

# Measuring Ownership, Control, and Use of Assets

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## Abstract

Assets generate and help diversify income, provide collateral to access credit, alleviate liquidity constraints in the face of shocks, and are key inputs into empowerment. Despite the importance of individual-level data on asset ownership and control, and that most assets are owned by individuals, solely or jointly, it is typical for the micro data on asset ownership to be collected at the household level, often from only one respondent per household. Even when the data are collected at the individual level, with identification of reported or documented owners of a given asset within the household, the information is still often solicited from a single respondent. Further, the identification of owners is seldom paired with the identification of individuals who hold various rights to assets, limiting

understanding of the interrelationships among ownership and rights, and whether these relationships vary across individuals. Through a review of the existing approaches to data collection and the relevant literature on survey methodology, this paper presents an overview of the current best practices for collecting individual-level data on the ownership and control of assets in household and farm surveys. The paper provides recommendations in three areas: (1) respondent selection; (2) definition and measurement of assets to and ownership and control of assets; and (3) measurement of the quantity, value, and quality of assets. Open methodological questions that can be answered through analysis of existing data or the collection and analysis of new data are identified for future research.

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## Measuring Ownership, Control, and Use of Assets

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## 1. Introduction

Ownership and control of physical and financial assets are essential to an individual's well-being. Assets generate and help diversify income; provide collateral to gain access to credit; alleviate liquidity constraints in the face of shocks; and provide status in society (Deere and Doss, 2006). A large body of literature demonstrates the critical role that assets, and not just income, play in poverty reduction (see Johnson et al. (2016) for a review). Although economic research focused on asset ownership and wealth has traditionally assessed household asset portfolios, an increasing number of studies over the last decade have emphasized the importance of the collection and analysis of individual-level information on ownership and control of physical and financial assets. This represents an important shift because it acknowledges that men and women often have differential access to, control over, and ability to benefit from assets.

The empirical utility of high-quality, individual-level data on asset ownership and control cannot be overstated. First, these data enrich the analyses of gender differences in wealth, revealing the extent of economic disadvantage accumulated by women over the life cycle and providing a long-term and more holistic overview of the gender dimensions of economic inequality (Warren, 2006; Deere and Doss, 2006; Ruel and Hauser, 2013). Second, in comparison to household-level analyses, asset studies focused on individuals provide more nuanced insights into the determinants of poverty and vulnerability by capturing additional vulnerabilities faced by women, whose rights over assets often disappear upon dissolution of her household whether due to death, divorce, or separation.<sup>2</sup> Third, the desired individual-level data directly inform microeconomic research that focuses on women's empowerment and intrahousehold bargaining and cooperation and that often utilizes control of assets as a proxy for the individual's empowerment/bargaining power. Evidence suggests that the decisions made within the household are different when women have higher bargaining power and that the outcomes generally increase the well-being of women and their children (Allendorf, 2007; Beegle et al., 2001; Deininger et al., 2010; Doss, 2006; Duflo, 2003; Haddad et al., 1997; Menon et al., 2014; Quisumbing and Maluccio, 2003; Thomas, 1990). Finally, understanding who uses and controls assets is crucial for appropriate design and targeting of livelihood interventions to not only enhance the productivity of farmers and entrepreneurs but also ensure that these interventions do not have unintended consequences.<sup>3</sup>

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<sup>2</sup> For instance, Quisumbing et al. (2011) find that, in Bangladesh, weather-related shocks impact men's assets more than women's assets, but shocks related to illness have a larger impact on women's assets. In Uganda, drought shocks have an effect on women's assets, but not on men's assets.

