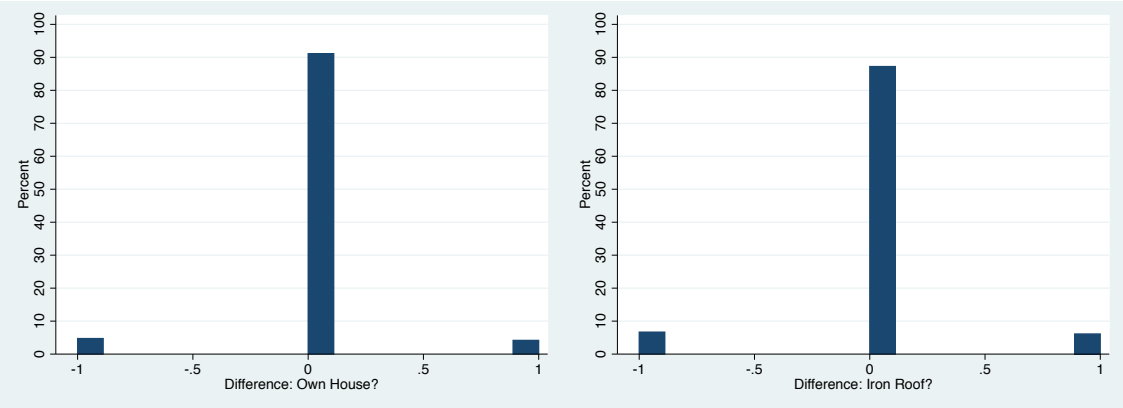


Figure 3.2: Histograms of Linear Difference in Asset Counts: Husband - Wife

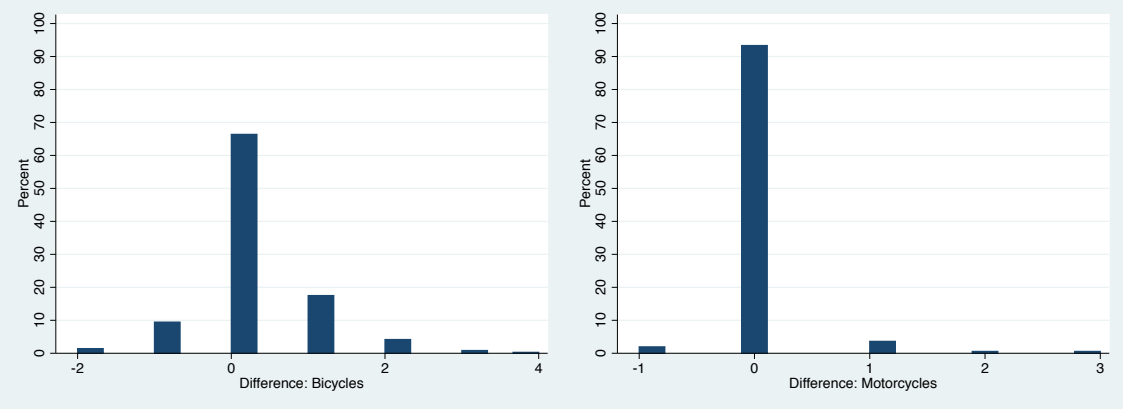
(a) Family Owns House?

(b) House has Iron Roof?



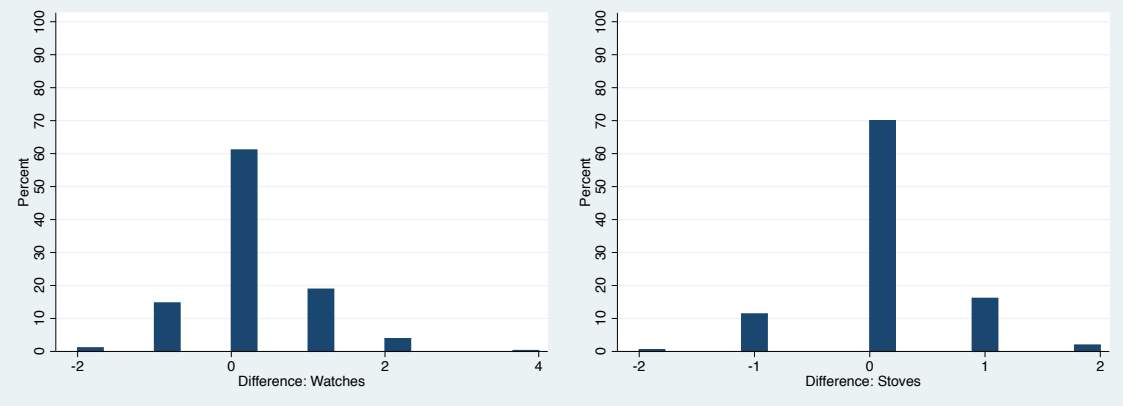
(c) Bicycles

(d) Motorcycles



(e) Watches

(f) Stoves

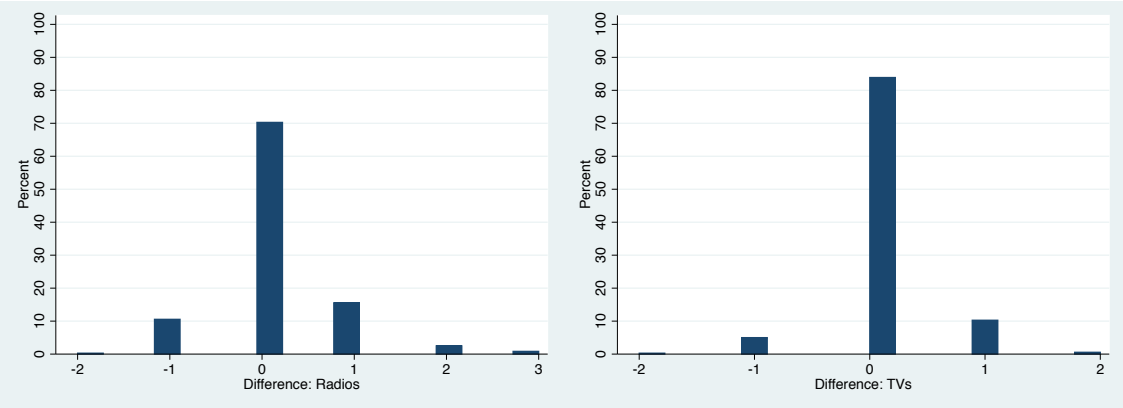


Notes: Histograms of the linear difference between husband and wives' reports. Positive numbers indicate that the husband reported more of the assets, while negative numbers show that the wife reported more of the asset.

Figure 3.3: Histograms of Difference in Asset Counts

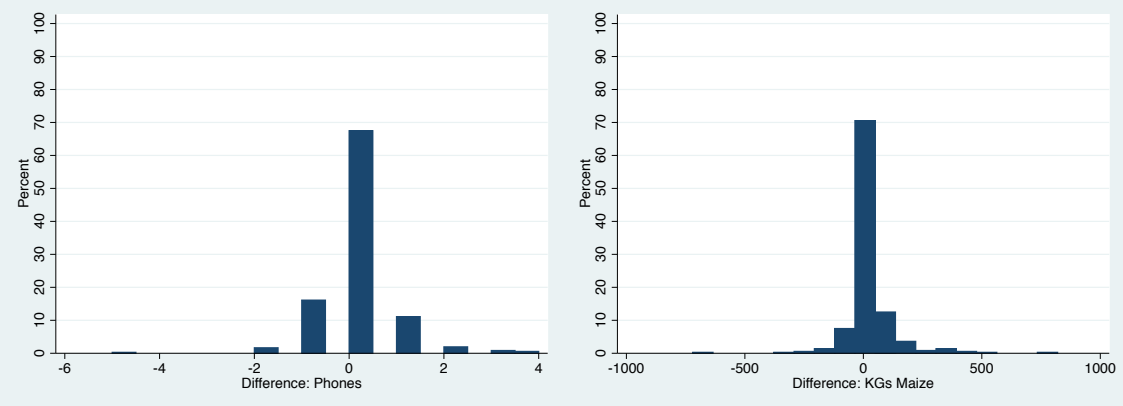
(a) Radios

(b) Televisions



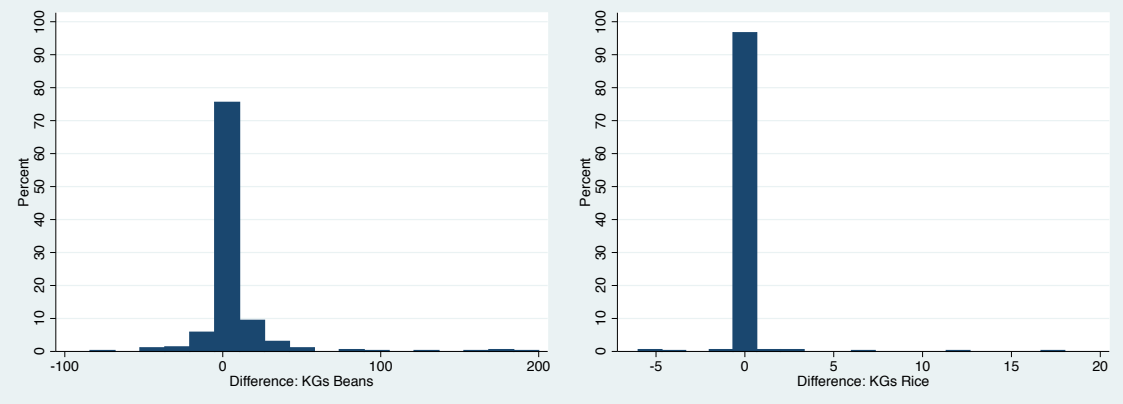
(c) Phones

(d) KGs Maize



(e) KGs Beans

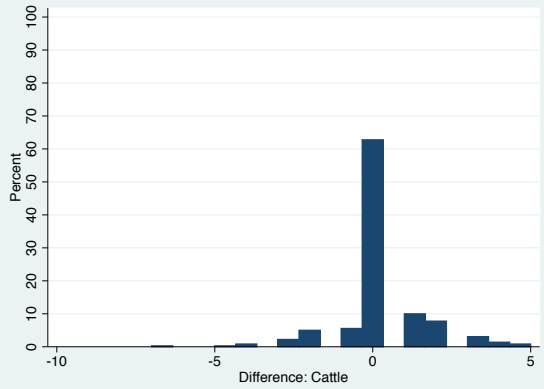
(f) KGs Rice



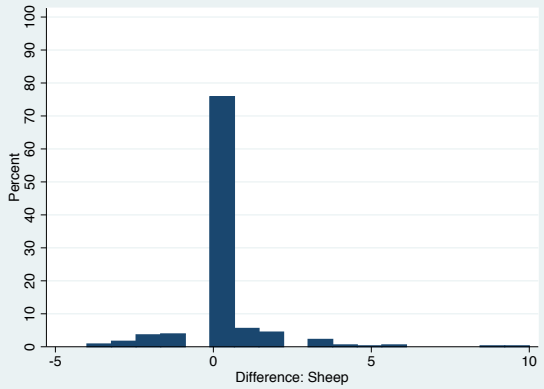
Notes: Histograms of the linear difference between husband and wives' reports. Positive numbers indicate that the husband reported more of the assets, while negative numbers show that the wife reported more of the asset.

