I. Introduction

Women’s bargaining power is increasingly a focus of both empirical research and policy interventions. These efforts have in turn spurred new research on the measurement of bargaining power, including the collection of data in which men and women within a household are asked the same set of questions. The practice of interviewing both men and women acknowledges the perceived importance of understanding their potentially different responses, but existing theory and empirical work do little to investigate what these disagreements might mean. In this paper, we contribute to this knowledge gap by studying the extent to which men and women provide similar answers when asked about common measures of women’s bargaining power in Bangladesh.

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1 See Doss 2013 for a detailed review. See also Beegle, Frankenberg, and Thomas 2001; Duflo 2003; Quisumbing and Maluccio 2003; Doss 2006; Allendorf 2007; Patel et al. 2007; Reggio 2011.

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We develop a conceptual framework that allows us to test among competing explanations for spousal disagreement and demonstrate that the observed responses are consistent with asymmetric information within the household.

In the classic collective household model, the household maximizes the weighted sum of each household member’s utility function subject to a budget constraint (Chiappori 1988, 1992). The weight assigned to each household member represents that person’s bargaining power. Because bargaining power itself is unobservable, researchers use information collected in surveys as proxies. In this study, we examine two of the commonly used proxies: women’s asset ownership and women’s involvement in household decision-making. These proxies represent two different ways to examine bargaining power: measuring the components of bargaining power (asset ownership) and describing the decision-making process, which should be determined by the distribution of bargaining power across household members. We analyze responses from both husbands and wives regarding who in the household owns assets and who in the household makes decisions about various activities. Given the wide range of combinations of possible responses to these questions, we concentrate on agreement regarding the wife’s role in ownership and/or decision-making.

The recent focus on collecting data from multiple household members suggests that researchers expect that the answers from different people will provide insights into household processes that would not be obtained from interviewing only one person. Existing empirical studies show that spouses do not always provide the same answers about measures of bargaining power. For example, studies have identified a lack of concordance between spouses’ responses about consumption decisions and women’s autonomy (Jejeebhoy 2002; Becker, Fonseca-Becker, and Schenck-Yglesias 2006; Ghuman, Lee, and Smith 2006; Allendorf 2007; Deere and Twyman 2012; Anderson, Reynolds, and Gugerty 2017). Other work documents either that men and women disagree about joint ownership of houses and land (Jacobs and Kes 2015; Twyman, Useche, and Deere 2015) or that men and women provide different answers to

---

2 Recent studies conducted through the Gender Asset Gap Project; the Gender, Assets, and Agriculture Project; the Women’s Empowerment and Agriculture Index; the Gender, Land, and Asset Survey; the Living Standards Measurement Study–Integrated Surveys on Agriculture; some Demographic and Health Surveys; and the Methodological Experiment on Measuring Asset Ownership from a Gender Perspective, among others, have collected detailed data on individual control over assets, decisions, and rights.

3 Asset ownership may also be a result of bargaining power, a reverse causality problem that is common with much research on bargaining power. In many households, asset ownership may be both a determinant and a result of bargaining power, but it serves as a measure of bargaining power in both situations. Some of the empirical literature has addressed this concern by analyzing assets brought to marriage (Quisumbing and Maluccio 2003) or instrumenting for asset ownership.
questions about asset ownership (Kilic and Moylan 2016). Yet little is understood about what these results tell us about models of household decision-making and behavior and whether these differences matter in substantive ways.

To our knowledge, no household model explicitly allows for disagreement in perceptions of bargaining power. We develop a framework that considers three types of explanations for this variation in responses. The first type of explanation is random measurement error, which could indicate enumerator error, for example, and which does not provide insight into household behavior. Our model predicts that random measurement error may result in different responses being registered for husbands and wives but not in such a way that women’s responses are systematically different from men’s. The second type of explanation is asymmetric measurement error, which in this case would indicate that men and women interpret the questions differently. Asymmetric measurement error results in different responses across men and women, but the probability of disagreement about wives’ involvement should be equal across assets and decisions.

The third type of explanation is asymmetric information. A growing literature (e.g., see Ashraf 2009; Castilla and Walker 2013; Ashraf, Field, and Lee 2014; Aker et al. 2016; Fiala and He 2017) documents that individuals may hide resources and actions from other household members.4 In the present context, information asymmetries could result in differing responses to survey questions if, for example, a woman indicates that she is involved in decision-making but her husband does not because she makes some decisions without her husband’s knowledge. We predict that differing rates of disagreement across assets and activities and higher rates of disagreement for assets or actions that are more likely to be hidden are indicative of asymmetric information.

To analyze agreement about women’s roles, we use responses to survey questions about decision-making and asset ownership from the Bangladesh Integrated Household Survey (BIHS; see Ahmed 2013). In this paper, we create four categories of responses regarding wives’ asset ownership and decision-making roles: cases where both spouses agree that the wife does not own or decide, cases where both spouses agree that the wife does own or decide, cases where the wife says that she owns or decides and the husband reports that

4 These studies generally employ experimental methods to capture data on information asymmetries, most likely because it is challenging to collect information on hidden assets and decisions within surveys. Recognizing the importance of hidden assets, the Evidence and Data for Gender Equality initiative of the United Nations conducted pilot surveys in several countries that directly inquire about asset hiding. Given the sensitive nature of such questions, it is not surprising that self-reported hidden assets are not common but are highest for easily concealable resources, such as financial assets (Asian Development Bank 2018).
she does not, and cases where the husband says that the wife owns or decides but she reports that she does not.

We find that disagreement is both substantial and systematic; women are much more likely than men to report women’s roles in asset ownership and decision-making. Because of the systematic nature of this disagreement, we reject the hypothesis that random measurement error accounts for the documented disagreement. We also find that disagreement varies across assets and activities and is higher for decision-making and assets that are easier to hide. In line with the predictions of the conceptual framework, these findings suggest that asymmetric measurement error does not fully explain the disagreement. Moreover, they suggest that asymmetric information in the form of hidden assets and decisions is present in the household.