<sup>3</sup> Evidence has demonstrated that secure land rights increase agricultural production at the household level, but very little research exists on this topic at the individual level. Goldstein and Udry (2008) find that in Ghana, women farmers had less secure land rights than men, and were thus less likely to leave their land fallow due to their increased risk of losing land that they were not actively farming. Quisumbing et al. (2001) reveal also in Ghana that women were more likely to invest in land with secure property rights by planting

Despite the importance of individual-level data on asset ownership and control, and the fact that most assets are owned by individuals, either solely or jointly, it is typical for the micro data on asset ownership to be collected largely at the household-level, often from only one respondent per household (Doss et al., 2008; Deere et al., 2012; Ruel and Hauser, 2013). Even when household survey data are collected at the individual-level, with identification of reported or documented owners of a given asset within the same household, the information is often collected from a single respondent, often the household member designated as the “most knowledgeable” household member. Further, data on ownership are seldom paired with data identifying individuals who hold various rights to assets, limiting our understanding of the inter-relationships among ownership and rights, and whether these relationships vary across individuals (Kilic and Moylan, 2016).

Accurate measurement of ownership, control, and use of assets is essential for correctly diagnosing problems and developing recommendations to address these challenges within developing countries. Although sex-disaggregated asset ownership indicators are part of the data agenda for the Sustainable Development Goals (SDGs), gaps remain in our knowledge of how best to collect these data. Identifying the best practices on questionnaire design and respondent selection protocols is in turn necessary to promote the availability and comparability of these indicators on a cross-country basis (Kilic and Moylan, 2016).

This paper assesses what we know and what we do not know regarding best practices for collecting individual-level data on the ownership, control, and use of assets in the context of household and farm surveys.

Section 2 defines assets, control, use, and ownership, and identifies the challenges to both measuring and understanding exclusive and joint forms of asset use, control, and ownership. Section 3 provides an overview of existing approaches to micro data collection on asset use, control, and ownership, highlighting how different methods have operationalized different definitions. Section 4 assesses the strengths and weaknesses of diverse approaches to three key methodological questions: (1) Who should be interviewed: Can one proxy respondent for the entire household provide adequate information? Does reporting vary by sex of respondent? (2) How can one define and measure control, access, and ownership of assets within a survey? (3) How can one reliably measure asset quantity, value, and quality? Section 5 concludes by identifying methodological questions that can be answered through analysis of existing data or through the collection and analysis of new data, and the implications of answering these questions.

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cocoa trees. While more research is needed to understand the conditions under which strengthening women’s property rights will increase aggregate agricultural productivity and sustainable management practices (Doss 2017), sufficient evidence has demonstrated that livelihood interventions that do not recognize the gender asset gap run the risk of exacerbating inequalities (Meinzen-Dick et al. 2011).

## 2. Conceptual Framework

Before assessing the state of knowledge on asset measurement, it is important to lay out the key conceptual issues. First, we must define *assets*, which generally refer to resources controlled by individuals, households, or formal or informal groups (see Johnson et al. (2016) for a review of asset definitions). They serve as a means of storing value and may provide a stream of benefits over time. In our paper, we use a definition of assets based on the Sustainable Livelihoods Framework, which includes five capitals: (1) **natural**, including land, livestock, water, and trees; (2) **physical**, including housing and agricultural and household durables; (3) **financial**, including cash, savings (formal or informal), and financial investments including stocks and bonds; (4) **human**, including health, knowledge, education, labor power, and skills; and (5) **social**, including group membership and social networks (Scoones 1998). Some recent work categorizes land, housing, livestock, and durables all as physical assets, as distinct from financial, human and social assets (Doss et al, 2014).

Further, we focus our review on natural (specifically land and trees)<sup>4</sup>, physical, and financial assets. While human and social capital are important for understanding mechanisms to reduce poverty, increase women’s empowerment, and improve livelihoods, methods of measuring human capital have been widely studied, including from a gender perspective. The approaches to studying social capital require methods that differ considerably from those used for studying natural, physical, and financial assets. In addition, we exclude the analysis of access to and control over common property resources, mainly due to our pragmatic focus on areas in which cross-country applicable recommendations could be provided.<sup>5</sup>

Although a livelihoods perspective might promote a focus on productive assets, such as land, dwelling, livestock, and, agricultural equipment, a bargaining perspective would encourage us to also consider other assets that may be of value, especially to women, such as jewelry. To understand how individuals accumulate assets as they move out of poverty – and how the accumulation of assets propels the movement out of poverty – it is important to consider not only those assets that have high value, such as land and livestock, but also those that have less economic value, and which may contribute to livelihoods or well-being such as consumer durables and smaller agricultural equipment items.