Figure 3.4: Histograms of Difference in Asset Counts

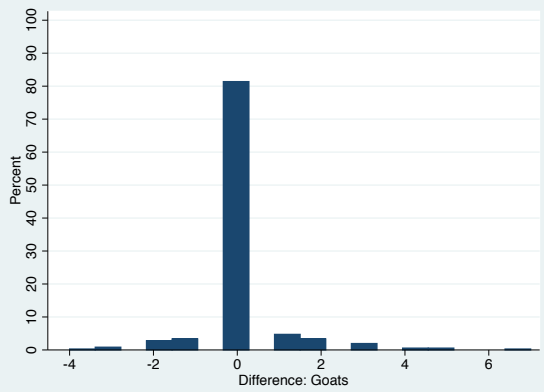
(a) Cattle



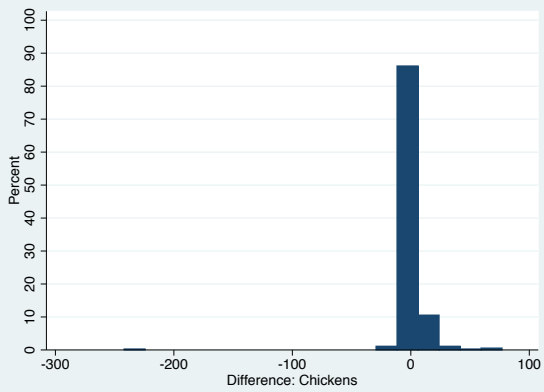
(b) Sheep



(c) Goats

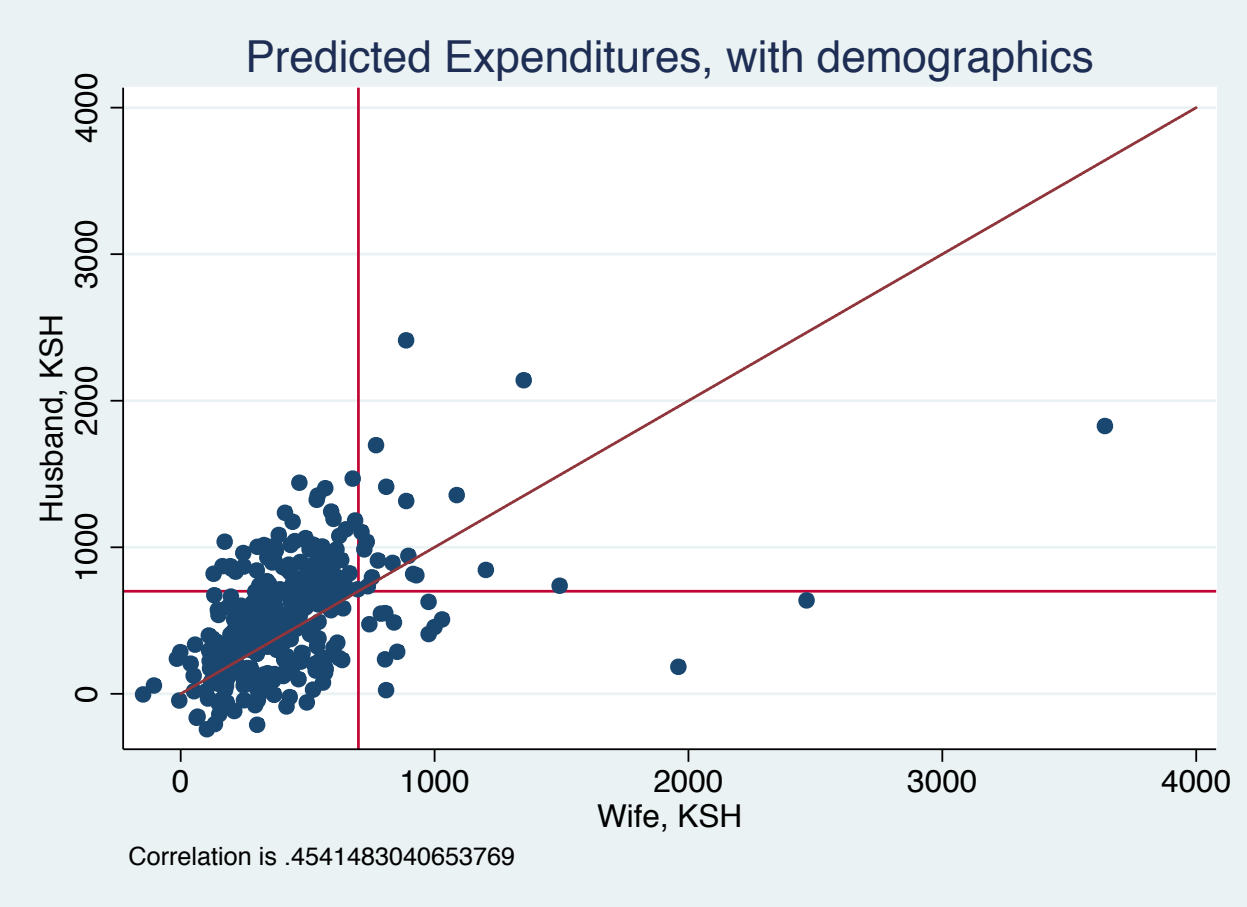


(d) Chickens



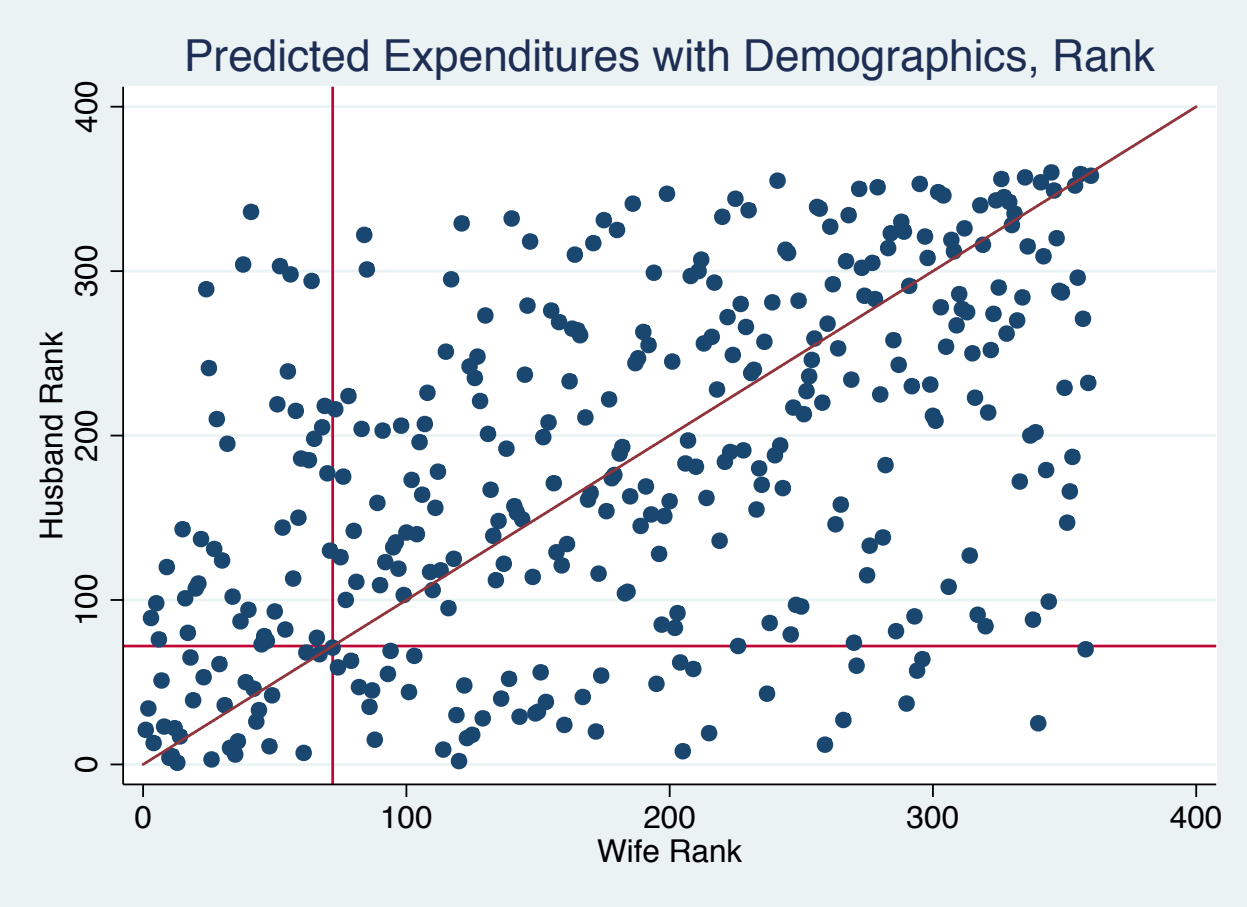
Notes: Histograms of the linear difference between husband and wives' reports. Positive numbers indicate that the husband reported more of the assets, while negative numbers show that the wife reported more of the asset.

Figure 3.5: Scatter Plot of Predicted Expenditures per Household Member, WITH Demographics



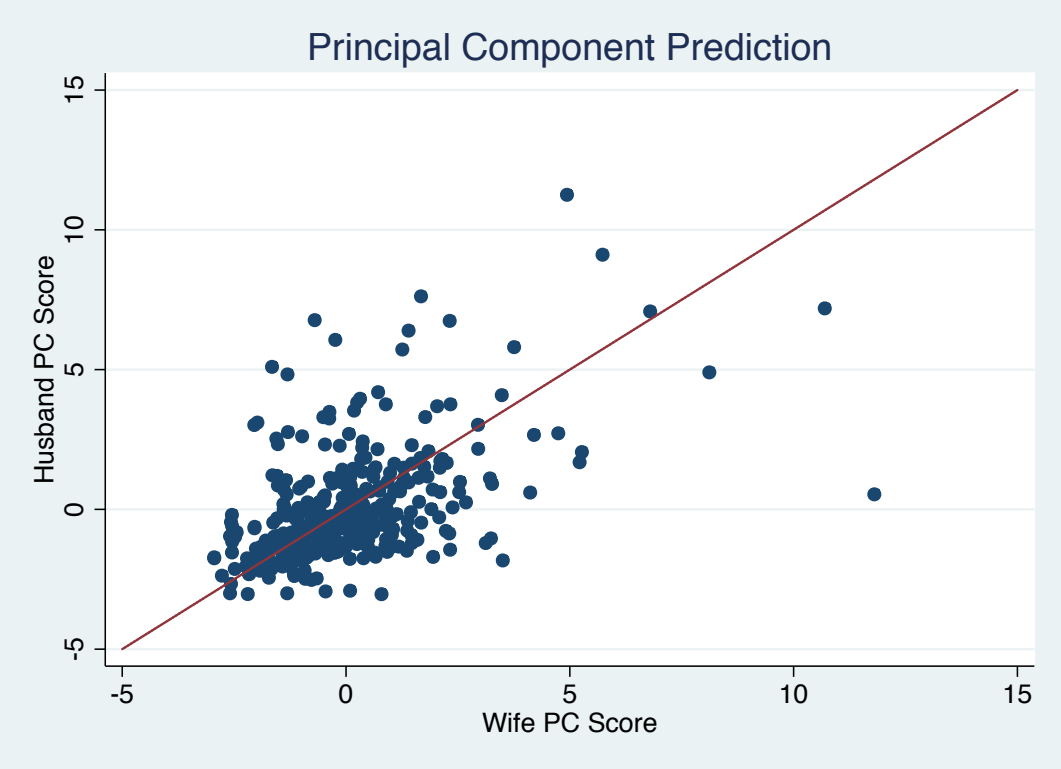
Notes: Figure shows scatter plot of husband's predicted expenditure by wife's predicted expenditure, where predicted expenditures are generated by an OLS regression of the respondent's report of total household expenditure per household member (excluding educational expenditures) on the respondent's report of assets in the home. Demographic controls for age, age squared, education, and an indicator for employment for the respondent and the respondent's spouse are included. Regressions are run for each gender separately seen in Columns 2 and 3 of Table 3.5. The red lines are drawn at 700 KSH, or $1 per day per capita. Note that while many couples fall above or below the poverty line by both the husband and wife's report, many others do not. Table 3.6 shows this fact numerically.

Figure 3.6: Scatter Plot of Rank by Predicted Expenditures per Household Member, WITH Demographics



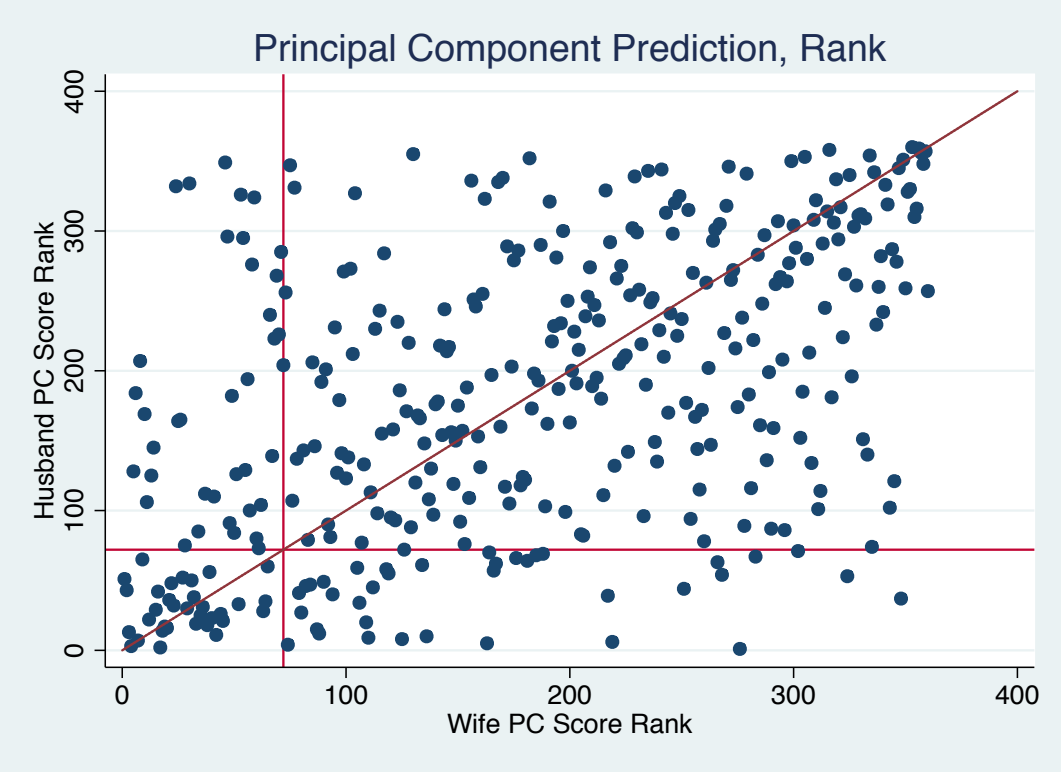
Notes: Figure shows scatter plot of the household's rank in the sample of 360 households by predicted expenditures per household member, split by husband and wife's reports. Predicted expenditures are generated by OLS regression of the respondent's report of total household expenditure per household member (excluding educational expenditures) on the respondent's report of assets in the home. Demographic controls for age, age squared, education, and an indicator for employment for the respondent and the respondent's spouse are included. Regressions are run for each gender separately, seen in Columns 2 and 3 of Table 3.5. The red lines are drawn at rank 72, showing the lowest quintile in the sample. Note that while many couples are in the lowest quintile by both the husband and wife's reports, many more are not. Table 3.7 shows this fact numerically.

Figure 3.7: Scatter Plot of Principal Component Scores



Notes: Figure shows scatter plot of the husband's principal component score by the wife's principal component score. Coefficients were calculated for the genders separately, shown in Table 3.8.

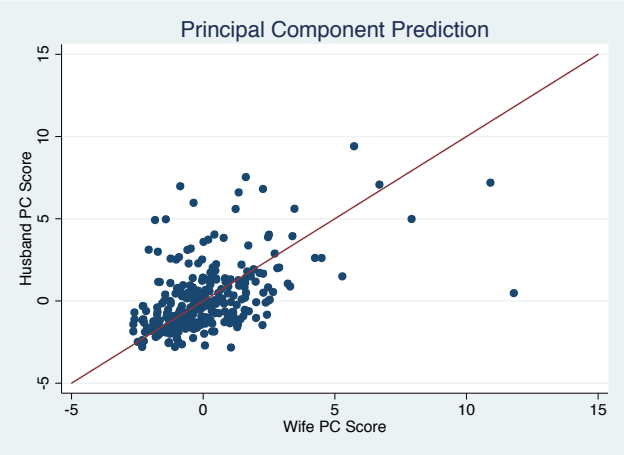
Figure 3.8: Scatter Plot of Ranks by Principal Component Score



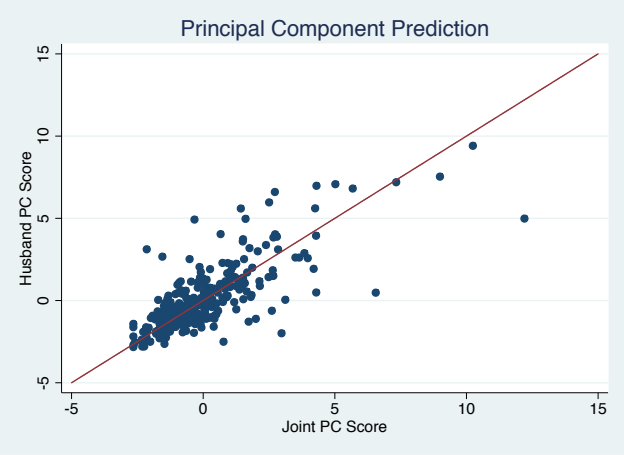
Notes: Figure shows scatter plot of the household's rank in the sample of 360 households by principal component score, split by husband and wife's reports. Principal Component Score Coefficients were calculated for the genders separately, shown in Table 3.8. The red lines show the bottom quintile. Note that while some couples are in the lowest quintile by both the husband and wife's report, many more are not. Table 3.9 shows this fact numerically.

Figure 3.9: Scatter Plot of Principal Component Scores, Joint Report

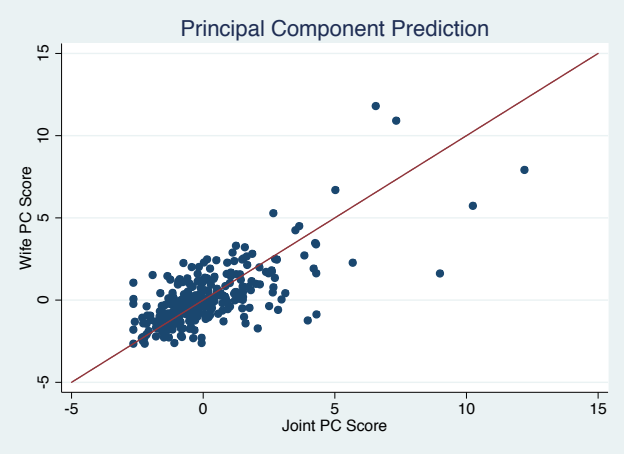
(a) Husband v. Wife



(b) Husband v. Joint Report



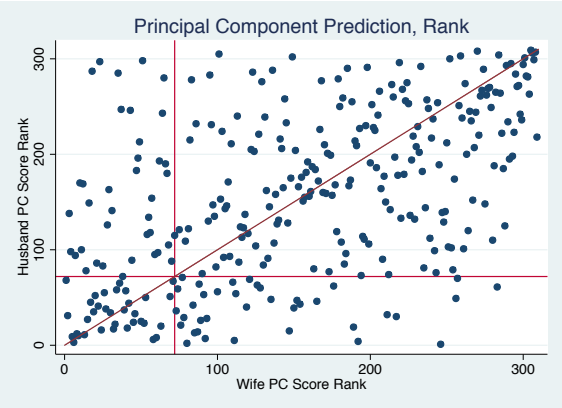
(c) Wife v. Joint Report



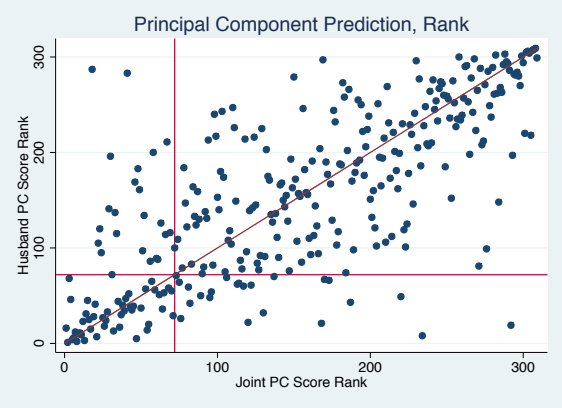
Notes: Figure shows scatter plots of the husband's, wife's, and endline principal component scores. Coefficients were calculated for the genders and endline separately, shown in Table 3.11.

Figure 3.10: Scatter Plot of Ranks by Principal Component Score, Joint Report

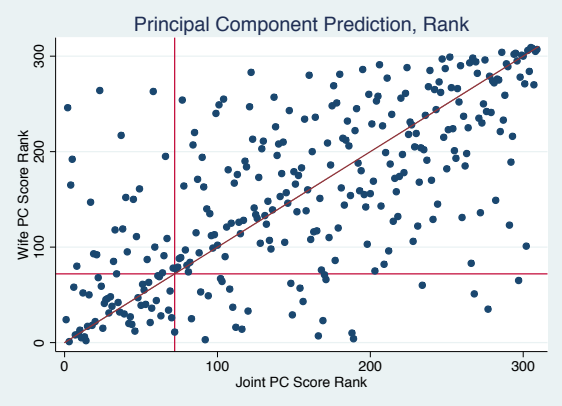
(a) Husband v. Wife



(b) Husband v. Joint Report



(c) Wife v. Joint Report



Notes: Figure shows scatter plot of the household's rank in the sample of 309 households in the joint report sample by principal component score, split by husband's, wife's, and joint reports. Principal Component Score Coefficients were calculated for the genders and joint report separately, shown in Table 3.11. The red lines show the bottom quintile. Note that while some couples are in the lowest quintile by both the husband and wife's report in Panel a, many more are not. When comparing the husband's report to the joint report, or the wife's report to the joint report, more couples are categorized in the lowest quintile by both reports. Table 3.12 shows this fact numerically.