The modeling of what disagreement tells us about household behavior and the empirical tests of the model’s predictions are the principal contributions of this paper. We additionally provide some exploratory, descriptive analysis that shows that these agreement categories are correlated with women’s well-being. To conduct this analysis, we study the correlation of the response categories with five outcomes associated with women’s well-being. Cases where the husband and wife agree on the wife’s involvement and cases where the wife acknowledges her involvement but the husband does not are both associated with better women’s outcomes relative to cases where spouses agree that the wife is not involved. However, this association is generally larger for cases where the spouses agree that the wife is involved. If disagreement is interpreted as evidence of asymmetric information, the results indicate that women may benefit from situations where they make decisions or own assets without the knowledge of their husbands but that outcomes are best when both spouses are aware of these actions and acknowledge the wife’s role.5

This paper proceeds as follows: Section II presents the conceptual framework. Section III discusses the context and data. Section IV provides the main empirical analysis. Section V examines the correlation of responses with outcomes, and Section VI concludes.

II. Conceptual Framework

In this section, we present a conceptual framework that provides explanations for why disagreement over wives’ involvement in asset ownership or decision-making may occur and present testable predictions for the empirical analysis that will allow us to differentiate among these explanations. We detail three

5 Our selection of outcome variables also goes beyond prior research examining how men’s and women’s responses are related to health outcomes (Becker et al. 2006; Allendorf 2007).
specific explanations for this disagreement: random measurement error, asymmetric measurement error, and asymmetric information.

A. Random Measurement Error
Random measurement error may indicate variation by enumerator, errors in recording responses, or variations in respondents’ understanding of the questions, all of which are uninformative about household behavior. For the purposes of this analysis, this is measurement error that may result in different responses being registered for husbands and wives but not such that women’s responses are systematically different from men’s.

Each spouse, the husband (H) and the wife (W), reports whether the wife owns an asset or makes a decision (this refers to both sole and joint ownership or decision-making). The proportion of households in which the wife owns the asset or makes the decision is $A$, and the proportion of households in which the wife does not own the asset or make the decision is $1 - A$. The proportion $A$ will vary across assets and decisions.

We first consider the case where disagreement arises only from random measurement error. We make two key assumptions: first, that husbands and wives make errors with equal probability and, second, that errors are equally likely in both states (i.e., whether the wife owns the asset or makes the decision or not). These assumptions are similar to those made in Harless and Camerer (1994) when considering the error rates in choice experiments.\(^6\)

The probability that an error is made reporting the wife’s ownership or decision-making is equal to $p$ and is equal for husbands and wives. The term $Y$ indicates that the recorded response was that the wife owns or decides, and $N$ indicates that the recorded response was that the wife does not own or decide. Therefore, the probabilities of each response in each state (the wife owns the asset/decides or does not) are as follows:

| Truth $= Y$ (A households):         | Truth $= N$ (1 $- A$ households): |
|------------------------------------|------------------------------------|
| Husband $Y$ 1 $- p$                | Husband $N$ 1 $- p$                |
| Husband $N$  $p$                   | Husband $Y$  $p$                   |
| Wife $Y$ 1 $- p$                   | Wife $N$ 1 $- p$                   |
| Wife $N$  $p$                      | Wife $Y$  $p$                      |

\(^6\) Among other reasons, Harless and Camerer (1994) argue that if errors are truly random or compared with “trembles” in game theory, then choice or state-dependent errors are illogical.
We use these probabilities to develop the overall probability of each type of disagreement: when the husband says that the wife owns or decides and she says that she does not, and vice versa. The probabilities of each type of disagreement can be written as follows:

\[
\Pr(H: Y, W: N) = A(1 - p)p + (1 - A)p(1 - p) = (1 - p)p,
\]
\[
\Pr(H: N, W: Y) = Ap(1 - p) + (1 - A)(1 - p)p = (1 - p)p.
\]

This leads to the following prediction:

**Prediction 1.** If random measurement error is the only factor leading to disagreement, then the two types of disagreement should occur with equal probability.

**B. Asymmetric Measurement Error**

Next, we consider how asymmetric measurement error should affect patterns of responses. Asymmetric measurement error is measurement error that occurs systematically and leads to different patterns of responses for men and women. Men and women may simply interpret questions differently or have different perceptions about what it means to own an asset or make a decision, even though there is complete information on asset ownership and activities within the household. Other patterns could also be classified in this way, such as men underreporting women’s roles for cultural reasons.

This type of measurement error is not assumed to be equal across spouses, and errors are made with probability \(r\) by husbands and probability \(s\) by wives. The assumption that mistakes are equally likely in both states does not change. Random measurement error still occurs, but because it is not possible to separately identify \(p\), \(r\), and \(s\), \(p\) is subsumed into one of the spouse-specific parameters. Therefore, the probabilities of each response in each state are as follows:

| Truth = Y (A households): | Y | 1 – r |
|---------------------------|---|------|
| Husband                   | Y |      |
| Husband                   | N |  r   |
| Wife                      | Y | 1 – s |
| Wife                      | N |  s   |
| Truth = N (1 – A households): | Y |  r   |
| Husband                   | Y |      |
| Husband                   | N | 1 – r |
| Wife                      | Y |  s   |
| Wife                      | N | 1 – s |
The probabilities of each type of disagreement can now be written as

\[
Pr(H: Y, W: N) = A(1 - r)s + (1 - A)r(1 - s) \\
= A(s - r) + r(1 - s),
\]

\[
Pr(H: N, W: Y) = Ar(1 - s) + (1 - A)(1 - r)s \\
= A(r - s) + s(1 - r).
\]

Thus, the probabilities of the two types of disagreement are no longer equal. Now we consider the probability of overall disagreement:

\[
Pr((H: Y, W: N) \cup (H: N, W: Y)) = A[(1 - r)s + r(1 - s)] \\
+ (1 - A)[r(1 - s) + (1 - r)s] \\
= r + s - 2rs.
\]

None of these terms depends on the asset or decision (i.e., they do not include \( A \), which is the only term that varies by asset or activity). These observations are summarized in the following prediction:

**Prediction 2.** When asymmetric measurement error is present, the probability of \((H: Y, W: N)\) is no longer equal to the probability of \((H: N, W: Y)\). However, the overall probability of any disagreement is the same across assets and activities.