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<sup>4</sup> Although water is also important, the access to and control over water is a substantially different issue with an extensive literature that is beyond the scope of this paper.

<sup>5</sup> Common property could include forests, rangelands, or water systems. The extent to which these assets are controlled by men, women, or jointly, as well as the resulting implications for livelihood strategies or empowerment (such as through leadership in the group tasked with the common property management) can be explored (Meinzen-Dick et al., 2011).

There are myriad definitions of ownership, control, and use of assets; they represent the wide variety of rights over assets. Schlager and Ostrom (1992) characterize different bundles of rights along a continuum from access or use rights to control rights to ownership rights. According to the Collective Action and Property Rights (CAPRI) program, use rights might include the right to access the resource (e.g. walk across a field), withdraw from a resource (e.g. pick wild plants), or exploit a resource for economic benefit (e.g. fish commercially). Control or decision-making rights include the rights of management (e.g. plant a crop), exclusion (i.e. prevent others from accessing a resource), or alienation (e.g. rent out, sell, or give away the rights) (CAPRI, 2010). Transfer rights, including bequeathing, as well as the ability to distribute benefits from the assets, may be considered control or decision-making rights.

A major challenge in measuring asset ownership is that the approaches necessarily vary substantially by asset type and by context. Understanding the definition of ownership in each setting requires an understanding of what rights are generally associated with ownership. This may include the full bundle of use and control rights or it may be defined as the right of alienation. The System of National Accounts uses two definitions of ownership, distinguishing between the legal owner and the economic owner.

“The legal owner of entities such as goods and services, natural resources, financial assets and liabilities is the institutional unit entitled in law and sustainable under the law to claim the benefits associated with the entities. By contrast, the economic owner of entities such as goods and services, natural resources, financial assets and liabilities is the institutional unit entitled to claim the benefits associated with the use of the entity in question in the course of an economic activity by virtue of accepting the associated risks” (UN Statistics, 2009. p. 195).

In practice, the approaches to collecting ownership data in household surveys do not map cleanly onto the concepts of the various rights. Household surveys tend to gather information on reported (or perception-based) ownership, documented ownership, or occasionally both. For reported ownership, the respondent(s) is/are asked who owns an asset, while for documented ownership, the respondent(s) is/are generally asked whose name(s) is/are listed as owner(s) on an ownership document such as a title, will, or receipt.<sup>6</sup> While documented ownership is often considered the most secure, it is only relevant for certain assets, and only in places where the enforcement of the associated rights is effective.

Ownership, whether reported or documented, does not overlap consistently with the other property rights articulated above. When there are benefits, such as tax reductions in India for property registered to women, this does not necessarily translate into increased control

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<sup>6</sup> Only rarely do enumerators ask to see copies of the ownership documents.

over the property by the woman whose name it is in (especially if she is unaware that her name is on the document). And in places where documented ownership is rare, women may have the rights to manage land and obtain the economic benefits from it, even if they are not considered the owner. Thus, information on both ownership and other rights may be important.

One analysis that compares the ownership, management, and control over output of agricultural land in six African countries finds that often these rights do not overlap (Slavchevska et al., 2017). The form of rights holding is defined to be that solely by a man, solely by a woman, joint by a man and woman, and other. The overlap between ownership and management ranges from 47% in Malawi to 84% in Niger. And the overlap between ownership and control over output ranges from 40% in Malawi to 71% in Uganda. This strongly suggests that these rights are distinct and may be held by different people.

Another challenge in measuring who owns, controls, and uses an asset is that one or more individuals or groups can hold these rights. In some cases, different people or groups may have different rights over the same asset and the benefits of ownership or control may vary depending on whether asset is owned or controlled individually or jointly. The most common form of joint ownership is between spouses, but it can also occur between parents and children, siblings, or others. As data become more widely available on individual and joint ownership, it will provide opportunities for analyses of how their impacts differ. There is a longstanding debate in the literature as to whether women are better off with individual or joint property rights, especially regarding land (Agarwal, 2003; Jackson 2003). Better data will allow us to empirically analyze these questions across contexts.