3.11 Tables

Table 3.1: DHS 2008/9, Nyanza Province: Relationship of Respondent to Household Head

	Total	**Male Respondent**	**Female Respondent**
Head	58%	87%	45%
Spouse	32%	0%	46%
Child/In-Law	7%	9%	6%
Grandchild	1%	1%	1%
Parent/In-Law	0%	0%	0%
Sibling	1%	1%	1%
Other	1%	1%	1%
Total	1314	30.67%	69.33%

Notes: Table shows the relationship of the respondent to the head of the household in the unweighted sample in the Nyanza Province, and split by whether the respondent is a male or female.

Table 3.2: DHS: Summary Statistics by Gender of Respondent, UNWEIGHTED

	Full Sample	**Male Respondent Male Headed Household**	**Female Respondent Male Headed Household**	***t-stat***
Age of Respondent	38.47	41.61	32.18	*9.16*
	(16.42)	(16.78)	(11.88)	
Education of Respondent	7.18	8.33	7.43	*3.45*
	(4.01)	(4.01)	(3.39)	
Age of Head	43.86	43.43	41.84	*1.44*
	(16.41)	(16.55)	(14.91)	
Education of Head	7.37	8.34	8.57	*-0.82*
	(4.42)	(4.1)	(3.94)	
Number in Household	4.56	4.1	5.49	*-8.07*
	(2.43)	(2.65)	(2.24)	
Number of Children in Household	2.2	1.7	2.74	*-8.3*
	(1.8)	(1.8)	(1.8)	
Age of Youngest In Household	4.03	4.35	2.83	*4.53*
	(4.32)	(4.4)	(3.54)	

Notes: Table shows demographic summary statistics in DHS Kenya 2008/9, in the UNWEIGHTED sample in the Nyanza Province. The first column shows statistics for the full sample. The second and third columns show information for male-headed households split by the gender of the respondent of the household survey. The fourth column shows a Welch's t-statistic of the difference between male and female respondent summary statistics.

Table 3.3: Sample Summary Statistics by Gender of Respondent: Demographic and Financial Characteristics

Variable	**Men**	**Women**
Age of Respondent	45.75	35.89
	(16.33)	(13.54)
Education	7.91	6.49
	(3.66)	(3.52)
Working?	0.54	0.35
	(0.5)	(0.48)
Expenditures	2237	1922
	(2768)	(1905)
Expenditures per HH member	521.7	422.8
	(809)	(523.6)
Number in HH	5.29	5.29
	(2.17)	(2.17)
N	360	360

Notes: Table shows demographic summary statistics for matched pairs of husbands and wives in my data. Working status is positive if the respondent reported income from work over the previous week. Expenditures are the respondent's report of their own and their spouse's expenditures over the previous week, excluding educational expenditures. Number of members in the household is the number of people who ate from the cooking pot last night.

Table 3.4: Sample Summary Statistics by Gender of Respondent: Asset Reports

	Mean (Std.Dev)		t-stat	% Couples Disagree	Conditional Mean Difference	Only Husband Reports	Only Wife Reports
Asset	**Husbands**	**Wives**					
Own House?	0.790 (0.410)	0.800 (0.400)	*-0.33*	9	1	4	5
Iron Roof?	0.670 (0.470)	0.680 (0.470)	*-0.29*	13	1	6	7
Bicycles	0.950 (0.780)	0.780 (0.620)	*3.24*	34	1.24	14	7
Motorcycles	0.100 (0.360)	0.0500 (0.220)	*2.25*	7	1.25	5	2
Cattle	1.140 (1.640)	0.990 (1.540)	*1.27*	37	1.97	12	7
Sheep	0.650 (1.490)	0.510 (1.060)	*1.45*	24	2.18	7	8
Goats	0.510 (1.190)	0.400 (0.970)	*1.36*	19	1.97	7	4
Chickens	6.560 (9.460)	5.260 (14.04)	*1.46*	75	6.51	9	8
Watches	0.610 (0.750)	0.500 (0.620)	*2.14*	39	1.15	17	12
Radios	0.990 (0.620)	0.880 (0.500)	*2.62*	30	1.15	12	8
TVs	0.240 (0.470)	0.180 (0.410)	*1.83*	16	1.05	10	5
Stoves	0.470 (0.580)	0.390 (0.530)	*1.93*	30	1.08	16	11
Phones	1.340 (0.870)	1.350 (0.690)	*-0.17*	32	1.25	2	7
Maize (KGs)	58.29 (118.4)	36.74 (92.43)	*2.72*	66	72.9	22	10
Beans (KGs)	9 (24.62)	3.660 (10.50)	*3.79*	42	21.48	23	8
Rice (KGs)	0.120 (1.280)	0.0600 (0.490)	*0.83*	3	5.08	2	1

Notes: The first and second columns show means and standard deviations for men and women separately. The third column shows the Welch's t-test of a difference in means across genders. The fourth column shows the percentage of couples that differ in their asset reports. The fifth column shows the mean absolute difference in couples that disagree. The sixth column shows the percentage of couples in which only the man reports the asset present, while the last column shows the percentage of couples in which only the woman reports the asset present.

Table 3.5: OLS Regressions: Expenditures per Household Member on Assets

	Pooled	**Men**	**Women**	**Difference between Men and Women**	
Own House?	-181.3***	-220.1*	-160.4*		
	(67.95)	(117.5)	(82.61)		
Iron Roof?	-53.60	-124.6*	-16.47		
	(48.30)	(75.38)	(51.46)		
Bicycles	37.07	30.30	40.68		
	(40.35)	(61.44)	(43.69)		
Motorcycles	-156.2*	-147.8*	-31.33		
	(92.19)	(89.19)	(104.3)		
Cattle	79.20	92.00	53.94*		
	(54.55)	(65.80)	(29.53)		
Sheep	-33.36	-45.19	5.409		
	(33.95)	(34.56)	(38.62)		
Goats	16.17	32.52	-5.741		
	(25.55)	(36.35)	(20.70)		
Chickens	-1.436	-4.479	0.0764		
	(1.544)	(3.676)	(1.812)		
Watches	0.551	71.84	-30.48		
	(41.52)	(54.02)	(45.53)		
Radios	-18.79	-7.482	-56.71		
	(35.91)	(59.22)	(44.75)		
TVs	178.2**	255.4**	15.11	*	
	(84.33)	(127.8)	(69.91)		
Stoves	79.25	88.51	94.08*		
	(51.98)	(80.77)	(55.95)		
Phones	76.39*	63.60	86.52*		
	(40.87)	(63.59)	(44.81)		
KGs Maize	1.075**	0.136	2.166**	**	
	(0.523)	(0.311)	(0.943)		
KGs Beans	-0.786	1.387	-4.452	*	
	(1.691)	(1.645)	(3.006)		
KGs Rice	10.35	-11.94	170.7		
	(31.63)	(19.66)	(171.8)		
Constant	931.4***	1,417***	566.1**		
	(299.7)	(545.7)	(232.3)		
Observations	720	360	360		
R-squared	0.197	0.215	0.345		
Mean		521.7***	422.8***	Difference	-98.91*
		(43.82)	(28.24)		(52.13)
Blinder-Oaxaca Decomposition					
Asset	-43.79*	Asset	92.85	Asset	-3.035
Endowments	(24.72)	Coefficients	(182.4)	Interactions	(31.55)
Demographic	-48.90	Demographic	819.9*	Demographic	-65.24
Endowments	(116.9)	Coefficients	(468.9)	Interactions	(135.3)

Notes: *** p<0.01, ** p<0.05, * p<0.1 OLS regressions of the respondent's report of their and their spouse's expenditures per household member over the previous week on the respondent's report of assets in the household. Number of household members is the number of people who ate from the cooking pot last night. Regressions include demographic controls for age, age squared, education, and an indicator of employment, for both the respondent and the respondent's spouse. Expenditures include food, clothing, household items, and transportation, but exclude educational expenses. The third column report whether the male and female coefficients are statistically different in a pooled regression (standard errors clustered at the couple level). The lower panel shows a Blinder-Oaxaca decomposition.

Table 3.6: Husband and Wife Predicted Expenditure Categories

		Wife				
		0-700 KSH	701-1400 KSH	1401-2100 KSH	2101+ KSH	Total
Husband	0-700 KSH	66.4	3.1	0.3	0.3	70
	701-1400 KSH	23.9	3.6	0.3	0	27.8
	1401-2100 KSH	0.8	0.6	0	0.3	1.7
	2101+ KSH	0	0.6	0	0	0.6
	Total	91.1	7.8	0.6	0.6	100

Notes: Table shows the percent of the sample in each cell, husband's predicted expenditures per household member by wife's predicted expenditures per household member. 700KSH is equivalent $1 per day per capita. Predicted expenditures were generated using OLS regressions of the respondent's report of total household expenditures per household member (except educational expenditures) on the respondent's report of asset holdings. Number of household members is the number of people who ate from the cooking pot last night. Demographic controls for age, age squared, education, and an indicator for employment for both the respondent and the respondent's spouse are included. Regressions for predicted expenditures were run for each gender separately, shown in Columns 2 and 3 of Table 3.5.

Table 3.7: Husband and Wife Predicted Expenditure Rank Quintiles

		Wife's Rank				
		1st Quintile	**2nd Quintile**	**3rd Quintile**	**4th Quintile**	**5th Quintile**
Husband's Rank	**1st Quintile**	8.1	5.6	3.6	1.4	1.4
	2nd Quintile	6.7	5.6	3.1	2.8	1.9
	3rd Quintile	2.5	5.3	5.8	3.6	2.8
	4th Quintile	1.1	2.2	4.4	6.7	5.6
	5th Quintile	1.7	1.4	3.1	5.6	8.3

Notes: Table show the percent of the sample in each category. Rank determined by predicted expenditures per household member, which were generated using OLS regressions of the respondent's report of total household expenditures per household member (except educational expenditures) on the respondent's report of asset holdings. Number of household members is the number of people who ate from the cooking pot last night. Demographic controls for age, age squared, education, and an indicator for employment for the respondent and the respondent's spouse were included. Regressions for predicted expenditures were run for each gender separately, shown in Columns 2 and 3 of Table 3.5.

Table 3.8: First Principal Component Coefficients

Asset	**Pooled**	**Men**	**Women**
Own House?	-0.04	-0.03	-0.03
Iron Roof?	0.16	0.15	0.17
Bicycles	0.34	0.34	0.31
Motorcycles	0.18	0.20	0.13
Cattle	0.29	0.28	0.31
Sheep	0.20	0.19	0.21
Goats	0.11	0.11	0.10
Chickens	0.28	0.31	0.30
Watches	0.33	0.32	0.31
Radios	0.30	0.29	0.30
TVs	0.30	0.29	0.30
Stoves	0.25	0.26	0.23
Phones	0.28	0.29	0.24
KGs Maize	0.31	0.31	0.30
KGs Beans	0.30	0.27	0.34
KGs Rice	0.06	0.04	0.16

Notes: Table shows the first principal component coefficients for an asset index. The first column pools male and female reports, while the last two columns split the sample by gender.

Table 3.9: Husband and Wife Principal Component Score Rank Quintiles

		Wife's Rank				
		1st Quintile	**2nd Quintile**	**3rd Quintile**	**4th Quintile**	**5th Quintile**
Husband's Rank	**1st Quintile**	9.4	5.6	2.2	1.9	0.8
	2nd Quintile	4.4	5.8	4.2	3.1	2.5
	3rd Quintile	2.5	4.4	6.1	4.4	2.5
	4th Quintile	1.7	3.1	4.7	5.6	5.0
	5th Quintile	1.9	1.1	2.8	5.0	9.2

Notes: Table shows the percent of the sample in each category. Rank determined by principal component score, split by husband and wife's reports. Coefficients were calculated for the genders separately, shown in Table 3.8.

Table 3.10: Joint Report Asset Summary Statistics

	Mean (Std.Dev)			Husbands v. Joint Wives v. Joint	Pct. Joint Match Husband Only : Wife Only Pct. Joint Match Both : Neither	Pct. Higher (Cond. Mean) Pct. Lower (Cond. Mean)	Pct. Higher (Cond. Mean) Pct. Lower (Cond. Mean)
	Husbands	**Wives**	**Joint**	*t-stats*		**Husbands**	**Wives**
Bicycles	0.97	0.79	0.94	*0.52*	19.4 : 10.7	10 (1.27)	7 (1.05)
	0.76	0.61	0.67	*-2.91*	62.5 : 7.4	8 (1.12)	20 (1.1)
Motorcycles	0.1	0.05	0.07	*1.12*	2.6 : 3.6	3 (1.55)	1 (1)
	0.38	0.22	0.28	*-0.99*	92.2 : 1.6	2 (1.4)	3 (1.11)
Cattle	1.13	0.99	1.08	*0.38*	16.2 : 12.3	15 (1.7)	14 (1.88)
	1.59	1.55	1.66	*-0.7*	57 : 14.6	12 (1.78)	17 (1.91)
Sheep	0.66	0.52	0.55	*0.98*	10 : 9.7	10 (2)	9 (1.61)
	1.51	1.06	1.27	*-0.32*	72.5 : 7.8	7 (1.62)	9 (2.07)
Goats	0.46	0.37	0.42	*0.48*	6.8 : 7.4	7 (2.14)	5 (2)
	1.08	0.87	0.99	*-0.67*	79.9 : 5.8	6 (1.7)	8 (1.72)
Chickens	6.61	5.22	6.4	*0.22*	20.7 : 23.6	34 (5.15)	23 (3.46)
	9.94	14.97	13.88	*-1.02*	18.8 : 36.9	27 (5.56)	35 (5.7)
Watches	0.61	0.49	0.6	*0.17*	18.4 : 15.5	15 (1.1)	12 (1.05)
	0.71	0.61	0.73	*-2.03*	52.1 : 13.9	14 (1.19)	20 (1.23)
Radios	1.01	0.86	0.99	*0.41*	17.2 : 11.3	12 (1.11)	9 (1)
	0.61	0.5	0.61	*-2.9*	61.8 : 9.7	9 (1.1)	18 (1.22)
TVs	0.25	0.17	0.22	*0.81*	8.7 : 7.4	7 (1.05)	4 (1)
	0.46	0.39	0.46	*-1.46*	80.6 : 3.2	4 (1.08)	8 (1.04)
Stoves	0.44	0.37	0.44	*0*	12.6 : 16.2	13 (1.02)	8 (1.04)
	0.56	0.53	0.57	*-1.58*	62.1 : 9.1	12 (1.08)	14 (1.07)
Phones	1.31	1.32	1.36	*-0.69*	11.7 : 16.2	12 (1.29)	11 (1.06)
	0.83	0.69	0.96	*-0.59*	62.1 : 10	14 (1.49)	11 (1.45)
Maize (KGs)	60.22	37.45	37.76	*2.42*	11.7 : 21	45 (67.93)	27 (45.15)
	125.3	97.82	104	*-0.04*	29.8 : 37.5	14 (53.73)	22 (58.69)
Beans (KGs)	8.96	3.62	4.7	*2.45*	7.4 : 19.7	29 (19.2)	13 (12.03)
	24.69	10.66	17.94	*-0.91*	55.3 : 17.5	8 (16.44)	12 (21.13)
Rice (KGs)	0.15	0.06	0.07	*0.97*	0.3 : 2.3	2 (6)	1 (4)
	1.38	0.52	0.43	*-0.26*	94.8 : 2.6	3 (2.25)	2 (1.43)

Notes: The first and second columns show means and standard deviations for baseline male and female reports for the subsample with complete endline data. The third column shows endline statistics. The fourth column shows the Welch's t-test of a difference in means across between the baseline and endline statistics, for men in the first row and women in the second. The top line of the fifth column shows the percentage of households for which the joint report matches only the husband's : wife's report. The second line of the fifth column shows the percentage of households for which the joint report matches both : neither of the husband's and wife's report. The sixth column shows the percentage of men's reports that are higher (lower) than the endline, with the conditional mean absolute difference in parentheses. The final column shows the percentage of women's reports that are higher (lower) than the endline, with the conditional mean absolute difference in parentheses.

Table 3.11: First Principal Component Coefficients, Joint

Assets	Men Baseline	Women Baseline	Joint
Bicycles	0.34	0.32	0.33
Motorcycles	0.21	0.15	0.10
Cattle	0.30	0.33	0.32
Sheep	0.20	0.22	0.16
Goats	0.12	0.15	0.12
Chickens	0.32	0.31	0.26
Watches	0.31	0.30	0.32
Radios	0.28	0.29	0.30
TVs	0.27	0.26	0.26
Stoves	0.27	0.21	0.22
Phones	0.27	0.23	0.31
KGs Maize	0.33	0.31	0.34
KGs Beans	0.32	0.37	0.33
KGs Rice	0.04	0.16	0.23

Notes: Table shows the first principal components for an asset index. The first two columns show coefficients for male and female reports at baseline, for only the households with complete endline data. The last column shows the index coefficient for the endline reports.