### C. Asymmetric Information

The idea that disagreement may be driven by asymmetric information within the household draws on literature that shows that people may hide resources and actions within the household, circumventing the bargaining process. For example, a woman may own an asset without her husband’s knowledge (e.g., some chickens), or she may make some decisions without informing her husband. In such cases, she would report that she owns the asset or makes the decision, while he would report that she is not involved because he is unaware of that asset or decision. This behavior could be strategic or unintentional. She could be hiding her activities and thus the decisions concerning those activities (or the assets that she owns), or the husband simply may not be cognizant of the full range of decisions that she makes or assets that she owns.

The incorporation of asymmetric information into this model in the form of hidden assets and decisions requires the introduction of a new term. In the state where the truth is that the wife owns or decides \((Y)\), these assets or decisions may be hidden by the wife with probability \( B \). Because some assets or decisions are more likely to be hidden than others (e.g., chickens are easier to hide than houses), \( B \) will vary across assets and decisions. We now must consider
three states of the world: one where the wife owns or decides and the asset or
decision is hidden, one where the wife owns or decides and the asset or decision
is not hidden, and one where the wife does not own or decide. Asymmetric mea-
surement error still exists and is defined as in the previous section. However,
when the asset or decision is hidden, the husband’s probabilities are flipped.
Because the asset/decision is being hidden from him, his “truth” is the opposite of
the actual truth. If the wife does not own or decide, there can be no hiding because
we consider only the wife’s ownership and decision-making, so all probabilities are
as before. The probabilities of each response in each state are defined as follows:

\[
\text{Truth} = Y \text{ (A households); asset/decision is hidden (B households):} \\
\begin{align*}
\text{Husband} & : Y \quad r \\
\text{Husband} & : N \quad 1 - r \\
\text{Wife} & : Y \quad 1 - s \\
\text{Wife} & : N \quad s \\
\text{Truth} = Y \text{ (A households); asset/decision is not hidden (1 - B households):} \\
\begin{align*}
\text{Husband} & : Y \quad 1 - r \\
\text{Husband} & : N \quad r \\
\text{Wife} & : Y \quad 1 - s \\
\text{Wife} & : N \quad s \\
\text{Truth} = N \text{ (1 - A households):} \\
\begin{align*}
\text{Husband} & : Y \quad r \\
\text{Husband} & : N \quad 1 - r \\
\text{Wife} & : Y \quad s \\
\text{Wife} & : N \quad 1 - s
\end{align*}
\]
\]

To develop a testable prediction for the presence of asymmetric information,
we again consider overall disagreement:

\[
\Pr((H: Y, W: N) \cup (H: N, W: Y)) = A[B(rs + (1 - r)(1 - s)) \\
+ (1 - B)((1 - r)s + r(1 - s))] \\
+ (1 - A)[r(1 - s) + (1 - r)s].
\]

This probability reduces to

\[
AB(2r - 1)(2s - 1) - 2rs + r + s.
\]

7 Nevertheless, if the wife does not own or decide, she could hide her lack of ownership or decision-
making from her husband. For example, the wife could sell an asset without her husband’s knowl-
edge. Since this form of asymmetric information differs from hiding owned assets or decisions, we
exclude it from our main framework. However, allowing for wives to hide their lack of asset owner-
ship/decision-making with probability C, we find that the overall probability of disagreement is
\((AB + C)(2r - 1)(2s - 1) + AC(2r - 1)(1 - 2s) - 2rs + r + s.\) This probability clearly varies
by asset or activity, thus reinforcing prediction 3.
Because both $A$ and $B$ vary by asset or activity, this probability also varies by asset or activity, which results in the following prediction:

**Prediction 3.** The hiding of assets or decisions leads to variation in the probability of overall disagreement by asset and activity.

It should be noted that how the probability varies depends on whether $(2r - 1)(2s - 1)$ is positive or negative, which depends on the values of $r$ and $s$.\(^8\) When both $r$ and $s$ are less than .5, this expression is always positive, meaning that the probability of disagreement increases as the proportion of households hiding an asset or decision increases.\(^9\) In other words, for reasonable bounds on the probability of misreporting, the more likely an asset or decision is to be hidden, the more likely disagreement will be. However, this prediction is not directly testable in our data because the expression also depends on the probability that women own a certain asset or make a certain decision ($A$).

III. Context and Data

A. Context

This study uses data on women’s bargaining power from the BIHS. Rural Bangladesh is an appropriate context in which to analyze disagreement over bargaining power measures and what these disagreements tell us about household behavior because of the prevalence of gender inequities due to patrilineal and patrilocal kinship systems.

Women own relatively few assets relative to men. Although Bangladesh’s laws are technically secular, the rules and norms governing marriage, divorce, alimony, and property inheritance are determined by personal law, which is based on one’s religion or beliefs (Kamal 2010). Thus, Islamic law dictates how most property is allocated for 90% of the population. Several family law and property ordinances passed in Bangladesh are actually more favorable toward women than traditional Islamic principles; however, adherence to religious rather than national legal frameworks and a lack of resources and knowledge of laws prevent women from utilizing laws to protect their rights (USAID 2010). In short, the institutional structures supporting women’s property rights in Bangladesh are weak.

---

\(^8\) Of course, if $(2r - 1)(2s - 1) = 0$, then this expression does not vary by asset/activity. However, this is only true if either $r$ or $s$ is equal to .5.

\(^9\) This expression is also positive if both $r$ and $s$ are greater than .5. It is negative if one is greater than .5 and the other is less than .5. However, given that these are probabilities of making errors, a reasonable assumption is that they will be closer to 0 than 1. If $p$ is also included, the expression becomes more complicated, but it is still generally positive for probabilities close to 0.
In addition, women’s autonomy and decision-making power in Bangladesh have historically been low and remain so in many traditional communities (Anderson and Eswaran 2009). Women’s work is often practiced in isolation because of the cultural practice of purdah, or seclusion of women, which is present among both the rich and poor in Bangladesh (Amin 1997). This practice, as well as cultural norms, confines women to a specific set of “female” roles and occupations. It is evident that traditional gender roles that marginalize women are still prevalent in Bangladesh.