The rules about the extent to which marriage confers property rights are an important factor influencing individual and joint property rights. A range of marital property rights exist; on one end of the spectrum is the common property regime, in which all property owned by any member of the couple is considered jointly owned. On the other end is the separation of property regime, in which marriage does not provide one with any rights to the spouse's property. In between the two extremes are the partial community property regimes, in which typically the assets brought to the marriage or inherited by an individual during the marriage are individual property, but all other property acquired during the marriage is joint. Only 79 of the 173 countries analyzed in *Women, Business and the Law* (2016) have a full or partial community property regime, indicating that separation of property is the most common marital regime globally. A single country can have more than one marital property regime, often based on religion, ethnicity or region, and couples can often opt out of the default marital property regime, so it is important to identify which regime applies to a specific couple.



Finally, the means of acquisition of property may confer or limit particular rights over it. For instance, inherited land may come with stipulations about whether it includes the right to sell or transfer it outside of the family. Whether the inheritance was natal, from one's birth family, or marital, from one's spouse, may also affect the rights.

In many countries, inheritance laws do not guarantee equal rights to sons and daughters. In addition, even where sons and daughters have equal rights, parents often choose to provide their sons with a larger inheritance. Analysis of this may be complicated by the fact that in some contexts, the dowry provided to a daughter may be viewed as her inheritance, although she may not control it directly (Botticini and Siow, 2003). Parents may also provide sons and daughters with different types of bequests; in the Philippines, while sons are preferred regarding land inheritance, daughters receive more schooling (Estudillo, Quisumbing, and Otsuka, 2001). Moreover, even when daughters inherit, they may face pressure to waive these rights. For example, in many Muslim families, women give their inheritance rights to their brothers in exchange for the right to visit and maintain good relations with their birth family. Inheritance laws are also important for widows, but often discriminate against them. Thirty-five of the 173 economies assessed in *Women, Business and the Law* (2016) do not provide male and female surviving spouses with the same inheritance rights. It is therefore essential to obtain information on both inheritance laws and practices.

As we consider the approaches to collecting data on asset ownership, we will keep in mind these various conceptual issues, including the definition of assets and the rights over them, joint ownership contrasted with individual ownership, the rules regarding property within marriage and the patterns of inheritance.

### **3. Overview of Existing Approaches to Data Collection on Individual-Level Asset Ownership, Control, and Use**

To identify the gaps in our knowledge of how to best collect individual-level asset data, it is essential to review existing methods of collecting such data. The methodological differences across the efforts that are reviewed below are in part related to the differences in their objectives. We begin by discussing each effort and then assess the key lessons learned. For easy reference, Table 1 provides an overview of each data collection exercise that is reviewed in this section.

Key elements of the approaches include: What is the sample? Who is interviewed? How is the survey questionnaire structured? What is the unit of analysis? Does it allow us to analyze how the assets are owned? Can we assign ownership to specific individuals for

whom we have information on sex, age, marital status, etc.? What types of assets are included? How is ownership defined? Which rights are identified? Does the survey allow us to distinguish individual and joint ownership? How were the assets acquired? And finally, does the survey collect data on the value of assets?

### **3.1 Gender Asset Gap Project**

The Gender Asset Gap project was initiated in 2009 to demonstrate the importance and feasibility of collecting nationally representative, individual-level data on physical and financial assets. The project collected data that were nationally representative for Ghana and Ecuador and representative at the state level for Karnataka, India. The primary goal was to measure asset and wealth gaps between men and women. The data collection included both qualitative fieldwork and a household asset survey. In the qualitative phase, the key themes of focus group discussions were the accumulation of assets over the individual life cycle, the importance of assets, the market for assets, and household decision-making over asset acquisition and use. In combination with key informant interviews and a literature review of legal, marital, and inheritance regimes, this work formed the basis for adapting the household survey template to the three specific contexts.<sup>7</sup>

The household asset surveys, conducted between May 2010 and January 2011, included two survey instruments. The first instrument created a roster of all assets owned by anyone in the household, including dwelling, agricultural land, other real estate, livestock, agricultural implements, non-farm businesses, consumer durables, and identified the owners of each listed asset.<sup>8</sup> In Ghana and Karnataka, the person who was the most knowledgeable about the assets owned within the household was chosen as the respondent for the first instrument. In Ecuador, the primary couple was interviewed together whenever possible. The second instrument was administered separately to two adult members of the household and collected additional information including ownership of financial assets and rights and decision-making over assets.