Table 3.12: Husband, Wife, and Joint Report Principal Component Rank Quintiles

		Wife's Rank				
		1st Quintile	**2nd Quintile**	**3rd Quintile**	**4th Quintile**	**5th Quintile**
Husband's Rank	**1st Quintile**	9.4	5.8	2.3	1.6	0.6
	2nd Quintile	4.5	6.1	3.9	3.2	2.3
	3rd Quintile	3.2	3.2	6.8	4.5	2.3
	4th Quintile	1.3	3.2	4.2	5.8	5.5
	5th Quintile	1.3	1.6	2.9	4.9	9.4

		Joint Report Rank				
		1st Quintile	**2nd Quintile**	**3rd Quintile**	**4th Quintile**	**5th Quintile**
Husband's Rank	**1st Quintile**	12.9	4.9	0.6	1	0.3
	2nd Quintile	3.6	7.1	6.5	2.3	0.6
	3rd Quintile	1.9	5.5	7.4	4.2	1
	4th Quintile	0.6	2.6	4.2	8.1	4.5
	5th Quintile	0.6	0	1.3	4.5	13.6

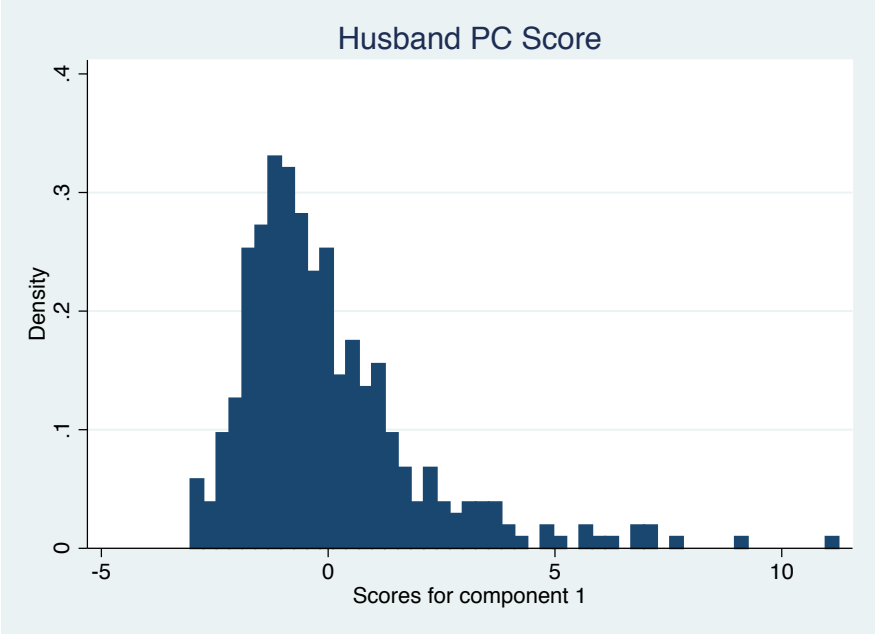
		Joint Report Rank				
		1st Quintile	**2nd Quintile**	**3rd Quintile**	**4th Quintile**	**5th Quintile**
Wife's Rank	**1st Quintile**	12	4.5	1.6	1	0.6
	2nd Quintile	4.5	7.8	4.5	1.9	1.3
	3rd Quintile	1.6	3.9	7.1	5.8	1.6
	4th Quintile	1	2.6	4.9	6.5	5.2
	5th Quintile	0.6	1.3	1.9	4.9	11.3

Notes: Table shows the percent of the sample in each category. Rank determined by first principal component scores. Coefficients for the scores were determined for each gender and the joint report separately, shown in Table 3.11.

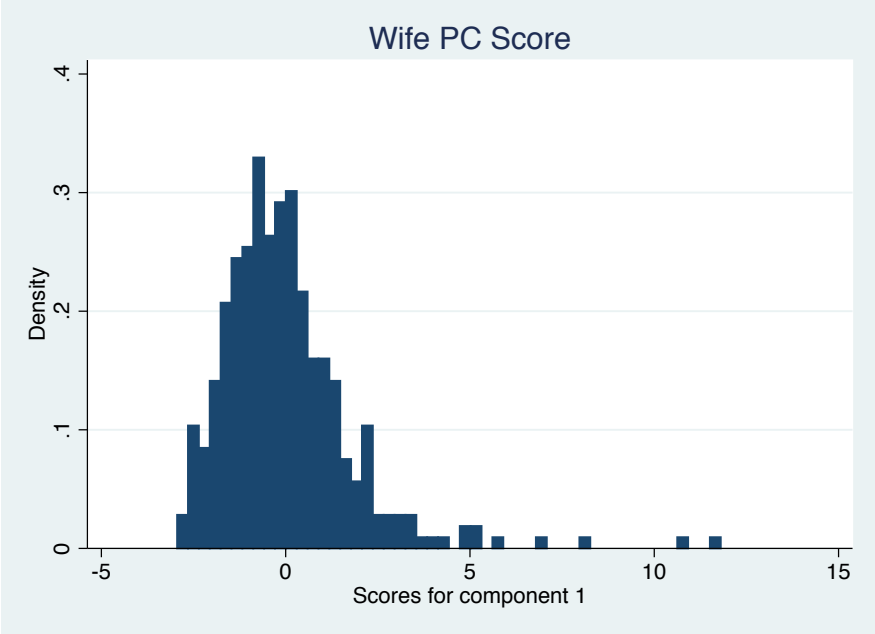
3.12 Additional Figures

Figure 3.11: Histogram of Principal Component Scores

(a) Men



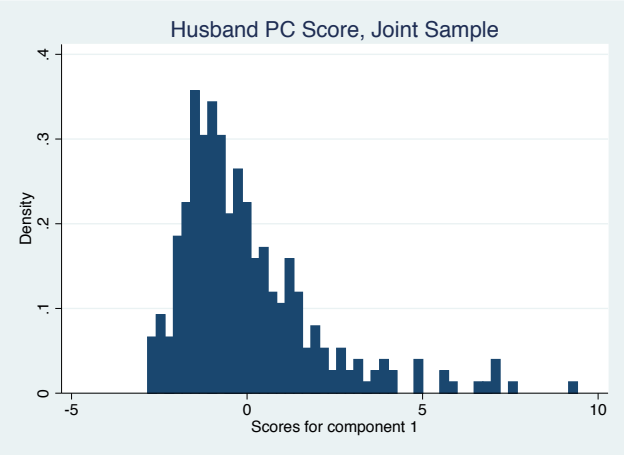
(b) Women



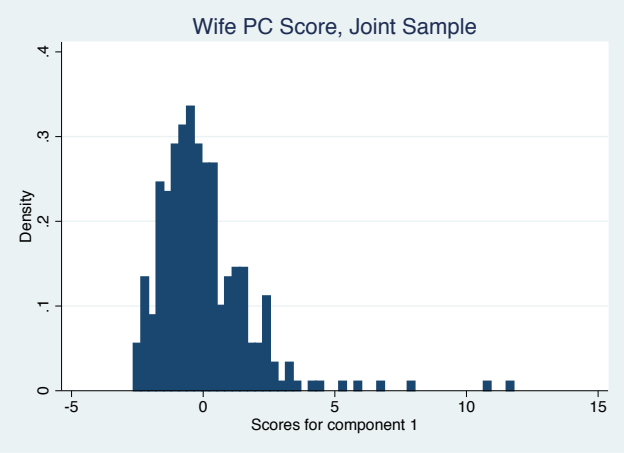
Notes: Figures show histograms of husbands' and wives' first principal component scores. Note the lack of clustering or truncation.

Figure 3.12: Histogram of Principal Component Scores, Endline

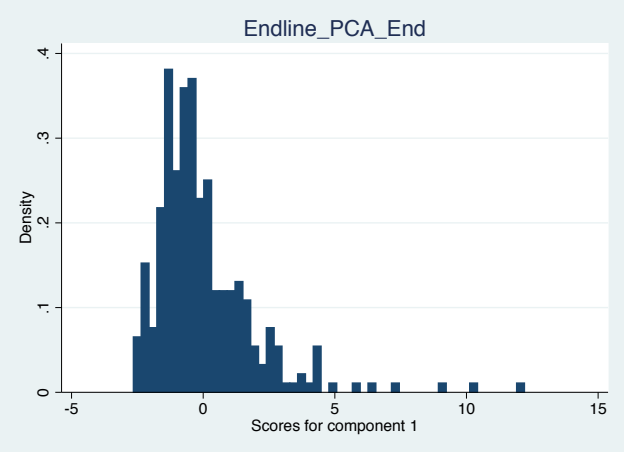
(a) Men



(b) Women



(c) Endline



Notes: Figures show histograms of husbands', wives', and endline report first principal component scores. Note the lack of clustering or truncation.

APPENDICES

APPENDIX A

Baseline Survey

Baseline: Book 1-Consent and Personal Information-Version U-Eng

IPA-Hoel Projects
Married Couple Decision Making (MCDM)
September 23, 2011

Consent

Hello, how are you? My name is [...] from IPA, which is a research organization from Busia town. Today I have visited you so that we can talk to you about the research that we are doing. It is a research about married people in Kenya, and how they make decisions in their home. We will talk about decisions about food, money, farming, and other household matters. This survey will take one hour. After completing I will give you a small gift to thank you for your time and for helping us in this survey. You will also be eligible to receive a larger cash transfer.

I will also welcome you so that you can help in the second survey next week. If you choose to be in the survey for next week, the survey will also take about one hour and I will give you a small gift to thank you for your time and participation.

The people that we work with will talk to your spouse also. Your spouse will be interviewed while he/she is alone today. In the second survey, we will first talk with each person alone, then later on we will talk with both of you together in the last survey.

I will not tell anyone the things that we will talk about with you in the first private survey. I will not tell your husband/wife what you say in the private survey. The people doing the research have taken the appropriate steps to ensure that no private information gets out to your community. However, there is a chance that information might get outside. In order to keep this information confidential, I will talk with you alone. I will also write your name only on the first packet of papers, and keep it away from the others as quick as possible.

After your own private survey, we will play a few games. Most of these games will be secret. For a few, I may tell your husband/wife how you play. I will be sure to tell you which games are secret and which games are public to your husband/wife.

Feel free in talking with me. If there is a question that you dont want to answer, that is ok. Your answers will not interfere with any assistance that IPA would like to give to your village or to your family. If you are not comfortable to answer any question, you are free not to answer it. You will still receive the small gift to thank you for your time and participation.

If you have any question about the research, you can come to our office in Busia and we shall connect you with Jessica Hoel. She is a doctoral student at the University of Michigan in America and she is the director of this project. This research will be one of the papers that will make her complete her education. Her work is supervised by David Lam, PhD. The IPA office can also help you to connect with the University of Michigan Behavioral Sciences Review Board or IPA Kenya Institutional Review Board which are seeing to it that this research is done in as good a way as possible.

We thank you very much for being in this research, however being in this research is your choice.

A.1	Respondent ID	|__|__|__|__|__|__|
A.2	Are you willing to participate? (*1=yes, 2=no*)	[ ]

Respondent Identifying Information

A.3	Respondent ID	|__|__|__|__|__|
A.4	Name	_____ (First Name / Middle Name / Last Name)
A.5	Date of Interview	|__|__|/|__|__|/|__|__|__|__| | *d*| *d*|/| *m*| *m*|/| *y*| *y*| *y*| *y*|
A.6	Time Stamp	|__|__| : |__|__|
A.6	Day of Week *(1=Mon, 2=Tue, 3=Wed, 4=Thu, 5=Fri)*	_____
A.7	Town	_____
A.8	Village	_____
A.9	Sub-Location	_____
A.10	Interviewer ID/Name	|__|__|__|__| _____

To be completed at the time of data entry

First Entry

A.11	Data Entry Person ID:	|__|__|__|__|
A.12	Data Entry Person Name:	_____
A.13	Comments on First Data Entry:	

Second Entry

A.14	Data Entry Person ID:	|__|__|__|__|
A.15	Data Entry Person Name:	_____
A.16	Comments on Second Data Entry:	

FO Comments page 2: _____

B Personal Information

First, I'd like to begin by asking you a bit about yourself.		
B.1	FO: Is the respondent male? (*1=yes, 2=no*)	[ ]
B.2	How old are you in full years? IF DON'T KNOW FULL YEARS, what year were you born?	[ ]
B.3	What is your highest level of education? (*0=None, 22=ECD, 1=Class 1, 2=Class 2, 3=Class 3, 4=Class 4, 5=Class 5, 6=Class 6, 7=Class 7, 8=Class 8, 9=Form 1, 10=Form 2, 11=Form 3, 12=Form 4, 14=SOME College, University or Polytechnic, 15=COMPLETED College, University or Polytechnic*) (*USE CODEBOOK*)	[ ]
B.4	What is your religion? (*1=Christian, 2=Muslim, 3=Other*)	[ ]
B.5	What is your marital status? *1=Single, 2=Living with Partner, 3=Married, 4=Inherited, 5=Separated, 6=Divorced, 7=Widowed, 777=Other*	[ ]
B.6	IF MALE, how many wives do you have? IF FEMALE, how many wives does your husband have?	[ ]
B.7	What is your husband/wife's first name?	
B.8	What is your husband/wife's middle name?	
B.9	What is your husband/wife's last name?	
B.10	How old were you when you first moved in with your current partner? *(Age in full years or YEAR)*	[ ]
B.11	How old were you when you married your current partner? *(Age in full years or year)*	[ ]
B.12	How many living children do you have with your current partner?	[ ]
B.13	How many living children do you have in total? (both with current partner and with others)	[ ]
B.14	How many living children does your spouse have in total? (both with current partner and with others)	[ ]
B.15	How old is your oldest child with your current partner? *(Age in full years or YEAR of birth)*	[ ]
B.16	How old is your oldest child? *(Age in full years or YEAR of birth)*	[ ]
B.17	How old is your youngest child? *(Age in full years or YEAR of birth)*	[ ]
B.18	Who lives on the compound where you stay currently? Is it only your family and close friends or is it neighbors too? (*1=family and friends, 2=neighbors too*)	[ ]
B.19	Did you cook the food you ate for dinner last night? IF NO, skip to 21. (*1=yes, 2=no*)	[ ]
B.20	How many people ate the food you cooked for dinner last night?	[ ]
B.21	Did your spouse cook the food you ate for dinner last night? (*1=yes, 2=no*)	[ ]
B.22	What was the longest stretch that you were absent from the household over the last 12 months? (*0=Never absent, 1=less than 3 months, 2=more than 3 months*)	[ ]

FO Comments page 3: _____

C Experiment Check

C.0	Do you know anyone who has participated in this study? If NO, skip to next section. (*1=yes, 2=no*)	[ ]

	A. First Name (*888= Don't have, 999= Don't know*)	B. Middle Name (*888= Don't have, 999= Don't know*)	C. Last Name (*888= Don't have, 999= Don't know*)	D. Relationship (Use codes below)	E. (*1=male, 2=female*)	F. Town they live in (*1=Sega, 2=Sigomere, 3=Ugunja, 4=Ukwala, 777=Other*)	G. How many times have they visited with us? (**FO**: Please press for the respondent's best guess)	H. How much money did they receive in total? (*999=Don't know*)
C.1								
C.1	I. What did they tell you about this study?							
C.2								
C.2	I. What did they tell you about this study?							
C.3								
C.3	I. What did they tell you about this study?							
C.4								
C.4	I. What did they tell you about this study?							
C.5								
C.5	I. What did they tell you about this study?							
C.6								
C.6	I. What did they tell you about this study?							

Relationship Codes: 1=Spouse, 2=Parent/Parent-in-Law, 4=Child, 5=Sibling/Sibling-in-Law, 6=Aunt/Uncle, 7=Niece/Nephew, 8=Grandparent, 9=Grandchild, 10=Adopted Child, 11=Cousin, 12=Other Relative

FO Comments page 4: ____________________

Baseline : Book 2 - Individual Survey - Version U-Eng

IPA-Hoel Projects
Married Couple Decision Making (MCDM)
September 23, 2011

Respondent Identifying Information

D.1	Respondent ID	|__|__|__|__|__|
D.2	Date of Interview	|__|__|/|__|__|/|__|__|__|__| | *d*| *d*|/| *m*| *m*|/| *y*| *y*| *y*| *y*|
D.3	Time Stamp	|__|__| : |__|__|
D.3	Interviewer ID/Name	|__|__|__|__| _____

To be completed at the time of data entry
First Entry

D.4	Data Entry Person ID:	|__|__|__|__|
D.5	Data Entry Person Name:	_____
D.6	Comments on First Data Entry:	

Second Entry

D.7	Data Entry Person ID:	|__|__|__|__|
D.8	Data Entry Person Name:	_____
D.9	Comments on Second Data Entry:	

E Assets and Wealth

Now I would like to ask you about the things your family owns. Please tell me about the place where you currently stay, and the things you, your spouse, and your children own. You should include things at your current place and another home, but be sure to tell me about only things that YOU own.