B. Data and Survey Questions Analyzed

Our empirical analysis focuses on spouses’ responses to questions from the Women’s Empowerment in Agriculture Index (WEAI) modules within the 2011–12 BIHS. The full sample of the BIHS data set includes 6,503 households in 325 villages. The WEAI component of the survey had both a man and a woman respond independently to all modules, but these were not always spousal pairs. We include only households in which spouses were interviewed. Our final sample for analysis is 4,944 households.

We focus on two indicators of women’s bargaining power: asset ownership and decision-making on household activities. The first set of analyses uses questions regarding asset ownership, which ask respondents, “Who would you say owns most of [asset]?” The next set of analyses considers decisions about activities and refers to the following question: “When decisions are made regarding the following aspects of household life, who normally makes the decision?”

These questions are asked separately about each asset and activity, respectively. The assets include agricultural land, livestock, and consumer durables. Activity categories include production- and business-related decisions as well as household expenditures. The full list of assets and activities that we analyze is documented in table 1.

The response coding from the survey is the same for both sets of questions. The response options include the following: self; spouse; self and spouse jointly; self and other; other and spouse; and other. The surveys include a number of other questions on these topics, such as who contributes to decisions regarding a new purchase of [asset], who can use [asset] most of the time, who can decide whether to sell [asset] most of the time, who can decide to mortgage or rent [asset] most of the time, who can keep the majority of [asset] in the case a marriage is dissolved because of divorce or separation, and who would keep the majority of [asset] in the case a marriage is dissolved because of death. We chose to exclude the questions related to divorce and death because of the issues of singularity and asset divisibility associated with the response. Furthermore, our preliminary analyses showed that responses were similar across questions of who owns assets and the various rights of alienation.

Our analysis includes all assets listed on the survey. We drop two activity categories that are highly correlated with agricultural production (input purchase and crop type) and five categories that refer to personal rather than household decisions (e.g., “What to do if you have a serious health problem?”) and are therefore not the same question for husband and wife.
other household member(s); self and other household member(s); spouse and other household member(s); self and other outside people; spouse and other outside people; self, spouse, and other outside people; and some individual (or group of people) outside the household. Given the large quantity of potential response combinations, we collapse responses into four categories to reduce noise and facilitate analysis. Because we are primarily interested in the role of the wife, these categories focus on whether the couple agrees on the wife’s involvement, either alone or in conjunction with her spouse or others. The categories are as follows: (1) neither spouse says that the wife is involved; (2) both spouses say that the wife is involved; (3) the wife says that she is involved, but the husband reports that she is not; and (4) the husband says that the wife is involved, but she reports that she is not. Thus, our agreement measures (categories 1 and 2) do not indicate that the spouses necessarily gave exactly the same answer but rather that they agreed on whether the wife was involved. This categorization reduces noise by grouping responses where spouses provide exactly the same response together with responses where they agree on the wife’s involvement but provide slightly different responses (e.g., whether decision-making is sole or joint or where one person names an additional owner or decision maker). This approach should reduce random measurement error and ensure that remaining patterns in the data are meaningful.

In table 2, we present summary statistics describing the analysis sample. Husbands are, on average, 8.5 years older than their wives. Education is low for both men (3.3 years) and women (3.2 years). Households in the sample have, on average, 4.4 members and 0.77 acres of cultivable land. Almost all households are Muslim. The average body mass index (BMI) of wives in the sample is 20.8, with a standard deviation of 3.5. Most women do not participate in groups (the average number of groups is 0.31), and only 18% currently

### TABLE 1

**MAIN SURVEY QUESTIONS ON DECISION-MAKING AND OWNERSHIP UNDERLYING ANALYSIS**

| Proxy, Survey Question | Categories Examined in Analysis |
|-------------------------|---------------------------------|
| Assets/productive capital: Who would you say owns most of [item]? | Agricultural land, other land not used for agriculture, large livestock, small livestock, poultry, fish pond or fishing equipment, farm equipment (nonmechanized), farm equipment (mechanized), nonfarm business equipment, house/other structures, large consumer durables, small consumer durables, mobile phones, transportation (motorized or nonmotorized) |
| Activities: When decisions are made regarding the following aspects of household life, who is it that normally makes the decision? | Agricultural production, taking crops to market, livestock raising, nonfarm business activity, minor household expenditures, use of family planning |
have a loan. Contraception use is quite high (78%). Finally, women’s average life satisfaction is 7.1 on a scale of 1–10.

IV. Disagreement and Empirical Tests of the Conceptual Framework
In the empirical analysis presented here, we use the BIHS data described above to test the predictions of our conceptual framework, evaluating whether spouses agree on women’s involvement regarding asset ownership and household decision-making. Before examining these patterns, it is important to note