The unit of analysis was the asset, with information collected on the owner or owners of each asset. Up to three owners could have been listed for each asset or it could have been coded “owned by all household members.” Because the owners are identified with an ID number that can be matched to the household roster, it is possible to compile the information at the individual-level, identifying the assets owned by each household member and associating them with the owner’s characteristics.

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<sup>7</sup> For detailed information on the survey methodology and the lessons learned, see Doss et al. (2011).

<sup>8</sup> Additional information was collected in each of the surveys, but the placement and content varied across the three countries and is less relevant to this analysis.

Much of the analysis conducted as part of the project has used the information from the household roster, which uses proxy respondents for information about other household members. Additional information is available for the two respondents of the individual questionnaire.

The project also collected data on the value of each asset, using three measures of value: the potential sales price, the construction cost (for dwellings), and the rental value. The three project countries differed in the placement of the valuation questions and the respondents for these. In Ecuador, the valuation questions were asked in the household inventory completed by the principal adults of the household (i.e., a couple, or a sole male or female head). The respondents were asked to list all assets owned by a household member and to provide a value for each asset. In Ghana, the valuation questions were only asked in the household inventory and only one person responded to this section. In Karnataka, the valuation questions were asked in the individual questionnaires.

### **3.2 Methodological Experiment on Measuring Assets from a Gender Perspective**

The World Bank Living Standards Measurement Study (LSMS), the United Nations Evidence and Data for Gender Equality (EDGE) project<sup>9</sup> and the Uganda Bureau of Statistics collaborated on the design and implementation of the Methodological Experiment on Measuring Asset ownership from a Gender Perspective (MEXA). MEXA was a randomized household survey experiment implemented in 2014 across 140 enumeration areas (EA) in Uganda to test the relative effects of different approaches to respondent selection and questionnaire design on the estimates of ownership of and rights to physical and financial assets. Together with the UN EDGE-supported household surveys implemented in Georgia, Maldives, Mexico, Mongolia, Philippines, and South Africa in 2015-2016, MEXA is informing the international guidelines on individual-level measurement of asset ownership and control that will be submitted by the UN EDGE project to the United Nations Statistical Commission for adoption in 2017 (see Kilic and Moylan (2016) for more details on the design, implementation and analysis of MEXA).

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<sup>9</sup> The EDGE project is executed jointly by the United Nations Statistics Division (UNSD) and the United Nations Entity for Gender Equality and the Empowerment of Women (UN-Women) and seeks to accelerate existing efforts to generate comparable gender indicators on health, education, employment, entrepreneurship, and asset ownership. The project focuses on (i) the development of a platform for international data and metadata compilation covering education, employment and health indicators, (ii) the development of international definitions and methods for measuring gender-disaggregated entrepreneurship and asset ownership, and (iii) testing the newly developed methods in selected countries. These seven household surveys tested different approaches to data collection in an iterative fashion, over the period of 2014-2016, for informing the international guidelines on the measurement of individual-level asset ownership and control. This document was circulated in draft form for comments during the 2017 United Nations Statistical Commission.

The key research questions that guided the MEXA experimental design included: 1) Does interviewing only the “most knowledgeable” household member, as is typically done in household surveys, yield comprehensive information about individual-level asset ownership and control for both men and women? 2) How much can we improve understanding of (i) intra-household asset ownership and control and (ii) inter-relationships between reported, economic and documented ownership of, and rights to assets by interviewing multiple household members, as opposed to the most knowledgeable household member? 3) Do partners provide different information about personal and each other’s asset ownership when interviewed separately versus together? 4) Do individuals provide different information about personal asset ownership when interviewed separately but asked to report only on assets they own versus assets owned by any household member, including themselves?