E.1	Does your family own the house you currently stay in? (*1=yes, 2=no*)	[ ]
E.2	How long have you been staying in your current home? (*1=less than 3 months, 2=3-6 months, 3=6-12 months, 4=1-5 years,5=5-10 years, 6=More than 10 years*)	[ ]
E.3	Does the house you sleep in now have an iron roof? (*1=yes, 2=no*)	[ ]
E.4	How many of the following items do you, your spouse, and your children own?	

	Item	Quantity		Item	Quantity
E.4.A	Bicycle		E.4.B	Sheep	
E.4.C	Motorcycle		E.4.D	Cattle	
E.4.E	Watch		E.4.F	Goats	
E.4.G	Radio		E.4.H	Chickens	
E.4.I	TV		E.4.J	Maize, Whole (KGs)	
E.4.K	Kerosene Stove		E.4.L	Beans (KGs)	
E.4.M	Cell Phones		E.4.N	Rice (KGs)	

F Decision Making

Now I would like to ask you about how you make decisions in your home. In every question, I would like you to give me one of these answers. (**FO: read options aloud**)

(1=I decide alone, 2= We decide, but I have the final word, 3=We decide together all of us, 4=We decide, but my spouse has the final word, 5=My spouse decides alone, 6=Someone different from us makes the decision, 7=Culture decides/it is just the way it is, 999=I don't know.)

F.1	Who decides on daily expenditure in your house (let's say what is bought from the market or what to cook)?	[ ]
F.2	Who decides how much you can give to your parents, relatives, friends, and neighbors?	[ ]
F.3	Who makes the decision on how much to use on the purchase of personal items (such as clothes, hair, makeups, etc.)?	[ ]
F.4	Who decides how much is spent on leisure, social life, and alcohol?	[ ]
F.5	Who makes the budget about how you spend in your family? (For example, how much to spend on vegetables, rent, medicine, education, etc.)	[ ]
F.6	Who is the primary financial decision maker in your household?	[ ]
F.7	Who makes decisions on how many children you should have?	[ ]
F.8	What is the biggest amount of money you feel comfortable using without asking your spouse? *(If he/she says that she can use any amount without asking, write "ANY." If he/she says they always talk first, write 0.)* (*999=don't know*)	[ ]KSH
F.9	If I were to ask your spouse what he/she thinks, what is the biggest amount your spouse would be comfortable with you spending without consulting first? *(If he/she says my spouse never wants to consult, write "ANY." But if he/she says that my spouse always wants to consult, write 0.)* (*999=don't know*)	[ ]KSH

FO Comments page 6: _____

G Expenditures and Transfers

Now I would like to ask you about your expenditures over the past 7 days. I will ask you about many different kinds of goods. For each, tell me how much you personally spent on that item. For example, if you purchased tomatoes yesterday for 20 KSH, you would tell me about it when I asked about tomatoes. But if you gave 20 KSH to your spouse and asked them to buy tomatoes for you, that would not be considered you making the purchase *personally*. Do you understand?

FO Instructions: First ask if the respondents has PERSONALLY purchased the item in column A and record the yes/no answer. If yes, fill in the rest of the row. If no, skip to column G to ask if the spouse purchased any of the item. When you have finished the page, check that you have filled a yes/no answer for all rows in columns A and G.

A. Did you buy any [ITEM] over the past 7 days? ONLY COUNT ITEMS THAT THE RESPONDENT PERSONALLY PURCHASED. If NO, skip to G.			B. How much did you spend in total?	C. Does your spouse know that you bought this item?	D. Did you benefit/eat from this purchase?	E. Did your spouse benefit/eat from this purchase?	F. Did your children benefit/eat from this purchase?	G. Did your husband/wife buy any [ITEM] over the past 7 days? If NO or D/K, skip to A.	H. How much did your husband/wife spend in total?
		(*1=yes, 2=no*)	KSH, 999=Don't Know	(*1=yes, 2=no*)	(*1=yes, 2=no*)	(*1=yes, 2=no*)	(*1=yes, 2=no*)	(*1=yes, 2=no, 999=Don't Know*)	KSH, 999=Don't Know
Cereals and Cereal products									
G.101	Rice								
G.102	Maize, Millet, and Sorghum								
G.103	Wheat, including flour								
G.104	Cost of grinding								
G.105	Bread, buns, cakes, biscuits, and spaghetti								
Tubers and Plantains									
G.106	Cassava, Sweet potatoes, Yams, Irish potatoes								
G.107	Cooking bananas, plantains								
Beans, Nuts, and Seeds									
G.108	Beans and Lentils								
G.109	Groundnuts, Cashew, almonds, and other nuts								
Fruits									
G.110	Ripe bananas, Mangos, avocados, and other fruits, and juices								
G.111	Sugarcane								

FO Comments page 7: __________

A. Did you buy any [ITEM] over the past 7 days? ONLY COUNT ITEMS THAT THE RESPONDENT PERSONALLY PURCHASED. If NO, skip to G.			B. How much did you spend in total?	C. Does your spouse know that you bought this item?	D. Did you benefit/eat from this purchase?	E. Did your spouse benefit/eat from this purchase?	F. Did your children benefit/eat from this purchase?	G. Did your husband/wife buy any [ITEM] over the past 7 days? If NO or D/K, skip to A.	H. How much did your husband/wife spend in total?
		(*1=yes, 2=no*)	KSH, 999=Don't Know	(*1=yes, 2=no*)	(*1=yes, 2=no*)	(*1=yes, 2=no*)	(*1=yes, 2=no*)	(*1=yes, 2=no, 999=Don't Know*)	KSH, 999=Don't Know
Vegetables									
G.112	Tomatoes								
G.113	Onions, Garlic, Carrots, Green Pepper, Other vitungu								
G.114	Sukuma, cabbage, kunde, and other green leafy vegetables								
Meat, fish, milk									
G.115	Goat, Beef, Pork, Chicken and other poultry								
G.116	Eggs								
G.117	Fish and seafood								
G.118	Fresh milk, Canned milk/milk powder								
Oils, fats, spices									
G.119	Cooking oil								
G.120	Butter, margarine, and other fat products								
G.121	Salt								
G.122	Sugar and Honey								
Beverages									
G.123	Tea and Coffee								
G.124	Bottled/canned soft drinks (soda, juice, water)								
G.125	Bottled beer, local brews, wine, and other alcohol								

FO Comments page 8: ______________________________

A. Did you buy any [ITEM] over the past 7 days? ONLY COUNT ITEMS THAT THE RESPONDENT PERSONALLY PURCHASED. If NO, skip to G.			B. How much did you spend in total?	C. Does your spouse know that you bought this item?	D. Did you benefit/eat from this purchase?	E. Did your spouse benefit/eat from this purchase?	F. Did your children benefit/eat from this purchase?	G. Did your husband/wife buy any [ITEM] over the past 7 days? If NO or D/K, skip to A.	H. How much did your husband/wife spend in total?
		(1=yes, 2=no)	KSH, 999=Don't Know	*(1=yes, 2=no)*	*(1=yes, 2=no)*	*(1=yes, 2=no)*	*(1=yes, 2=no)*	*(1=yes, 2=no, 999=Don't Know)*	KSH, 999=Don't Know
G.126	Full meals (breakfast, lunch, dinner) OUTSIDE THE HOUSE								
G.127	Barbecued meat, chips, roast bananas, snacks, sweets and ice-cream OUTSIDE THE HOUSE								
G.128	Tea and Coffee OUTSIDE THE HOUSE								
G.129	Charcoal/coal, Firewood, Kerosene, paraffin, Matches, lighters, candles, lamp/stove wicks, Batteries								
G.130	Laundry soap, toilet soap, toilet paper								
G.131	Personal care (Toothpaste, hair products, razor, perfumes, lotions, make-up, beauty salons)								
G.132	Clothing and shoes for respondent								
G.133	Clothing and shoes for respondent's spouse								
G.134	Clothing and shoes for children								
G.135	Linen, mattress, Kitchenware (Pots, dishes, utensils, cleaning items), Other household wares (baskets, brooms)								
G.136	Furniture, appliances (including phones), and repairs for same								

FO Comments page 9: ____________________

A. Did you buy any [ITEM] over the past 7 days? ONLY COUNT ITEMS THAT THE RESPONDENT PERSONALLY PURCHASED. If NO, skip to G.			B. How much did you spend in total?	C. Does your spouse know that you bought this item?	D. Did you benefit/eat from this purchase?	E. Did your spouse benefit/eat from this purchase?	F. Did your children benefit/eat from this purchase?	G. Did your husband/wife buy any [ITEM] over the past 7 days? If NO or D/K, skip to A.	H. How much did your husband/wife spend in total?
		(1=yes, 2=no)	KSH, 999=Don't Know	*(1=yes, 2=no)*	*(1=yes, 2=no)*	*(1=yes, 2=no)*	*(1=yes, 2=no)*	*(1=yes, 2=no, 999=Don't Know)*	KSH, 999=Don't Know
G.137	Modern medical care: Services and Medications								
G.138	Traditional medical care								
G.139	Water Treatment Products (WaterGuard, PUR, etc.)								
G.140	Mosquito Nets								
G.141	Cigarettes, tobacco, snuff								
G.142	Cellphone top-up cards and internet								
G.143	Transport (petrol, oil, fares for transport. Include transport to/from school or for medical care)								
G.144	Education for children (fees, uniform, equipment, excluding transport/food)								
G.145	Entertainment and recreation (newspapers, playing games, sports, going to the disco, etc.)								
G.146	Contributions to church and other religious organizations								
G.147	Ceremonies (wedding parties, funerals, dowries paid out)								
G.148	Livestock and livestock care (cows, chickens, goats, etc.)								
G.149	Farming Inputs (seeds, fertilizer, etc.)								

FO Comments page 10: ______________________________

Money Transferred from/to Self

FO Instructions: First fill in the proper days of the week.

Now I would like to ask you about money that you gave and received for things other than the purchase of food and goods and all the other things we already discussed. For money you gave, I'm interested in transfers to your husband/wife, transfers to other people, gifts, loans, and payments for services like child care, hair braiding, help on your farm, etc. For money you received, I'm interested in how much cash you received from your work, from your spouse, and from other sources. I will first ask about your transfers. Next, I will ask you the same questions of your spouse.

	I GAVE					**I RECEIVED**				
	A. Did you give any money [...]? (*1=yes, 2=no, 999= don't know/ don't remember*) **IF NO or D/K**, skip to F.	B. To Who? (*Use Person Codes Below*)	C. Amount (KSH, 999= Don't know)	D. For what reason? (*Use Reason Codes Below*)	E. Does your spouse know you gave this money? (*1=yes, 2=no*)	F. Did you receive any money [...]? (*1=yes, 2=no, 999= don't know/ don't remember*) **IF NO or D/K**, skip to A.	G. From Who? (*Use Person Codes Below*)	H. Amount (KSH, 999= Don't know)	I. For what reason? (*Use Reason Codes Below*)	J. Does your spouse know you got this money? (*1=yes, 2=no*)
Today:										
G.301										
G.302										
Yesterday:										
G.303										
G.304										
DAY:										
G.305										
G.306										
DAY:										
G.307										
G.308										
DAY:										
G.309										
G.310										
DAY:										
G.311										
G.312										
DAY:										
G.313										
G.314										

Person Codes: *1=Spouse, 2=Other Compound Member 3=Employer/Casual Employer, 4=Shopkeeper/Employee, 5=Customer, 6=Friend, 7=Relative (not on compound), 8=Neighbor, 777=Other, 999=Don't know*

Reason Codes: *1=To buy food/keep up the house, 2=Personal Consumption, 3=Goods I bought/sold, 4=Services I bought/sold, 5=Work I did, 6=Work someone did for me, 7=Business or Investment Profit, 8=Gift, 9=Merry-go-round payment or payout, 10=Loan, 11=Repayment of Loan, 777=Other, 999=Don't know*

FO Comments page 11:

Money Transferred from/to Spouse

FO Instructions: First fill in the proper days of the week.

Tell me about when your husband/wife last gave or received money, including from you.

	SPOUSE GAVE				SPOUSE RECEIVED			
	A. Did your spouse give any money [...]? (*1=yes, 2=no, 999= don't know/ don't remember*) **IF NO or D/K**, skip to F.	B. To Who? (*Use Person Codes Below*)	C. Amount (KSH, 999= Don't know)	D. For what reason? (*Use Reason Codes Below*)	F. Did your spouse receive any money [...]? (*1=yes, 2=no, 999= don't know/ don't remember*) **IF NO or D/K**, skip to A.	G. From Who? (*Use Person Codes Below*)	H. Amount (KSH, 999= Don't know)	I. For what reason? (*Use Reason Codes Below*)
Today:								
G.401								
G.402								
Yesterday:								
G.403								
G.404								
DAY:								
G.405								
G.406								
DAY:								
G.407								
G.408								
DAY:								
G.409								
G.410								
DAY:								
G.411								
G.412								
DAY:								
G.413								
G.414								

Person Codes: *1=Spouse (Respondent), 2=Other Compound Member 3=Employer/Casual Employer, 4=Shopkeeper/Employee, 5=Customer, 6=Friend, 7=Relative (not on compound), 8=Neighbor, 777=Other, 999=Don't know*

Reason Codes: *1=To buy food/keep up the house, 2=Personal Consumption, 3=Goods he/she bought/sold, 4=Services he/she bought/sold, 5=Work he/she did, 6=Work someone did for him/her, 7=Business or Investment Profit, 8=Gift, 9=Merry-go-round payment or payout, 10=Loan, 11=Repayment of Loan, 777=Other, 999=Don't know*

FO Comments page 12: ____________________

H Finances

Now I would like to ask you about you and your family's general finances.			
H.1	Are you paid wages or salary for work you do for your employer (NOT yourself), either at a full or part-time job? You are requested to add casual work like working on someone's land in this category, but don't add work done on your own land. (If NO, skip to 5) (*1=yes, 2=no*)	[	]
H.2	How much do you earn in a month from all of your employers? (*999=don't know*)	[	]KSH
H.3	Have you been self employed at all over the last 30 days? For example working on your own land, buying and selling goods, hairdressing, etc. (If NO, skip to 8) (*1=yes, 2=no*)	[	]
H.4	How much did you get last month from all SELF-EMPLOYMENT after subtracting expenses and business money? (*999=don't know*)	[	]KSH
H.5	How much **in total** did you earn last year, both salary and personal income? (*999=don't know*)	[	]KSH
H.6	How much did your husband/wife earn last year (both salary and SELF-EMPLOYMENT)? (*999=don't know*)	[	]KSH
Get money from Spouse			
H.7	How often does your spouse give you money? (*1=once or twice a year, 2=once a month, 3=twice a month, 4=once a week, 5=a few times a week, 6=once a day, 7=several times a day, 8888=Never; if NEVER, skip to 14*)	[	]
H.8	How much money did your spouse give you last? (*999=don't know*)	[	]KSH
Give money to Spouse			
H.9	How often do you give your spouse money? *1=once or twice a year, 2=once a month, 3=twice a month, 4=once a week, 5=a few times a week, 6=once a day, 7=several times a day, 888=Never; if NEVER, skip to next section*	[	]
H.10	How much money did you give your spouse last? (*999=don't know*)	[	]KSH

FO Comments page 13: _____

I Savings and Debts

I would like to ask you about savings you might have. I refer to savings you might have at home, entrusted to friends or relatives or deposited in a financial institution. These savings should be different from savings that you might have in animals or grain that you may have saved from the harvest.

	Respondent's Savings					Spouse's Savings		
	A. Where are these savings stored? (*Use Place Codes Below*, 888=Respondent has no such savings; if 888, skip to F)	B. What is the current balance on this account? (KSH)	C. If this account is joint with another person, who? (*Use Person Codes Below*)	D. Does your spouse know about these savings? (*1=yes, 2=no*) IF NO, skip to next.	E. Does your spouse know exactly how much is in this savings? (*1=yes, 2=no*)	F. Where are these savings stored? (*Use Place-Codes Below*, 888=Spouse has no such savings; if 888, skip to LOANS)	G. What is the current balance on this account? (KSH, *999= Don't Know*)	H. If this account is joint with another person, who? (*Use Person Codes Below*)
I.1 Largest Savings								
I.2 2nd Largest Savings								
I.3 3rd Largest Savings								
Person Codes: *0=One Person Alone, 1=Spouse, 2=Other Compound Member 3=Boss/Employer, 4=Customer, 5=Friend, 6=Relative (not on compound), 7=Neighbor, 8=ROSCA/Merry-go-round, 777=Other*								
Place Codes: *See below next table*								

Now I would like to ask about debts and credit. I am interested in any debts you currently still owe. I would like to know about debts of money and goods from financial institutions, moneylenders, input providers, friends, relatives, and neighbors.