### TABLE 2
**SUMMARY STATISTICS**

|                      | Mean   | Standard Deviation | Number of Observations |
|----------------------|--------|--------------------|------------------------|
| **A. Demographic Variables** |        |                    |                        |
| Age of husband       | 45.02  | 13.54              | 4,944                  |
| Age of wife          | 36.52  | 11.65              | 4,944                  |
| Age difference between husband and wife | 8.50   | 4.98               | 4,944                  |
| Years of education for husband | 3.27   | 3.97               | 4,944                  |
| Years of education for wife | 3.19   | 3.52               | 4,944                  |
| Education difference between husband and wife | 0.08   | 3.37               | 4,944                  |
| Presence of husband’s mother in household | 0.11   | 0.32               | 4,944                  |
| Presence of husband’s father in household | 0.03   | 0.18               | 4,944                  |
| Annual per capita consumption (Tk) | 243.80 | 126.24             | 4,944                  |
| Asset ownership score | 0.06   | 1.92               | 4,944                  |
| Total cultivable land held by household, converted to acres | 0.76   | 1.13               | 4,944                  |
| Proportion of men in household ages 0–15 | 0.18   | 0.17               | 4,944                  |
| Proportion of men in household ages 16 and up | 0.33   | 0.13               | 4,944                  |
| Proportion of women in household ages 0–15 | 0.17   | 0.17               | 4,944                  |
| Proportion of women in household ages 16 and up | 0.33   | 0.12               | 4,944                  |
| Household size | 4.37   | 1.55               | 4,944                  |
| Religion:            |        |                    |                        |
| Muslim (%)           | 87.72  |                    | 4,944                  |
| Hindu (%)            | 12.10  |                    | 4,944                  |
| **B. Outcome Variables** |        |                    |                        |
| Wife’s BMI           | 20.78  | 3.51               | 4,749                  |
| Number of groups in which wife is active | 0.31   | 0.49               | 4,944                  |
| Wife has loan        | 0.18   | 0.25               | 4,944                  |
| Wife’s use of birth control ever | 0.78   | 0.42               | 4,944                  |
| Wife’s life satisfaction | 7.05  | 2.35               | 4,944                  |

**Note.** Wife’s body mass index (BMI) is defined as mass in kilograms divided by the square of height in meters; the variable for whether the wife has a loan is an indicator equal to 1 if it is reported that the wife currently has a loan; the variable for birth control is an indicator equal to 1 if the wife reports ever having used birth control methods to delay or avoid pregnancy; the wife’s life satisfaction is the response to the question “How would you rate your satisfaction with your life overall?” and is measured from 1 to 10; consumption is measured as per capita annual consumption in taka (Tk), calculated from the consumption-expenditure module of the Bangladesh Integrated Household Survey; the asset ownership score is an index created by taking the first principal component of all assets reported owned in the household survey; amount of cultivable land is the total cultivable land owned or operated by the household in the past 12 months in decimals, divided by 100 to convert to acres.
that this analysis is straightforward only in cases where both the husband and wife agreed that someone in the household owned the asset or made the decision. In the case of questions concerning assets, the ownership question was preceded by the question, “Does anyone in your household currently have any [asset]?” In the case of decision-making about activities, the question included an answer option for “decision not made.”

Differing responses to these filter questions mean that in some cases we have the wife’s response to the main questions of interest but not the husband’s and vice versa. Because disagreement over whether the household owned the asset or made the decision at all can also be indicative of asymmetric information in the household, it is important to incorporate these households into our analysis. We include these households by classifying them in the following way: if the wife reports household ownership or decision-making and her husband does not, we use her response to the main question of interest (identity of owner or decision maker) and assume that the husband’s response is “wife does not own/decide.” If the husband reports household ownership or decision-making and the wife does not, we use his response regarding the identity of the owner/decision maker and assume that the wife’s response is “wife does not own/decide.” The logic behind this method is that if one spouse reports that the household does not own or decide at all, that spouse would also report that neither spouse owns or decides. While it is important to take this into account in the analysis, in general, agreement over whether the asset is owned or the decision is made is quite high (appendix tables 1 and 2; apps. A–C are available online).12

We now examine the distribution of households across the four response categories described above for the questions of interest: who owns most of each asset and who normally makes the decision regarding each activity. Tables 3 and 4 show the distributions of responses for who owns assets and who decides about activities, respectively. In all cases, each activity or asset is in a separate column, with rows 1–4 each representing a response category. The number of observations in each category represents the cases where the husband and wife agree that the household owns the asset or makes the decision or where one spouse indicates that the household owns or decides and the other does not. Households where the spouses agree that the household does not own the asset or make the decision are excluded from the sample for that asset or activity. As a robustness check, appendix tables 3 and 4 show the same analysis including only those spouses who agree that the household owns the asset or makes the decision.

12 Rates of disagreement are also similar across the two types of disagreement (wife says that household owns/decides, husband does not; husband says that household owns/decides, wife does not).
### Table 3

**Agreement and Disagreement Regarding Who Owns Assets**

|                           | Agricultural Land | Large Livestock | Small Livestock | Poultry | Fish Pond or Fishing Equipment | Farm Equipment (Nonmechanical) | Farm Equipment (Mechanical) | Nonfarm Business Equipment | House | Large Durables | Small Durables | Mobile Phone | Nonagricultural Land | Means of Transport |
|---------------------------|-------------------|-----------------|-----------------|---------|-------------------------------|--------------------------------|------------------------------|----------------------------|-------|----------------|----------------|--------------|------------------|-------------------|
| **Agree:**                |                   |                 |                 |         |                               |                                |                              |                            |       |                |                |              |                  |                   |
| 1. Wife does not own      | .82               | .57             | .42             | .19     | .84                           | .78                            | .89                          | .88                        | .79   | .68            | .34            | .65           | .84              | .81              |
| 2. Wife owns              | .09               | .12             | .20             | .45     | .04                           | .03                            | .02                          | .03                        | .09   | .08            | .18            | .14           | .06              | .11              |
| **Disagree:**             |                   |                 |                 |         |                               |                                |                              |                            |       |                |                |              |                  |                   |
| 3. Wife says wife owns,   |                   |                 |                 |         |                               |                                |                              |                            |       |                |                |              |                  |                   |
| husband does not          | .07               | .24             | .30             | .27     | .11                           | .16                            | .06                          | .08                        | .18   | .40            | .15            | .07           | .05              | .03              |
| 4. Husband says wife      |                   |                 |                 |         |                               |                                |                              |                            |       |                |                |              |                  |                   |
| owns, wife does not       | .02               | .07             | .09             | .09     | .02                           | .03                            | .02                          | .03                        | .04   | .06            | .07            | .06           | .02              | .03              |
| **Total agreement**       | .91               | .69             | .62             | .64     | .87                           | .81                            | .91                          | .91                        | .88   | .76            | .52            | .79           | .90              | .92              |
| **Total disagreement**    | .09               | .31             | .38             | .36     | .13                           | .19                            | .09                          | .09                        | .12   | .24            | .48            | .21           | .10              | .08              |
| **Number of observations**| 3,206             | 2,432           | 1,193           | 3,549   | 1,273                         | 3,183                          | 511                          | 1,066                       | 4,921 | 1,490          | 2,951          | 3,650         | 1,631            | 1,826            |