In view of the prevailing protocols on respondent selection and fieldwork implementation, and the research questions, MEXA tested 5 survey treatments, each of which sought to establish a different interview setting while uniquely identifying, at the asset-level and across 13 asset classes, reported owners, economic owners, documented owners and holders of rights to (i) bequeath, (ii) sell, (iii) rent out, (iv) use as collateral, and (v) invest/make improvements. Within each enumeration area, 4 households were assigned at random to each treatment arm.

Arm 1 (standard of practice) interviewed the individual who, following the enumerator’s introduction of the survey, was identified to be the “most knowledgeable” household member.” This respondent was asked about the assets owned by each member of the household, exclusively or jointly with others within or outside the household, in each asset class.<sup>10</sup> Arm 2 interviewed the randomly selected member of the principal couple while Arm 3 interviewed the principal couple together. The questionnaire for Arm 2 and Arm 3 was otherwise identical with respect to Arm 1. Arm 4 and Arm 5 each interviewed up to 4 adult household members, 18 years and above; attempts were made to conduct the interviews simultaneously. In each case, an attempt was made to conduct the interview without others present.

Identical to Arms 1 through 3, each respondent in an Arm 4 household was asked independently about the assets owned by each member of the household, exclusively or jointly with others within or outside the household, in each asset class. In this respect, *reported* owners, *economic* owners and *documented* owners (as applicable) were uniquely identified based on ID numbers sourced from household roster through the following

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<sup>10</sup> In line with the prevailing implementation protocols, the selection of the most knowledgeable household member was a function of the adult individuals that were available at the time of the interview. This could have meant that the first choice for the most knowledgeable member was not interviewed if he/she was unavailable during the time that the field team was going to be in that enumeration area.

questions: “Who owns this [ASSET]?” (identifying reported owners); “If this [ASSET] were to be sold/rented out today, who would decide how the money is used” (identifying economic owners); and “Whose names are listed as owners on the ownership document for this [ASSET]?” (identifying documented owners).

In contrast, Arm 5 only inquired about the assets owned by the respondent, exclusively or jointly with others within or outside the household, in each asset class. Another household member’s potential joint ownership of an asset was identified only conditional on the respondent’s identification of himself or herself as an owner of that asset. For example, in the case of inquiring regarding the dwelling reported ownership, Arm 5 would have asked first “Are you among the owners of this dwelling?” followed by “Who else owns this dwelling?” to capture, if applicable, other household and/or non-household members that may be joint reported owners.

Finally, Arm 4 and Arm 5 had each respondent create an independent roster of assets in each asset class with the idea that the analysis team would attempt to create a panel of assets across the respondents of the same household based strictly on the household survey data. This decision was thought to better capture assets that may be hidden from other household members, and still did not compromise the objective of creating a household-level wealth aggregate that would ultimately feed into the System of National Accounts.

### **3.3 Gender, Agriculture, and Assets Project**

The Gender, Agriculture, and Assets Project (GAAP), led by the International Food Policy Research Institute (IFPRI) and the International Livestock Research Institute (ILRI), and funded by the Bill and Melinda Gates Foundation, aimed to better understand the dynamics of gender and assets in agricultural development programs. The GAAP portfolio included eight agricultural development projects from South Asia and Africa from 2010 to 2014. Each project collected both qualitative and quantitative information on individual asset ownership and control, but each data collection effort was tailored to the individual project, rather than standardized. The person chosen as the respondent also varied by project. The purpose was to collect data for impact evaluation, rather than to obtain representative data on patterns of asset ownership.

Most of the GAAP surveys collected information on the number and value of assets owned by the household and by individuals within the household. Asset types included livestock, agricultural and non-agricultural productive assets, and non-productive assets. In addition to gathering data on who owns assets, either individually or jointly, the surveys gathered data on who holds certain rights over assets, such as the right to use, rent out, sell, lend, or prevent others from using the asset; who can decide how to spend money generated from

the asset; who can decide who inherits the asset; and who can decide what type of crops to cultivate.

Based on the findings from the first phase, the project produced a Gender and Assets Toolkit<sup>11</sup>, which includes a list of best practices for collecting gender and assets data at the project level. The best practices highlight (1) the importance of using both quantitative and qualitative research methods for understanding complex gender and assets dynamics, and (2) the need for analyzing gender asset gaps over time rather than simply capturing snapshots of men’s and women’s control over assets. In addition, this list focuses on the importance of tailoring data collection methods to specific contexts and measuring ownership, use, and control rights rather than simply focusing on asset ownership.