	Respondent's Loans					Spouse's Loans			
	A. What source is this loan from? (*Use Place Codes Below*, 888=Respondent has no such loans; if 888, skip to F)	B. How much was the total amount of the original loan? (KSH)	C. What is the status of the loan? (*Use Status Codes Below*)	D. How much do you still owe? (KSH)	E. Does your spouse know about this loan? (*1=yes, 2=no*)	F. What source is this loan from? (*Use Place Codes Below*, 888=Spouse has no such loans; if 888, skip to next section)	G. How much was the total amount of the original loan? (KSH, 999= Don't know)	H. What is the status of the loan? (*Use Status Codes Below*)	I. How much does your spouse still owe? (KSH, 999=Don't know)
I.5 Largest Loan									
I.6 2nd Largest Loan									
I.7 3rd Largest Loan									
Loan Status Codes: *1=Fully paid off, 2=Partially paid off and still making payments, 3=Partially paid off and not making payments, 4=Not yet started making payments9=Don't know*									
Place Codes: *1=Bank, 2=Cooperative, 3=NGO/MFI, 4=ROSCA/Merry-go-round, 5=With a shopkeeper/Duka, 6=Employer, 7=In business or investment, 8=In the house or on person, 9=In phone, 10=Friend/family, 11=Money lender, 12=Post Office, 13=Government Agency, 14=Wholesaler, 15=Village or religious leader, 16=Other Community Group, 777=other*									

FO Comments page 14: ______________________________

Baseline: Book 3 - Games - Version U-Eng

IPA-Hoel Projects
Married Couple Decision Making (MCDM)
September 23, 2011

Respondent Identifying Information

J.1	Respondent ID	|__|__|__|__|__|
J.2	Date of Interview	|__|__|/|__|__|/|__|__|__|__| | *d*| *d*|/| *m*| *m*|/| *y*| *y*| *y*| *y*|
J.3	Time Stamp	|__|__| : |__|__|
J.3	Interviewer ID/Name	|__|__|__|__| _____

To be completed at the time of data entry
First Entry

J.4	Data Entry Person ID:	|__|__|__|__|
J.5	Data Entry Person Name:	_____
J.6	Comments on First Data Entry:	

Second Entry

J.7	Data Entry Person ID:	|__|__|__|__|
J.8	Data Entry Person Name:	_____
J.9	Comments on Second Data Entry:	

K Game Recording Sheet

K.1	SECRET STRANGER - Order Number:	

	Number of Caps	A. Caps Kept	B. Amount Kept	C. Caps Given	D. Amount Given	E. Number of times changed answer
K.2	5					
K.3	10					
K.4	25					

K.5	SECRET SPOUSE - Order Number:	

	Number of Caps	A. Caps Kept	B. Amount Kept	C. Caps Given	D. Amount Given	E. Number of times changed answer
K.6	5					
K.7	10					
K.8	25					

K.9	PUBLIC SPOUSE - Order Number:	

	Number of Caps	A. Caps Kept	B. Amount Kept	C. Caps Given	D. Amount Given	E. Number of times changed answer
K.10	5					
K.11	10					
K.12	25					

K.13	SPOUSE STRANGER - Order Number:	

	Number of Caps	A. Caps Kept	B. Amount Kept	C. Caps Given	D. Amount Given	E. Number of times changed answer
K.14	5					
K.15	10					
K.16	25					

K.17	STRANGER STRANGER - Order Number:	

	Number of Caps	A. Caps Kept	B. Amount Kept	C. Caps Given	D. Amount Given	E. Number of times changed answer
K.18	5					
K.19	10					
K.20	25					

FO Comments page 16: _____

L Games Debrief

Thank you for participating in the games! For the final section, I would like to ask you a few questions about your experience with the games.

L.1	Let's think about how your spouse played his/her games. How many tokens do you think they gave to you in the 10 token Public Spouse game? (*999=Don't know*)	[ ]	
L.2	How many tokens do you think they gave to you in the 10 token Secret Spouse game? (*999=Don't know*)	[ ]	
L.3	How much money do you think you will take home from the games in total? (*999=don't know*)	[ ]	KSH
L.4	How much money do you think your spouse will take home from the games in total? (*999=don't know*)	[ ]	KSH

FO Comments page 17: _____

M Conclusion

Thank you for your participation in this survey. Please accept this soap as a token of our appreciation.

READ CONCLUSION SCRIPT from slip you were given at the time of treatment assignment.

About 4 out of 10 women who participated in this study will receive a 500 shilling cash transfer, while 6 out of 10 will not receive the transfer. 4 out of 10 men will receive the transfer, while 6 out of 10 will not. A family is only eligible for one transfer.

Please remember to come back on the same day next week for the follow-up interview. You will receive a small gift then to thank you for your participation, and you can also pick up your winnings from the games we played today.

M.1	Time Stamp	|__|__| : |__|__| | *h*| *h*| : | *m*| *m*|
M.2	Did you read the conclusion script , including the bit about the cash transfer? (*1=yes, 2=no*)	[ ]
M.3	Did you give the respondent the gift of soap? (*1=yes, 2=no*)	[ ]
M.4	Did you give the respondent a cash transfer of 500KSH? (Check with the Banker if you are not sure if you are supposed to.) (*1=yes, 2=no*)	[ ]
M.5	Did you ask the respondent to sign the accounting sheet for their gift and/or cash transfer? (*1=yes, 2=no*)	[ ]
M.6	Did you remind the respondent about the follow-up interview next week? (*1=yes, 2=no*)	[ ]
M.7	Is there anything special Jessica should know about this interview or this respondent? (e.g. You don't believe the respondent is married, the respondent was hostile/not interested, etc.) (*1=yes, 2=no*)	[ ]
M.8	What should Jessica know?	
M.9	Which language did you primarily use to conduct this survey and script? *(1=Kiswahili, 2=Kiluhya, 3=Dholuo, 4=English, 5=Other)*	[ ]
M.10	In addition to the primary respondent, was anyone else present for some portion of the interview? *(0=No one, 1=Spouse of Respondent, 2=Another Adult Man from the compound, 3=Another Adult Woman from the compount, 4=Liguru/Guide, 5=Children, 6=Other*	[ ]

N Survey Quality Self-Check

N.1	There should be no blank fields; coded fields should have 888s if not applicable.Have you confirmed that there are no blank fields? (*1=yes, 2=no*)	[ ]
N.2	Is the respondent ID number written on the front page of every booklet? (*1=yes, 2=no*)	[ ]

FO Comments page 18: _____

APPENDIX B

Game Scripts

Note: The games were implemented with respondents by a trained native Dholuo speaker in Dholuo in an individual interview. The scripts were written in English with input from the field assistants, then forward and back-translated twice into Dholuo. The scripts shown here are in English. Dholuo translations are available on request.

INTRODUCTION TO GAMES

Thank you for your participation in the survey. Now I would like to invite you to participate in some games. First, I will give you some instructions for the game. You should feel free to ask me to repeat something if you dont catch it at first. After the instructions, I will ask you a few questions to check your understanding. Its ok if you dont answer the questions correctly at first; I will just repeat the instructions of the game.

GENERAL GAME INSTRUCTIONS

1. In these games you will have a chance to win real money. Jessica, the leader of this project, has arranged for the money. The money you win has come from Jessicas school so that she can complete this project.

2. These games you will play with a partner. In some games your partner will be your husband/wife. But in some of the games your partner will be a stranger.

3. You will make two types of decisions [hold up two fingers]; 1) secret decisions and 2) public decisions. For the secret decision, I will not tell anyone about your choices except Jessica, the leader of this project. For the public decision you make I will tell only your partner and Jessica, but no one else in your village.

4. Today we will play several different games over different amounts of money. One of these games will come true.

5. We will enter all of your games into the computer in the office. The computer will randomly decide which game comes true. We will then combine your choices with the choices of your partners, and together they will determine how much money you win.

6. You will receive your money next week when we come back for a follow up interview.

Now I would like to ask you a few questions to check your understanding of the instructions. If you dont understand some part, I will just repeat the instruction and that will be fine.

Questions about General Game Instructions

FO Instructions: If the respondent answers correctly, say "Yes, thats right" then repeat the correct answer. If the respondent answers incorrectly, follow the instructions given on the line.

1. Where did the money come from? [Jessicas School; if wrong, repeat #1.]

2. Who will be your partner in these games? [My spouse or a stranger; if wrong, repeat #2.]

3. When your decision is secret, who will I tell about your choice? [No one except the leader of this project; if wrong, repeat #3.]

4. When your decision is public who will I tell about your choices? [My partner and the leader of this project only; if wrong, repeat #3.]

5. Will I ever tell your village elder about your choices? [No. If wrong, say "I will sometimes tell your partner, but I will never tell anyone else in your village about your choices."]

6. Of the many games we play today, how many of your choices will come true? [One; if wrong, repeat #4.]

7. How will we pick which of your games come true? [The computer will pick randomly; if wrong, repeat #5.]

8. When will you receive your money from the game that comes true? [Next week; if wrong, repeat #6]

Great! Now that you understand the general rules of the games, lets talk about one game in specific.

SECRET STRANGER DECIDER GAME

(If the first:) Now lets play the first game. This game is called the Secret Stranger Decider Game.

(If not the first:) Now lets play a different game. This game is called the Secret Stranger Decider Game. The rules are a bit the same and a bit different from the last game.

Game Rules

1. Your partner is a stranger. I cant tell you who the stranger is and I will never tell the stranger who you are.

2. At the end of the week we will put the names of those who participated into the computer and will pick out one randomly to be your stranger partner.

3. Your choices in this game will be secret. I will not tell the stranger how you have played. I will also not tell anyone else in the village how you have played.

4. In this game I will give you bottle caps that represent real money.

5. You can keep all these bottle caps and money for yourself or you can give some or all to the stranger.

6. The bottle caps you keep are worth ksh20 for yourself. But if you give them to the stranger, they are worth ksh30 to the stranger. For example, if you keep 3 bottle caps, they are worth 60 shillings to you. If you give 3 bottle caps, they are worth 90 shillings to the stranger. You can use this sheet to help you understand the value of the bottle caps. This column shows how much the caps are worth if you keep them and this column shows how much the caps are worth if you give them.

7. Here are two labeled tins. This one is labeled SELF and this one is labeled STRANGER 1. Drop the bottle caps you would like to keep in the tin labeled SELF and the bottle caps you would like to give in the tin labeled STRANGER 1.

8. Because this game is secret, the stranger will not know if you give them money, and they will also not know if you do not give them money. Again I would like to ask you a few questions to check your understanding of the rules of the Secret Stranger Decider Game.

Questions for Secret Stranger Game

FO Instructions: If the respondent answers correctly, say "Yes, thats right" then repeat the correct answer. If the respondent answers incorrectly, follow the instructions given on the line.

1. Here are 5 bottle caps. If you keep them by putting them in the SELF tin (FO: Demonstrate), how much are they worth to you? [100ksh; if wrong, repeat #6]

2. If you give the 5 bottle caps by putting them in the STRANGER tin (FO: Demonstrate), how much are they worth to the stranger? [150ksh; if wrong, repeat #6]

3. Who is your partner for this game? [A stranger; if wrong, repeat #1]

4. Will I tell your partner what you decided? [No; if wrong, repeat #3]

5. Will I tell your husband/wife what you decided? [No; if wrong, repeat #3]

Ok! Now lets play the game! Here are 5 bottle caps. You can make your choice as you wish.

Ok. You have chosen to keep X bottle caps worth X to you and give X bottle caps worth X to the stranger. Is that correct?

If no, "Ok, here are the 5 bottle caps again. You can make your choice as you wish."

If yes, "Ok, lets continue. Here are 10 bottle caps. You can make your choice as you wish."

FO: Repeat for other values as needed.

SECRET SPOUSE DECIDER GAME

(If the first:) Now lets play the first game. This game is called the Secret Spouse Decider Game.

(If not the first:) Now lets play a different game. This game is called the Secret Spouse Decider Game. The rules are a bit the same and a bit different from the last game.

Game Rules

1. Your partner in this game is your spouse.

2. Your choices in this game will be secret. I will not tell your spouse how you have played. I will also not tell anyone else in the village how you have played.

3. In this game I will give you bottle caps that represent real money.

4. You can keep all these bottle caps and money for yourself or you can give some or all to your spouse.

5. The bottle caps you keep are worth ksh20 for yourself. But if you give them to your spouse, they are worth ksh30 to your spouse. For example, if you keep 2 bottle caps, they are worth 40 shillings to you. If you give 2 bottle caps, they are worth 60 shillings to your spouse. You can use this sheet to help you understand the value of the bottle caps. This

column shows how much the caps are worth if you keep them and this column shows how much the caps are worth if you give them.

6. Here are two labeled tins. This one is labeled SELF and this one is labeled SPOUSE. Drop the bottle caps you would like to keep in the tin labeled SELF and the bottle caps you would like to give in the tin labeled SPOUSE.

7. Because this game is secret, your spouse will not know that the money comes from you. They will not know if you give them money, and they will also not know if you do not give them money.

Again I would like to ask you a few questions to check your understanding of the rules of the Secret Spouse Decider Game.

Questions for Secret Spouse Game

FO Instructions: If the respondent answers correctly, say "Yes, thats right" then repeat the correct answer. If the respondent answers incorrectly, follow the instructions given on the line.

1. Here are 7 bottle caps. If you keep them by putting them in the SELF tin (FO: Demonstrate), how much are they worth to you? [140ksh; if wrong, repeat #5]

2. If you give the 7 bottle caps by putting them in the SPOUSE tin (FO: Demonstrate), how much are they worth to your spouse? [210ksh; if wrong, repeat #5]

3. Who is your partner for this game? [Spouse; if wrong, repeat #1]

4. Will I tell your spouse what you decided? [No; if wrong, repeat #2]

5. Will I tell your village elder what you decided? [No; if wrong, repeat #2]

6. Will your spouse know how much you gave to them in this game? [No; if wrong, repeat #7]

Ok! Now lets play the game! Here are 5 bottle caps. You can make your choice as you wish.

Ok. You have chosen to keep X bottle caps worth X to you and give X bottle caps worth X to your spouse. Is that correct?

If no, "Ok, here are the 5 bottle caps again. You can make your choice as you wish."

If yes, "Ok, lets continue. Here are 10 bottle caps. You can make your choice as you wish."

FO: Repeat for other values as needed.

PUBLIC SPOUSE DECIDER GAME

(If the first:) Now lets play the first game. This game is called the Public Spouse Decider Game.

(If not the first:) Now lets play a different game. This game is called the Public Spouse Decider Game. The rules are a bit the same and a bit different from the last game.

Game Rules

1. Your partner in this game is your spouse.

2. Your choices in this game will be public. I will tell your spouse how you have played. But, I will not tell anyone else in the village how you have played.

3. In this game I will give you bottle caps that represent real money.

4. You can keep all these bottle caps and money for yourself or you can give some or all to your spouse.

5. The bottle caps you keep are worth ksh20 for yourself. But if you give them to your partner, they are worth ksh30 to your spouse. For example, if you keep 10 bottle caps, they are worth 200 shillings to you. If you give 10 bottle caps, they are worth 300 shillings to your spouse. You can use this sheet to help you understand the value of the bottle caps. This column shows how much the caps are worth if you keep them and this column shows how much the caps are worth if you give them.

6. Here are two labeled tins. This one is labeled SELF and this one is labeled SPOUSE. Drop the bottle caps you would like to keep in the tin labeled SELF and the bottle caps you would like to give in the tin labeled SPOUSE.

Again I would like to ask you a few questions to check your understanding of the rules of the Public Spouse Decider Game.

Questions for Public Spouse Game

FO Instructions: If the respondent answers correctly, say "Yes, thats right" then repeat the correct answer. If the respondent answers incorrectly, follow the instructions given on the line.

1. Here are 9 bottle caps. If you keep them by putting them in the SELF tin (FO: Demonstrate), how much are they worth to you? [180ksh; if wrong, repeat #5]

2. If you give the 9 bottle caps by putting them in the SPOUSE tin (FO: Demonstrate), how much are they worth to your spouse? [270ksh; if wrong, repeat #5]

3. Who is your partner for this game? [Spouse; if wrong, repeat #1]

4. Will I tell your spouse what you decided? [Yes; if wrong, repeat #2]

5. Will I tell your village elder what you decided? [No; if wrong, repeat #2]

Ok! Now lets play the game! Here are 5 bottle caps. You can make your choice as you wish.

Ok. You have chosen to keep X bottle caps worth X to you and give X bottle caps worth X to your spouse. Is that correct?

If no, "Ok, here are the 5 bottle caps again. You can make your choice as you wish."

If yes, "Ok, lets continue. Here are 10 bottle caps. You can make your choice as you wish."

FO: Repeat for other values as needed.

SPOUSE STRANGER DECIDER GAME

(If the first:) Now lets play the first game. This game is called the Spouse Stranger Decider Game.