**Note.** Sample for each asset is all households where at least one spouse indicates that the household owns the asset. To classify households where only one spouse indicates that the household owns, we use that spouse’s response regarding the wife’s role and assume that the other spouse replied that the wife did not own.
Across assets and activities, the most common response is generally that both spouses agree that the wife is not included among those who own most of the asset or make the decision. There are exceptions, but total agreement (whether they agree that the wife is or is not involved) is always higher than total disagreement. However, disagreement is present across all assets and activities. The extent of disagreement varies substantially from a minimum of 8% of couples disagreeing (ownership of means of transportation) to a maximum of 48% (ownership of small durables and decisions about livestock).

We now use these data to test the predictions laid out in the conceptual framework presented in Section II, first testing whether the documented disagreement can be fully attributed to random measurement error. Recall that prediction 1 in Section II indicates that if random measurement error is the only factor leading to disagreement, then the two types of disagreement should occur with equal probability. Thus, we test prediction 1 by comparing the percentage of couples where the wife reports that she is involved in ownership or decision-making and the husband does not (row 3) with the percentage of couples where the husband reports that the wife is involved but she does not (row 4). Across all assets and activities, these numbers are never equal, and the percentage of cases where the wife reports that she is involved and the husband does not is always larger, often substantially so. The last row of tables 3 and 4 also presents the p-value from the t-test of the hypothesis that rows 3 and 4 are equal.

### TABLE 4

| Agree: | Agricultural Production | Taking Crops to Market | Livestock Raising | Nonfarm Business Activity | Minor Household Expenditures | Use of Family Planning |
|--------|-------------------------|------------------------|-------------------|---------------------------|-----------------------------|------------------------|
| 1. Wife does not decide | .49 | .48 | .22 | .59 | .24 | .17 |
| 2. Wife decides | .12 | .11 | .30 | .06 | .28 | .47 |
| Disagree: | | | | | | |
| 3. Wife says wife decides, husband does not | .33 | .34 | .40 | .26 | .39 | .25 |
| 4. Husband says wife decides, wife does not | .06 | .07 | .08 | .10 | .08 | .11 |
| Total agreement | .61 | .59 | .52 | .65 | .53 | .64 |
| Total disagreement | .39 | .41 | .48 | .35 | .47 | .36 |
| Number of observations | 3,429 | 3,386 | 3,568 | 2,899 | 4,943 | 4,508 |
| p-value: row 3 = row 4 | .000 | .000 | .000 | .000 | .000 | .000 |

**Note.** Sample for each activity is all households where at least one spouse indicates that the household made that decision. To classify households where only one spouse indicates that the household decided, we use that spouse’s response regarding the wife’s role and assume that the other spouse replied that the wife did not decide.
p-values but two are below .01, and all are below .10. This analysis definitively rejects the hypothesis that all disagreement is due to random measurement error. Note that this does not mean that random measurement error is not present at all, only that it does not account for all of the documented disagreement. However, the large magnitude of the difference between the two types of disagreement suggests that random measurement error is not the principal factor influencing disagreement.

We now evaluate whether asymmetric measurement error, or measurement error that may differ systematically across husbands and wives, can account for the disagreement over wives’ involvement. Prediction 2 of the conceptual framework indicates that when asymmetric measurement error is present, the two types of disagreement are no longer equal to each other. However, the overall probability of any disagreement will be the same across assets and activities. The analysis already presented shows that the two types of disagreement are not equal. Descriptively, tables 3 and 4 show that total disagreement does vary significantly across assets and activities. In order to show this statistically, we perform a series of t-tests that test for the equality of overall disagreement for each pair of assets and each pair of activities. The p-values from these tests are presented in tables 5 (asset ownership) and 6 (decision-making about activities). In the majority of cases, we can convincingly reject that the disagreement rates are equal, thereby rejecting the hypothesis that asymmetric measurement error alone is responsible for these empirical patterns.

Finally, we examine whether the disagreement over wives’ involvement is evidence of asymmetric information, or hiding of assets or decisions, in the household. Prediction 3 indicates that the hiding of assets or decisions (whether intentional or unintentional) would result in variation of the probability of overall disagreement by asset or activity. The analysis presented above clearly shows variation in the disagreement rate, lending support to the hypothesis that asymmetric information plays a role in generating disagreement.

The conceptual framework also indicates that disagreement will be higher for assets or decisions that are more likely to be hidden. Because the model depends both on the probability that women own an asset or make a decision and on the probability that they hide that asset or decision, we cannot provide a definitive empirical test of this prediction. However, we observe further suggestive evidence for the asymmetric information hypothesis by noting that the disagreement is highest among assets that are more easily hidden (small livestock, poultry, and small durables). We also observe that disagreement is much higher for decision-making than for asset ownership. Because decisions can be made by one spouse without the knowledge of the other but assets are more
### TABLE 5
IS TOTAL DISAGREEMENT ABOUT THE ASSET OWNER EQUAL ACROSS ASSETS?