### **3.4 Women’s Empowerment in Agriculture Index**

The Women’s Empowerment in Agriculture Index (WEAI) survey instrument, developed by the IFPRI, Oxford Poverty and Human Development Initiative, and the United States Agency for International Development (USAID), captures data on five domains of empowerment in agriculture, one of which is the access to and control of productive capital.<sup>12</sup> The purpose of the survey instrument is not to identify individual asset ownership, but to collect data to use in an indicator of women’s empowerment in agriculture.

The WEAI was piloted in Bangladesh, Guatemala, and Uganda in 2011-12 and has since been collected in baseline surveys for Feed the Future’s 19 focus countries across Asia, Latin America, and Africa south of the Sahara. In general, these surveys are representative of Feed the Future’s zones of influence. In some cases, the WEAI modules are integrated in larger surveys, but in all cases, the WEAI is administered with a Household Questionnaire, which includes a household roster. Within each household, the individual survey instrument is administered to both a primary and a secondary respondent—one man and one woman aged 18 and over—who are self-identified as the primary members responsible for social and economic decision making within the household. They are usually, but not necessarily, husband and wife. The interview may also be conducted solely with a woman primary respondent if there is no adult man in the household.

Questions on productive assets are included in the section for the domain on control of productive capital. Each respondent is asked a series of questions about agricultural resources and assets, including agricultural land, large livestock, small livestock, poultry, fish pond/fishing equipment, mechanized and non-mechanized farm equipment, nonfarm

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<sup>11</sup> The toolkit can be accessed at <https://tinyurl.com/gaaptoolkit>.

<sup>12</sup> For more information on the WEAI, please visit <https://www.ifpri.org/topic/weai-resource-center>.

business equipment, house, large and small consumer durables, cell phones, non-agricultural land and means of transport. In the baseline surveys, these questions included on productive capital: 1) Does anyone in your household currently have any [item]?, 2) How many of [each item] does your household currently have?, 3) Who owns most of [each item]?, 4) Who can decide whether to sell [each item] most of the time?, 5) Who can decide whether to give [each item] away most of the time?, 6) Who can decide to mortgage or rent out [each item] most of the time?, 7) Who contributes most to decisions regarding a new purchase of [each item]?

The focus is on understanding who owns most of the assets, which serves as a proxy for bargaining power within the household. Thus, a woman who lives in a household with three parcels of land and owns one of them, would not be identified as a landowner. Similarly, if she can decide whether to sell only one parcel, but not most, the instrument will not identify her as having these land rights. It does not provide data to calculate how each asset is owned (jointly or individually and by whom) or the incidence of asset ownership by individuals, although one can impute the extent to which groups of assets (in predefined categories) are solely or jointly owned. Note that the WEAI is designed to be administered together with a household survey that collects asset information, so the WEAI should not be considered as a stand-alone module.

Instead of using household member identification numbers, the WEAI uses very detailed response codes. For the questions regarding who owns or control specific assets, the response codes usually include: (1) self (2) partner/spouse (3) self and partner/spouse jointly (4) other household member (5) self and other household member(s), (6) partner/spouse and other household member(s), (7) someone (or group of people) outside the household), (8) self and other outside people, (9) partner/spouse and other outside people, and (10) self, partner/spouse and other outside people. Thus, it provides information on whether most of the assets in each type are owned individually or jointly. Because the WEAI is administered together with a household questionnaire that includes a household roster, it is possible to map some of the codes in the WEAI back to the household roster.

The more recent Abbreviated WEAI (A-WEAI), a shorter version of the original WEAI asks, “Does anyone in your household currently have any [item]?” and “Do you own any of the item?” Respondents can reply that they own an item solely or jointly or that they do not own any of an item. This facilitates calculation of the incidence of ownership by men and women within the sample.