(If not the first:) Now lets play a different game. This game is called the Spouse Stranger Decider Game. The rules are a bit the same and a bit different from the last game.

Game Rules

1. In this game, you will make decisions for other people.

2. The person giving the money is your spouse. The person receiving the money is a stranger.

3. I cant tell you who the stranger is and I will never tell the stranger who you are.

4. At the end of the week we will put the names of those who participated into the computer and will pick out one randomly to be the stranger.

5. Your choices in this game will be secret. I will not tell your spouse how you have played. I will also not tell anyone else in the village how you have played.

6. In this game I will give you bottle caps that represent real money.

7. You can keep all these bottle caps and money for your spouse or you can give some or all to the stranger.

8. The bottle caps you keep are worth ksh20 for your spouse. But if you give them to the stranger, they are worth ksh30 to the stranger. For example, if you keep 4 bottle caps, they are worth 80 shillings to your spouse. If you give 4 bottle caps, they are worth 120 shillings to the stranger. You can use this sheet to help you understand the value of the bottle caps. This column shows how much the caps are worth if you keep them and this column shows how much the caps are worth if you give them.

9. Here are two labeled tins. This one is labeled SPOUSE and this one is labeled STRANGER. Drop the bottle caps you would like to keep in the tin labeled SPOUSE and the bottle caps you would like to give in the tin labeled STRANGER.

10. Because this game is secret, your spouse and the stranger will not know you made the decision. They will not know if you give them money, and they will also not know if you do not give them money.

Again I would like to ask you a few questions to check your understanding of the rules of the Spouse Stranger Decider Game.

Questions for Spouse Stranger Game

FO Instructions: If the respondent answers correctly, say "Yes, thats right" then repeat the correct answer. If the respondent answers incorrectly, follow the instructions given on the line.

1. Here are 15 bottle caps. If you keep them for your spouse by putting them in the SPOUSE tin (FO: Demonstrate), how much are they worth to your spouse? [300ksh; if wrong, repeat #8]

2. If you give the 15 bottle caps by putting them in the STRANGER tin (FO: Demonstrate), how much are they worth to the stranger? [450ksh; if wrong, repeat #8]

3. Who are the players in this game? [Your spouse and a stranger; if wrong, repeat #2]

4. Will I tell your spouse what you decided? [No; if wrong, repeat #5]

5. Will I tell your village elder what you decided? [No; if wrong, repeat #5]

6. Will your spouse know how much you kept for them in this game? [No; if wrong, repeat #9]

Ok! Now lets play the game! Here are 5 bottle caps. You can make your choice as you wish.

Ok. You have chosen to keep X bottle caps worth X to your spouse and give X bottle caps worth X to the stranger. Is that correct?

If no, "Ok, here are the 5 bottle caps again. You can make your choice as you wish."

If yes, "Ok, lets continue. Here are 10 bottle caps. You can make your choice as you wish."

FO: Repeat for other values as needed.

STRANGER STRANGER DECIDER GAME

(If the first:) Now lets play the first game. This game is called the Stranger Stranger Decider Game.

(If not the first:) Now lets play a different game. This game is called the Stranger Stranger Decider Game. The rules are a bit the same and a bit different from the last game.

Game Rules

1. In this game, you will make decisions for other people.

2. The person giving the money is a stranger. The person receiving the money is also a stranger.

3. I cant tell you who the strangers are and I will never tell the strangers who you are.

4. At the end of the week we will put the names of those who participated into the computer and will pick out two randomly to be the strangers.

5. Your choices in this game will be secret. I will also not tell anyone else in the village how you have played, including the strangers, your spouse, or anyone else in your village.

6. In this game I will give you bottle caps that represent real money.

7. You can keep all these bottle caps and money for STRANGER 1or you can give some or all to STRANGER 2.

8. The bottle caps you keep are worth ksh20 for STRANGER 1. But if you give them to STRANGER 2, they are worth ksh30 to the STRANGER 2. For example, if you keep 8 bottle caps, they are worth 160 shillings to STRANGER 1. If you give 8 bottle caps, they are worth 240 shillings to STRANGER 2. You can use this sheet to help you understand

the value of the bottle caps. This column shows how much the caps are worth if you keep them and this column shows how much the caps are worth if you give them.

9. Here are two labeled tins. This one is labeled STRANGER 1 and this one is labeled STRANGER 2. Drop the bottle caps you would like to keep in the tin labeled STRANGER 1 and the bottle caps you would like to give in the tin labeled STRANGER 2.

10. Because this game is secret, the strangers will not know how you decided. They will not know if you choose to give them money and they will not know if you dont give them money.

Again I would like to ask you a few questions to check your understanding of the rules of the Stranger Stranger Decider Game.

Questions for Stranger Stranger Game

FO Instructions: If the respondent answers correctly, say "Yes, thats right" then repeat the correct answer. If the respondent answers incorrectly, follow the instructions given on the line.

1. Here are 6 bottle caps. If you keep them for STRANGER 1 by putting them in the STRANGER 1 tin (FO: Demonstrate), how much are they worth to STRANGER 1? [120ksh; if wrong, repeat #8]

2. If you give the 6 bottle caps to STRANGER 2 by putting them in the STRANGER 2 in (FO: Demonstrate), how much are they worth to STRANGER 2? [180ksh; if wrong, repeat #8]

3. Who are the players in this game? [Two strangers; if wrong, repeat #2]

4. Will I tell the strangers what you decided? [No; if wrong, repeat #5]

5. Will I tell your village elder what you decided? [No; if wrong, repeat #5]

Ok! Now lets play the game! You can make your choice as you wish.

Ok. You have chosen to keep X bottle caps worth X to STRANGER 1and give X bottle

caps worth X to STRANGER 2. Is that correct?

If no, “Ok, here are the [5] bottle caps again. You can make your choice as you wish.”

If yes, “Ok, lets continue. Here are [10] bottle caps. You can make your choice as you wish.”

FO: Repeat for other values as needed.

APPENDIX C

Endline Survey

Endline:Book 1-Consent -Version U-Eng

IPA-Hoel Projects
Married Couple Decision Making (MCDM)
September 23, 2011

Consent

Hello, how are you? My name is [...] from IPA, which is a research organization from Busia town. Today I have visited you so that we can talk to you about the research that we are doing. It is a research about married people in Kenya, and how they make decisions in their home. We will talk about decisions about food, money, farming, and other household matters. This survey will take one hour. After completing I will give you a small gift to thank you for your time and for helping us in this survey.

The people that we work with will talk to your spouse also. You and your spouse will first be interviewed alone. Then we would like to speak to you both together.

I will not tell anyone the things that we will talk about with you in the first private survey. I will not tell your husband/wife what you say in the private survey. The people doing the research have taken the appropriate steps to ensure that no private information gets out to your community. However, there is a chance that information might get outside. In order to keep this information confidential, I will talk with you alone. I will also write your name only on the first packet of papers, and keep it away from the others as quick as possible.

Feel free in talking with me. If there is a question that you dont want to answer, that is ok. Your answers will not interfere with any assistance that IPA would like to give to your village or to your family. If you are not comfortable to answer any question, you are free not to answer it. You will still receive the small gift to thank you for your time and participation.

If you have any question about the research, you can come to our office in Busia and we shall connect you with Jessica Hoel. She is a doctoral student at the University of Michigan in America and she is the director of this project. This research will be one of the papers that will make her complete her education. Her work is supervised by David Lam, PhD. The IPA office can also help you to connect with the University of Michigan Behavioral Sciences Review Board or IPA Kenya Institutional Review Board which are seeing to it that this research is done in as good a way as possible.

We thank you very much for being in this research, however being in this research is your choice.

A.1	Respondent ID	|__|__|__|__|__|__|
A.2	Are you willing to participate? (*1=yes, 2=no*)	[ ]

Respondent Identifying Information

A.3	Respondent ID	|__|__|__|__|__|
A.4	Name	First Name Middle Name Last Name
A.5	Date of Interview	|__|__|/|__|__|/|__|__|__|__| | *d*| *d*|/| *m*| *m*|/| *y*| *y*| *y*| *y*|
A.6	Time Stamp	|__|__| : |__|__|
A.6	Day of Week *(1=Mon, 2=Tue, 3=Wed, 4=Thu, 5=Fri)*	_____
A.7	Town	_____
A.8	Village	_____
A.9	Sub-Location	_____
A.10	Interviewer ID/Name	|__|__|__|__| _____

To be completed at the time of data entry

First Entry

A.11	Data Entry Person ID:	|__|__|__|__|
A.12	Data Entry Person Name:	_____
A.13	Comments on First Data Entry:	

Second Entry

A.14	Data Entry Person ID:	|__|__|__|__|
A.15	Data Entry Person Name:	_____
A.16	Comments on Second Data Entry:	

FO Comments page 2: _____

B Experiment Check

B.0 Do you know anyone who has participated in this study? If NO, skip to next section. (*1=yes, 2=no*) [ ]

	A. First Name (*888= Don't have, 999= Don't know*)	B. Middle Name (*888= Don't have, 999= Don't know*)	C. Last Name (*888= Don't have, 999= Don't know*)	D. Relationship (Use codes below)	E. (*1=male, 2=female*)	F. Town they live in (*1=Sega, 2=Sigomere, 3=Ugunja, 4=Ukwala, 777=Other*)	G. How many times have they visited with us? (**FO**: Please press for the respondent's best guess)	H. How much money did they receive in total? (*999=Don't know*)
B.1								
B.1	I. What did they tell you about this study?							
B.2								
B.2	I. What did they tell you about this study?							
B.3								
B.3	I. What did they tell you about this study?							
B.4								
B.4	I. What did they tell you about this study?							
B.5								
B.5	I. What did they tell you about this study?							
B.6								
B.6	I. What did they tell you about this study?							

Relationship Codes: 1=Spouse, 2=Parent/Parent-in-Law, 4=Child, 5=Sibling/Sibling-in-Law, 6=Aunt/Uncle, 7=Niece/Nephew, 8=Grandparent, 9=Grandchild, 10=Adopted Child, 11=Cousin, 12=Other Relative

FO Comments page 3: ______________________

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FO Comments page 4: _____

Endline: Book 2 - Individual Survey - Version U-Eng

IPA-Hoel Projects
Married Couple Decision Making (MCDM)
September 23, 2011

Respondent Identifying Information

C.1	Respondent ID	|__|__|__|__|__|
C.2	Date of Interview	|__|__|/|__|__|/|__|__|__|__| | *d*| *d*|/| *m*| *m*|/| *y*| *y*| *y*| *y*|
C.3	Time Stamp	|__|__| : |__|__|
C.3	Interviewer ID/Name	|__|__|__|__| _____

To be completed at the time of data entry
First Entry

C.4	Data Entry Person ID:	|__|__|__|__|
C.5	Data Entry Person Name:	_____
C.6	Comments on First Data Entry:	

Second Entry

C.7	Data Entry Person ID:	|__|__|__|__|
C.8	Data Entry Person Name:	_____
C.9	Comments on Second Data Entry:	

D Expenditures and Transfers

Now I would like to ask you about your expenditures over the past 7 days. I will ask you about many different kinds of goods. For each, tell me how much you personally spent on that item. For example, if you purchased tomatoes yesterday for 20 KSH, you would tell me about it when I asked about tomatoes. But if you gave 20 KSH to your spouse and asked them to buy tomatoes for you, that would not be considered you making the purchase *personally*. Do you understand?

FO Instructions: First ask if the respondents has PERSONALLY purchased the item in column A and record the yes/no answer. If yes, fill in the rest of the row. If no, skip to column G to ask if the spouse purchased any of the item. When you have finished the page, check that you have filled a yes/no answer for all rows in columns A and G.

A. Did you buy any [ITEM] over the past 7 days? ONLY COUNT ITEMS THAT THE RESPONDENT PERSONALLY PURCHASED. If NO, skip to G.			B. How much did you spend in total?	C. Does your spouse know that you bought this item?	D. Did you benefit/eat from this purchase?	E. Did your spouse benefit/eat from this purchase?	F. Did your children benefit/eat from this purchase?	G. Did your husband/wife buy any [ITEM] over the past 7 days? If NO or D/K, skip to A.	H. How much did your husband/wife spend in total?
		(*1=yes, 2=no*)	KSH, 999=Don't Know	(*1=yes, 2=no*)	(*1=yes, 2=no*)	(*1=yes, 2=no*)	(*1=yes, 2=no*)	(*1=yes, 2=no, 999=Don't Know*)	KSH, 999=Don't Know
Cereals and Cereal products									
D.101	Rice								
D.102	Maize, Millet, and Sorghum								
D.103	Wheat, including flour								
D.104	Cost of grinding								
D.105	Bread, buns, cakes, biscuits, and spaghetti								
Tubers and Plantains									
D.106	Cassava, Sweet potatoes, Yams, Irish potatoes								
D.107	Cooking bananas, plantains								
Beans, Nuts, and Seeds									
D.108	Beans and Lentils								
D.109	Groundnuts, Cashew, almonds, and other nuts								
Fruits									
D.110	Ripe bananas, Mangos, avocados, and other fruits, and juices								
D.111	Sugarcane								

FO Comments page 6: ____________________

A. Did you buy any [ITEM] over the past 7 days? ONLY COUNT ITEMS THAT THE RESPONDENT PERSONALLY PURCHASED. If NO, skip to G.			B. How much did you spend in total?	C. Does your spouse know that you bought this item?	D. Did you benefit/eat from this purchase?	E. Did your spouse benefit/eat from this purchase?	F. Did your children benefit/eat from this purchase?	G. Did your husband/wife buy any [ITEM] over the past 7 days? If NO or D/K, skip to A.	H. How much did your husband/wife spend in total?
		(1=yes, 2=no)	KSH, 999=Don't Know	*(1=yes, 2=no)*	*(1=yes, 2=no)*	*(1=yes, 2=no)*	*(1=yes, 2=no)*	*(1=yes, 2=no, 999=Don't Know)*	KSH, 999=Don't Know
Vegetables									
D.112	Tomatoes								
D.113	Onions, Garlic, Carrots, Green Pepper, Other vitungu								
D.114	Sukuma, cabbage, kunde, and other green leafy vegetables								
Meat, fish, milk									
D.115	Goat, Beef, Pork, Chicken and other poultry								
D.116	Eggs								
D.117	Fish and seafood								
D.118	Fresh milk, Canned milk/milk powder								
Oils, fats, spices									
D.119	Cooking oil								
D.120	Butter, margarine, and other fat products								
D.121	Salt								
D.122	Sugar and Honey								
Beverages									
D.123	Tea and Coffee								
D.124	Bottled/canned soft drinks (soda, juice, water)								
D.125	Bottled beer, local brews, wine, and other alcohol								

FO Comments page 7: ____________________

A. Did you buy any [ITEM] over the past 7 days? ONLY COUNT ITEMS THAT THE RESPONDENT PERSONALLY PURCHASED. If NO, skip to G.			B. How much did you spend in total?	C. Does your spouse know that you bought this item?	D. Did you benefit/eat from this purchase?	E. Did your spouse benefit/eat from this purchase?	F. Did your children benefit/eat from this purchase?	G. Did your husband/wife buy any [ITEM] over the past 7 days? If NO or D/K, skip to A.	H. How much did your husband/wife spend in total?
		(*1=yes, 2=no*)	KSH, 999=Don't Know	(*1=yes, 2=no*)	(*1=yes, 2=no*)	(*1=yes, 2=no*)	(*1=yes, 2=no*)	(*1=yes, 2=no, 999=Don't Know*)	KSH, 999=Don't Know
D.126	Full meals (breakfast, lunch, dinner) OUTSIDE THE HOUSE								
D.127	Barbecued meat, chips, roast bananas, snacks, sweets and ice-cream OUTSIDE THE HOUSE								
D.128	Tea and Coffee OUTSIDE THE HOUSE								
D.129	Charcoal/coal, Firewood, Kerosene, paraffin, Matches, lighters, candles, lamp/stove wicks, Batteries								
D.130	Laundry soap, toilet soap, toilet paper								
D.131	Personal care (Toothpaste, hair products, razor, perfumes, lotions, make-up, beauty salons)								
D.132	Clothing and shoes for respondent								
D.133	Clothing and shoes for respondent's spouse								
D.134	Clothing and shoes for children								
D.135	Linen, mattress, Kitchenware (Pots, dishes, utensils, cleaning items), Other household wares (baskets, brooms)								
D.136	Furniture, appliances (including phones), and repairs for same								

FO Comments page 8: ______________________________

A. Did you buy any [ITEM] over the past 7 days? ONLY COUNT ITEMS THAT THE RESPONDENT PERSONALLY PURCHASED. If NO, skip to G.			B. How much did you spend in total?	C. Does your spouse know that you bought this item?	D. Did you benefit/eat from this purchase?	E. Did your spouse benefit/eat from this purchase?	F. Did your children benefit/eat from this purchase?	G. Did your husband/wife buy any [ITEM] over the past 7 days? If NO or D/K, skip to A.	H. How much did your husband/wife spend in total?
		(1=yes, 2=no)	KSH, 999=Don't Know	*(1=yes, 2=no)*	*(1=yes, 2=no)*	*(1=yes, 2=no)*	*(1=yes, 2=no)*	*(1=yes, 2=no, 999=Don't Know)*	KSH, 999=Don't Know
D.137	Modern medical care: Services and Medications								
D.138	Traditional medical care								
D.139	Water Treatment Products (WaterGuard, PUR, etc.)								
D.140	Mosquito Nets								
D.141	Cigarettes, tobacco, snuff								
D.142	Cellphone top-up cards and internet								
D.143	Transport (petrol, oil, fares for transport. Include transport to/from school or for medical care)								
D.144	Education for children (fees, uniform, equipment, excluding transport/food)								
D.145	Entertainment and recreation (newspapers, playing games, sports, going to the disco, etc.)								
D.146	Contributions to church and other religious organizations								
D.147	Ceremonies (wedding parties, funerals, dowries paid out)								
D.148	Livestock and livestock care (cows, chickens, goats, etc.)								
D.149	Farming Inputs (seeds, fertilizer, etc.)								