|                        | Agricultural Land | Large Livestock | Small Livestock | Poultry | Fish Pond or Fishing Equipment | Farm Equipment (Nonmechanical) | Farm Equipment (Mechanical) | Nonfarm Business Equipment | Large Durables | Small Durables | Mobile Phone | Nonagricultural Land | Means of Transport |
|------------------------|------------------|-----------------|----------------|---------|-------------------------------|--------------------------------|----------------------------|--------------------------|----------------|----------------|--------------|----------------------|------------------|
| Agricultural land      | 1.000            |                 |                |         |                               |                                |                            |                          |                |                |              |                      |                  |
| Large livestock        | 1.000            | .000            | 1.000          |         |                               |                                |                            |                          |                |                |              |                      |                  |
| Small livestock        | .000             | .000            | .109           | 1.000   |                               |                                |                            |                          |                |                |              |                      |                  |
| Poultry                | .000             | .000            | .000           | .000    |                               |                                |                            |                          |                |                |              |                      |                  |
| Fish pond or equipment | .001             | .000            | .000           | .000    |                               |                                |                            |                          |                |                |              |                      |                  |
| Farm equipment         | .674             | .000            | .000           | .000    |                               |                                |                            |                          |                |                |              |                      |                  |
| (nonmechanical)        | .000             | .000            | .000           | .000    |                               |                                |                            |                          |                |                |              |                      |                  |
| Farm equipment         | .674             | .000            | .000           | .000    |                               |                                |                            |                          |                |                |              |                      | 1.000            |
| (mechanical)           | .000             | .000            | .000           | .000    |                               |                                |                            |                          |                |                |              |                      | .080             |
| Nonfarm business       | .849             | .000            | .000           | .000    |                               |                                |                            | .802                     | 1.000          |                |              |                      |                  |
| equipment              | .000             | .000            | .000           | .000    |                               |                                |                            | .019                     | .004           | .000           |              |                      |                  |
| House                  | .000             | .000            | .000           | .000    |                               |                                | .778                       | .000                     | .019           |                |              |                      | .000             |
| Large durables         | .000             | .000            | .000           | .000    |                               | .000                          |                            | .000                     | .000           | .000           |              | .000                 | .100             |
| Small durables         | .000             | .000            | .000           | .000    |                               | .000                          |                            | .000                     | .000           | .000           |              | .000                 | .000             |
| Mobile phone           | .000             | .000            | .000           | .000    |                               | .000                          |                            | .000                     | .000           | .000           |              | .000                 | .000             |
| Nonagricultural land   | .897             | .000            | .000           | .000    |                               | .000                          |                            | .637                     | .787           | .002           | .000        | .000                 | .100             |
| Means of transportation| .061             | .000            | .000           | .000    |                               | .000                          |                            | .474                     | .201           | .000           |              | .000                 | .080             |

**Note.** Each cell reports the p-value for the unpaired t-test for equality of total disagreement for each pair of assets.
difficult for a spouse to hide, this can also be construed as evidence for the existence of asymmetric information.\textsuperscript{13}

In summary, although random measurement error and asymmetric measurement error are both likely present, we can rule out that they are the only explanation for the documented empirical patterns. We find evidence, on the basis of our conceptual framework and the empirical tests, that asymmetric information is also contributing to the disagreement. In the context of rural Bangladesh, this results in women reporting higher levels of women’s bargaining power than men are reporting. Ultimately, this analysis shows that these indicators are not pure measures of bargaining power but instead contain information about both bargaining power and asymmetric information.

V. How Does Disagreement Correlate with Women’s Outcomes?
The previous section established that men and women often provide different responses regarding women’s involvement in asset ownership and decision-making and that women are consistently more likely than men to report that women are involved in asset ownership or decision-making. Moreover, this disagreement is suggestive of a household dynamic where wives may own assets or make some decisions without the knowledge of their husbands. While the main contribution of this paper is to document this disagreement and show that it is indicative of asymmetric information between husband and wives, it is also instructive to consider how the variation in responses between men

\textsuperscript{13} It is also important to note that women are more likely to be involved in decisions than in asset ownership in this context and that systematic measurement error could vary between ownership and decision-making, both of which could also contribute to the increased disagreement.
and women is related to positive outcomes for women. This analysis will provide suggestive insight into what the documented response patterns (and, by extension, asymmetric information) mean for women’s well-being.

We examine how men’s and women’s responses regarding women’s involvement in asset ownership and decision-making are correlated with women’s outcomes. We focus on women’s well-being because it is directly linked to increases in women’s bargaining power and because improving women’s well-being is a goal of many women’s empowerment programs. Given the large number of assets and activities considered in this paper, we create a summary measure of spouses’ responses across assets or types of decisions. Using the agreement variables described in the previous sections, the continuous summary measure for each response category is the number of times (across assets or activities) that a household falls into that response category divided by the number of asset categories the household owns or the number of decisions the household makes. “Both report the wife is not involved” is the omitted category.

We consider the correlation of these aggregate measures with a set of five outcomes that are generally linked to higher levels of women’s bargaining power, including (1) the wife’s BMI, (2) the number of groups in which the wife is an active participant, (3) whether the wife currently has a loan, (4) whether the wife has ever used birth control, and (5) the wife’s reported life satisfaction. Further rationale for the choice of these outcome variables is described in appendix A. Using the aggregated response categories as explanatory variables, we conduct ordinary least squares regressions for these outcome variables. Standard errors are clustered at the village level (the primary sampling unit), and we control for a set of demographic and income variables, including consumption, a household asset ownership index, the area of cultivable land held by the household (acres), household size, household composition based on age and sex (proportion of men and women household members under 16 and 16 and older), religion, and region. In addition, we control for the number of activities that the household engages in or the number of asset categories that the household owns.

Given the conclusions drawn in the previous section about the link between household behavior and disagreement, this analysis is intended to provide a descriptive picture of how this disagreement is related to women’s well-being. The data available do not allow us to establish a causal relationship between disagreement and the outcome variables, and as such, this analysis is intended

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14 Consumption is measured as per capita annual consumption, calculated from the consumption-expenditure module of the BIHS. The asset ownership score is an index created by taking the first principal component of all assets reported to be owned in the BIHS household survey.
to be exploratory. Appendix B describes in detail the steps taken to address omitted variable bias, but we cannot rule out that it plays a role in our results.

Table 7 displays the results for asset ownership (panel A) and decision-making (panel B). The first column reports the percentage of assets falling into each category, and the regression results are presented in columns 2–6. When analyzing the relationship of agreement over women’s ownership with outcomes in panel A, we find that agreement that the wife is involved is positively associated with outcomes for group membership, loans, and life satisfaction relative to cases where spouses agree that she is not involved. Cases where the wife says that she owns assets but the husband says that she does not are positively associated with outcomes for the wife’s BMI, group membership, and life satisfaction, while cases where the husband says that she owns but she says that she does not are positively associated with outcomes for life satisfaction.