FO Comments page 9: ____________________

Money Transferred from/to Self

FO Instructions: First fill in the proper days of the week.

Now I would like to ask you about money that you gave and received for things other than the purchase of food and goods and all the other things we already discussed. For money you gave, I'm interested in transfers to your husband/wife, transfers to other people, gifts, loans, and payments for services like child care, hair braiding, help on your farm, etc. For money you received, I'm interested in how much cash you received from your work, from your spouse, and from other sources. I will first ask about your transfers. Next, I will ask you the same questions of your spouse.

	I GAVE					**I RECEIVED**				
	A. Did you give any money [...]? (*1=yes, 2=no, 999= don't know/ don't remember*) **IF NO or D/K**, skip to F.	B. To Who? (*Use Person Codes Below*)	C. Amount (KSH, 999= Don't know)	D. For what reason? (*Use Reason Codes Below*)	E. Does your spouse know you gave this money? (*1=yes, 2=no*)	F. Did you receive any money [...]? (*1=yes, 2=no, 999= don't know/ don't remember*) **IF NO or D/K**, skip to A.	G. From Who? (*Use Person Codes Below*)	H. Amount (KSH, 999= Don't know)	I. For what reason? (*Use Reason Codes Below*)	J. Does your spouse know you got this money? (*1=yes, 2=no*)
Today:										
D.301										
D.302										
Yesterday:										
D.303										
D.304										
DAY:										
D.305										
D.306										
DAY:										
D.307										
D.308										
DAY:										
D.309										
D.310										
DAY:										
D.311										
D.312										
DAY:										
D.313										
D.314										

Person Codes: *1=Spouse, 2=Other Compound Member 3=Employer/Casual Employer, 4=Shopkeeper/Employee, 5=Customer, 6=Friend, 7=Relative (not on compound), 8=Neighbor, 777=Other, 999=Don't know*

Reason Codes: *1=To buy food/keep up the house, 2=Personal Consumption, 3=Goods I bought/sold, 4=Services I bought/sold, 5=Work I did, 6=Work someone did for me, 7=Business or Investment Profit, 8=Gift, 9=Merry-go-round payment or payout, 10=Loan, 11=Repayment of Loan, 777=Other, 999=Don't know*

Money Transferred from/to Spouse

FO Instructions: First fill in the proper days of the week.

Tell me about when your husband/wife last gave or received money, including from you.

	SPOUSE GAVE				SPOUSE RECEIVED			
	A. Did your spouse give any money [...]? (*1=yes, 2=no, 999= don't know/ don't remember*) **IF NO or D/K**, skip to F.	B. To Who? (*Use Person Codes Below*)	C. Amount (KSH, 999= Don't know)	D. For what reason? (*Use Reason Codes Below*)	F. Did your spouse receive any money [...]? (*1=yes, 2=no, 999= don't know/ don't remember*) **IF NO or D/K**, skip to A.	G. From Who? (*Use Person Codes Below*)	H. Amount (KSH, 999= Don't know)	I. For what reason? (*Use Reason Codes Below*)
Today:								
D.401								
D.402								
Yesterday:								
D.403								
D.404								
DAY:								
D.405								
D.406								
DAY:								
D.407								
D.408								
DAY:								
D.409								
D.410								
DAY:								
D.411								
D.412								
DAY:								
D.413								
D.414								

Person Codes: *1=Spouse (Respondent), 2=Other Compound Member 3=Employer/Casual Employer, 4=Shopkeeper/Employee, 5=Customer, 6=Friend, 7=Relative (not on compound), 8=Neighbor, 777=Other, 999=Don't know*

Reason Codes: *1=To buy food/keep up the house, 2=Personal Consumption, 3=Goods he/she bought/sold, 4=Services he/she bought/sold, 5=Work he/she did, 6=Work someone did for him/her, 7=Business or Investment Profit, 8=Gift, 9=Merry-go-round payment or payout, 10=Loan, 11=Repayment of Loan, 777=Other, 999=Don't know*

FO Comments page 11: ______________________________

E Savings and Debts

I would like to ask you about savings you might have. I refer to savings you might have at home, entrusted to friends or relatives or deposited in a financial institution. These savings should be different from savings that you might have in animals or grain that you may have saved from the harvest.

	Respondent's Savings					**Spouse's Savings**		
	A. Where are these savings stored? (*Use Place Codes Below*, 888=Respondent has no such savings; if 888, skip to F)	B. What is the current balance on this account? (KSH)	C. If this account is joint with another person, who? (*Use Person Codes Below*)	D. Does your spouse know about these savings? (*1=yes, 2=no*) IF NO, skip to next.	E. Does your spouse know exactly how much is in this savings? (*1=yes, 2=no*)	F. Where are these savings stored? (*Use Place-Codes Below*, 888=Spouse has no such savings; if 888, skip to LOANS)	G. What is the current balance on this account? (KSH, *999= Don't Know*)	H. If this account is joint with another person, who? (*Use Person Codes Below*)
E.1 Largest Savings								
E.2 2nd Largest Savings								
E.3 3rd Largest Savings								
Person Codes: *0=One Person Alone, 1=Spouse, 2=Other Compound Member 3=Boss/Employer, 4=Customer, 5=Friend, 6=Relative (not on compound), 7=Neighbor, 8=ROSCA/Merry-go-round, 777=Other*								
Place Codes: *See below next table*								

Now I would like to ask about debts and credit. I am interested in any debts you currently still owe. I would like to know about debts of money and goods from financial institutions, moneylenders, input providers, friends, relatives, and neighbors.

	Respondent's Loans					**Spouse's Loans**			
	A. What source is this loan from? (*Use Place Codes Below*, 888=Respondent has no such loans; if 888, skip to F)	B. How much was the total amount of the original loan? (KSH)	C. What is the status of the loan? (*Use Status Codes Below*)	D. How much do you still owe? (KSH)	E. Does your spouse know about this loan? (*1=yes, 2=no*)	F. What source is this loan from? (*Use Place Codes Below*, 888=Spouse has no such loans; if 888, skip to next section)	G. How much was the total amount of the original loan? (KSH, 999= Don't know)	H. What is the status of the loan? (*Use Status Codes Below*)	I. How much does your spouse still owe? (KSH, 999=Don't know)
E.5 Largest Loan									
E.6 2nd Largest Loan									
E.7 3rd Largest Loan									
Loan Status Codes: *1=Fully paid off, 2=Partially paid off and still making payments, 3=Partially paid off and not making payments, 4=Not yet started making payments9=Don't know*									
Place Codes: *1=Bank, 2=Cooperative, 3=NGO/MFI, 4=ROSCA/Merry-go-round, 5=With a shopkeeper/Duka, 6=Employer, 7=In business or investment, 8=In the house or on person, 9=In phone, 10=Friend/family, 11=Money lender, 12=Post Office, 13=Government Agency, 14=Wholesaler, 15=Village or religious leader, 16=Other Community Group, 777=other*									

FO Comments page 12: ____________________

F Post-Games Payout

F.1	Did you and your spouse talk about the games? IF NO, skip to question 9. (*1=yes, 2=no*)	[ ]	
F.2	When did you first talk about it? (*1=the day of the baseline, 2=within a few days of the first visit, 3=before we came today, 777=Other*)	[ ]	
F.3	Who first brought up the topic of the games? (*1=I did, 2=My spouse did, 9=Don't know/don't remember*)	[ ]	
F.4	Did you and your spouse talk about how you played the Secret Spouse Decider Game? (*1=yes, 2=no*)	[ ]	
F.5	How much did you tell your spouse you gave to them in the 25 token Secret Spouse Decider Game? (*999=don't know*)	[ ]	KSH
F.6	Did they believe you? (*1=yes, 2=no*)	[ ]	
F.7	How much did your spouse tell you that they gave you in the 25 token Secret Spouse Decider Game? (*999=don't know*)	[ ]	KSH
F.8	How much do you think your spouse actually gave you in the 25 token Secret Spouse Decider Game? (*999=don't know*)	[ ]	KSH
F.9	Why did you choose to tell your spouse or not tell them about how you played the games?		

G Post-Experiment Questions

G.1	How much money did you receive last time you met with the study team? (*999=don't know*)	[ ]	KSH
G.2	How much money did your spouse receive last time they met with the study team? (*999=don't know*)	[ ]	KSH
If answers to BOTH 1 and 2 are 0, skip to next section.			
G.3	Did you and your spouse talk about how to spend the money? IF NO, skip to question 6. (*1=yes, 2=no*)	[ ]	
G.4	When did you first talk about it? (*1=the day of the baseline, 2=within a few days of the first visit, 3=before we came today, 777=Other*)	[ ]	
G.5	Who first brought up the topic of how to spend the money? (*1=I did, 2=My spouse did, 9=Don't know/don't remember*)	[ ]	
G.6	Who decided how the money should be spent? (*1=I decided alone, 2=We made the decision together, but I had the final word, 3=We decided together equally, 4=We decided together, but my spouse had the final word, 5=My spouse decided alone, 6=Someone else made the decision, 7=Culture decided/it is just the way it is, 9=Dont know.*)	[ ]	
G.7	Did you give any of the money away? If NO, skip to 9 (*1=yes, 2=no*)	[ ]	
G.8	To who? (*1=Spouse, 2=Other Compound Member 3=Boss/Employer, 4=Customer, 5=Friend, 6=Relative (not on compound), 7=Neighbor, 8=Other*)	[ ]	
G.9	What did your household spend the transfer on?		
G.10	Did you and your spouse quarrel about the cash transfer? (*1=yes, 2=no*)	[ ]	
G.11	If yes, what happened?		

FO Comments page 13: _____

H Marital Quality

Now I would like to talk to you about your marriage, and how you feel in your marriage. These questions are personal. Remember that you are free to skip any question, but also remember that your answers to this survey are completely private. I will not talk about your answers with anyone but the leader of the project. Your name is not written on this sheet, and we will be careful to keep your information secret. May I ask you these questions?

H.1	Is your marriage an arranged marriage? (*1=yes, 2=no*)	[ ]
H.2	How did you meet your partner? (*1=At school, 2=Through family/friends, 3=Around the village, 4=At work, 777=Other*)	[ ]
H.3	Who first suggested a romantic relationship between you two? (*1=I did, 2=My spouse did, 3=A family member/friend did, 777=Other*)	[ ]

Now, how often would you say that the following events occur between you and your mate?
(*0=Never, 1=less than once a month,2=once or twice a month, 3=once or twice a week, 4=once a day, 5=more often,777=Other, 888=Not Applicable, 999=Don't know*)

H.4	Laugh together	[ ]
H.5	Calmly discuss something	[ ]
H.6	Work together on a project	[ ]
H.7	You receive a gift from your spouse	[ ]
H.8	You walk together with your spouse to attend a public event (e.g. church, a wedding, a funeral, a baraza)	[ ]

Now, most people have disagreements in their relationships. Please indicate below the approximate extent of agreement of disagreement between you and your partner for each item on the following list.

(*0=Always Disagree, 1=Almost Always Disagree, 2=Frequently Disagree, 3=Occasionally Disagree, 4=Almost Always Agree, 5=Always Agree*)

H.9	Conventionality (correct or proper behavior)	[ ]
H.10	Religious matters	[ ]
H.11	Ways of dealing with parents or in-laws	[ ]
H.12	Sex relations	[ ]
H.13	Aims, goals, and things believed important	[ ]
H.14	Making major decisions	[ ]
H.15	Household tasks	[ ]
H.16	Do you and your spouse ever have disagreements about how to spend money? (*1=yes, 2=no*)	[ ]
H.17	Has there been a time when a disagreement about money escalated into a quarrel? (loud verbal disagreement) (*1=yes, 2=no*)	[ ]
H.18	Has there been a time when a disagreement about money escalated into fighting? (physical violence) (*1=yes, 2=no*)	[ ]

How often do they following things happen?
(*0=All of the time, 1=Most of the time, 2=More often than not, 3=Occasionally, 4=Rarely, 5=Never*)

H.19	How often do you disagree on matters pertaining to child discipline?	[ ]
H.20	How often do you or your mate leave the house after a fight?	[ ]
H.21	How often do you and your partner quarrel?	[ ]

Thank you for participating in this survey. I will now put your survey sheet in this brown envelope away from the papers that have your name on them.

FO Comments page 14: _____

I Conclusion

Thank you for your participation in this survey. Please accept this soap as a token of our appreciation.

I would also like to give you the money you won from last week's games. Next, our team would like to do a short interview with you and your spouse together.

READ THE SLIP THAT IS WITH THE GAMES PAYMENT ENVELOPE.

I.1	Time Stamp	|__|__| : |__|__| | *h*| *h*| : | *m*| *m*|
I.2	Did you read the conclusion script ? (*1=yes, 2=no*)	[ ]
I.3	Did you give the respondent the gift of soap? (*1=yes, 2=no*)	[ ]
I.4	Did you give the respondent their games winning envelope? (*1=yes, 2=no*)	[ ]
I.5	Did you ask the respondent to sign the accounting sheet for their gift and/or cash transfer? (*1=yes, 2=no*)	[ ]
I.6	SKIP for Endline (*1=yes, 2=no*)	[ ]
I.7	Is there anything special Jessica should know about this interview or this respondent? (e.g. You don't believe the respondent is married, the respondent was hostile/not interested, etc.) (*1=yes, 2=no*)	[ ]
I.8	What should Jessica know?	
I.9	Which language did you primarily use to conduct this survey and script? *(1=Kiswahili, 2=Kiluhya, 3=Dholuo, 4=English, 5=Other)*	[ ]
I.10	In addition to the primary respondent, was anyone else present for some portion of the interview? *(0=No one, 1=Spouse of Respondent, 2=Another Adult Man from the compound, 3=Another Adult Woman from the compound, 4=Liguru/Guide, 5=Children, 6=Other*	[ ]

J Survey Quality Self-Check

J.1	There should be no blank fields; coded fields should have 888s if not applicable.Have you confirmed that there are no blank fields? (*1=yes, 2=no*)	[ ]
J.2	Is the respondent ID number written on the front page of every booklet? (*1=yes, 2=no*)	[ ]

FO Comments page 15: _____

This page intentionally left blank.

FO Comments page 16: _____

Endline: Book 3 - Couple Survey - Version U-Eng

IPA-Hoel Projects
Married Couple Decision Making (MCDM)
September 23, 2011

Respondent Identifying Information

K.1	Husband ID	|__|__|__|__|__|
K.2	Wife ID	|__|__|__|__|__|
K.3	Date of Interview	|__|__|/|__|__|/|__|__|__|__| | *d*| *d*|/| *m*| *m*|/| *y*| *y*| *y*| *y*|
K.4	Time Stamp	|__|__| : |__|__|
K.4	Interviewer ID/Name	|__|__|__|__| _____

To be completed at the time of data entry
First Entry

K.5	Data Entry Person ID:	|__|__|__|__|
K.6	Data Entry Person Name:	_____
K.7	Comments on First Data Entry:	

Second Entry

K.8	Data Entry Person ID:	|__|__|__|__|
K.9	Data Entry Person Name:	_____
K.10	Comments on Second Data Entry:	

L Assets and Wealth

L.1 How many of the following items do you, your spouse, and your children own?

	Item	Quantity		Item	Quantity
L.1.A	Bicycle		L.1.B	Sheep	
L.1.C	Motorcycle		L.1.D	Cattle	
L.1.E	Watch		L.1.F	Goats	
L.1.G	Radio		L.1.H	Chickens	
L.1.I	TV		L.1.J	Maize, Whole (KGs)	
L.1.K	Kerosene Stove		L.1.L	Beans (KGs)	
L.1.M	Cell Phones		L.1.N	Rice (KGs)	

FO Comments page 18: _____