Next, we examine the role of women in household decision-making. The results are presented in panel B of table 7. The analysis shows that both spouses reporting that the wife is involved in decision-making is statistically significantly associated with improved women’s outcomes relative to both spouses reporting that she is not involved (in all cases but BMI). The wife reporting that she is involved when the husband does not is positively associated with having a loan and overall life satisfaction relative to the omitted category. This same coefficient is positive but not statistically significant for group membership and birth control use. However, these coefficients (except for BMI) are all statistically significantly smaller than the same coefficient for the cases where the couple agrees that she is involved.

When interpreted in light of the hypothesis that agreement that the wife is involved is a good measure of women’s bargaining power and that cases where the wife reports that she is involved but the husband does not are indicative of asymmetric information, these results suggest that women may be benefitting from hidden assets or decisions. Though limited in scope, our findings suggest that women who engage in this behavior may be better off than women who do not own assets or participate in decision-making at all. An emerging literature demonstrates how spouses take advantage of these opportunities (Ashraf 2009; Ashraf, Field, and Lee 2014) but fails to provide much evidence on whether this is good for women.15 Our findings thus represent a useful contribution to this body of research. At the same time, it is clear that the best outcomes

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15 In fact, Ashraf, Field, and Lee (2014) find that women who are privately offered contraception ultimately report lower levels of subjective well-being.
### TABLE 7
CORRELATION OF AGREEMENT CATEGORIES WITH WOMEN’S OUTCOMES

| Mean Percentage of Assets or Activities in Category | Wife’s Body Mass Index | Number of Groups | Wife Has Loan | Use of Birth Control | Wife’s Life Satisfaction |
|--------------------------------------------------|------------------------|-----------------|--------------|---------------------|-------------------------|
| (1)                                              | (2)                    | (3)             | (4)          | (5)                 | (6)                      |
| Agree:                                           |                        |                 |              |                     |                         |
| 1. Wife does not own                            | .64                    | .324            | .0896***     | .0144               | .486**                   |
| 2. Wife owns                                    | .14                    | -.324           | .158***      | .0243               | .0369                   | (.305) (.0467) (.0243) (.0369) (.220) |
| Disagree:                                       |                        |                 |              |                     |                         |
| 3. Wife says wife owns, husband does not         | .17                    | .483*           | .100**       | .0149               | .0149                   | .724*** (.266) (.0421) (.0246) (.0328) (.214) |
| 4. Husband says wife owns, wife does not         | .05                    | -1.15           | .00956       | .0258               | .0735                   | .667** (.379) (.0618) (.0313) (.0479) (.312) |
| $R^2$                                           | .109                   | .058            | .047         | .113                | .149                    |
| p-value: row 2 = row 3                           | .017                   | .264            | .006         | .991                | .343                    |

| B. Decision-Making about Activities              |                        |                 |              |                     |                         |
| Agree:                                           |                        |                 |              |                     |                         |
| 1. Wife does not decide                          | .33                    | -.0855          | .0732***     | .158***             | 1.324***                |
| 2. Wife decides                                  | .25                    | .053            | .0359**      | .0209               | .743***                 |
| Disagree:                                       |                        |                 |              |                     |                         |
| 3. Wife says wife decides, husband does not      | .33                    | .148            | .053         | .0145               | .0270                   | (.217) (.0335) (.0145) (.0270) (.138) |
| 4. Husband says wife decides, wife does not      | .09                    | -.552*          | -.00276      | .0122               | -.455***                | (.310) (.0446) (.0229) (.0470) (.247) |
| $R^2$                                           | .109                   | .053            | .048         | .17                 | .164                    |
| p-value: row 2 = row 3                           | .334                   | .012            | .029         | 0                   | .001                    |

| C. Outcomes                                      |                        |                 |              |                     |                         |
| Observations                                     | 4,749                  | 4,944           | 4,944        | 4,944               | 4,944                   |
| Outcome variable mean                            | 20.78                  | .31             | .18          | .78                 | .05                     |

**Note.** Robust standard errors in brackets are clustered at the level of primary sampling unit. All regressions control for annual per capita consumption, asset score, the area of cultivable land held by the household (converted to acres), household size and composition based on age and sex, religion, region, and the number of asset categories owned by that household.

* $p < .10$.

** $p < .05$.

*** $p < .01$. 
for women occur when their roles in ownership and decision-making take place with the knowledge of both parties.\footnote{Allendorf (2007) also finds that this association is strongest when the husband and wife agree.}

VI. Conclusion

Though many surveys collect information on bargaining power and related measures from both men and women, the information contained in the different responses is understudied. In this paper, we analyze agreement about women’s roles in asset ownership and household decision-making and develop a framework that considers the implications of disagreement for household behavior. We apply this framework to survey data from Bangladesh and find that disagreement is prevalent and systematic; women are more likely than men to report that women own assets or make decisions. We also find that disagreement varies across assets and activities. These findings indicate that disagreement is not exclusively driven by measurement error, either random or asymmetric. This pattern of results, combined with the fact that disagreement is suggestively higher for assets that are easier to hide and for decision-making, is indicative of asymmetric information in the household in the form of hidden assets and decisions.

We also find that cases in which women report involvement but men disagree are positively correlated with outcomes relative to the situation in which they agree the wife is not involved. This provides suggestive evidence that asymmetric information can be beneficial for women when the alternative is women’s lack of involvement in asset ownership and decision-making. Outcomes for women are the best when husbands and wives agree that the wife owns assets and is involved in decision-making.

The analysis presented in this paper shows that obtaining responses about bargaining power from both spouses does provide useful information. The response of only one spouse contains a mixture of information regarding bargaining power and asymmetric information, while the comparison of both spouses’ responses can help to separate these two phenomena. To fully understand women’s bargaining power within the household, it is not sufficient to rely on the response of just one spouse, and researchers must balance this additional information with the nonnegligible cost of interviewing both spouses.

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