### **3.5 Demographic and Health Surveys**

The Demographic and Health Surveys (DHS) are nationally representative household surveys on fertility, health, and family planning behaviors and attitudes, collected in over 90 countries, and administered by host country governments with technical assistance from ICF International and other agencies under the MEASURE project.<sup>13</sup> Since 2009, they have included questions about land and housing ownership.

All DHS surveys include a minimum of two questionnaires—a Household Questionnaire and a Women’s Questionnaire. The Household Questionnaire can be administered to any capable member of the household age 15 years or older and collects information on individual and household characteristics. All women of reproductive age (15-49) that are identified in the household roster are eligible to respond to the Women’s Questionnaire. In addition, many surveys include a Men’s Questionnaire, generally administered to men (age 15-49/54/59, depending on the country). In some cases, the sample only includes ever or currently married men and women.

The DHS sample sizes vary widely across countries and years, but are generally between 5,000 and 30,000 households, and are based on calculations of the optimal sample size for two-stage cluster sampling in each country. Due to the structure of the survey, more women are interviewed than men. The DHS are typically conducted every five years to facilitate analysis of changes over time.

Questions are asked both about household landholdings and about whether the respondent is an owner. For both land and housing, the respondents are typically asked, “Do you own any land either alone or jointly with someone else?” and responses of no ownership, sole ownership, joint ownership or both sole and joint ownership are allowed.

Thus, the unit of analysis is the respondent and the survey identifies irrespectively of whether he or she is a landowner. A similar question is asked about housing. If an individual identifies as a joint owner, the other owner is not identified. No information is collected on the value or area of the land or housing.

### **3.6 World Programme for the Census of Agriculture**

The World Programme for the Census of Agriculture (WCA), housed at the Food and Agriculture Organization of the United Nations (FAO), provides methodological guidelines and technical assistance for country agricultural census operations. The WCA 2010 round was undertaken from 2006 to 2015, and was centered around a modular

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<sup>13</sup> For more information, please visit: <http://www.measuredhs.com>.



approach to data collection, including a core census module and one or more census supplementary modules, depending on the country.

The core census module items that are important for gender-sensitive analysis of land and livestock ownership and management include the identification and location of the holding, the legal status of the holder, the sex of the agricultural holder, land tenure types and size of the holding, and livestock types and quantities. An important methodological difference between the 2000 and the 2010 rounds is that the latter introduced the concept of the sub-holding and sub-holder. By recognizing that an agricultural holder could be a group of people such as a husband and wife, the 2010 round aimed to improve measurement of the role of multiple household members, and especially women, in the management of a holding.

An FAO review of 86 agricultural censuses conducted between 2006 and 2013 revealed that while almost all collected information on the sex of the holder and the land tenure of the holding, only a few countries provided analysis of sex-disaggregated data in their reports. The review also covered the availability of data on sub-holdings and sub-holders. Although many countries implemented parcel-level modules, only African countries had collected data on the sex of the parcel manager or owner. Many countries faced challenges implementing the concepts of sub-holders and sub-holdings (FAO – UBOS Expert Consultation, 2014). Therefore, these concepts are not included in the WCA 2020 round, but the concept of a joint holder—or a person making decisions about the holding in conjunction with another individual within or outside one’s household—remains. In addition, the WCA 2020 guidelines recommend (1) collecting information on the sex of any household members – not limited to the holder or joint holders – making managerial decisions<sup>14</sup> on the holding, and (2) disaggregating the area of crops and the number of livestock by the sex of the person managing them and the area of land owned and the number of livestock owned by the sex of the owner.

### **3.7 Living Standards Measurement Study – Integrated Surveys on Agriculture**

The World Bank Living Standards Measurement Study - Integrated Surveys on Agriculture (LSMS-ISA) program provides technical and financial support to national statistical offices in Sub-Saharan Africa in the design, implementation and analysis of national, multi-topic, panel household surveys that have a strong focus on smallholder agriculture and that are modeled on the integrated household survey design of the LSMS.<sup>15</sup> In addition to the goal

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<sup>14</sup> The list of managerial decisions varies by country.

<sup>15</sup> The LSMS-ISA is implemented by the Living Standards Measurement Study (LSMS), housed within the Development Data Group of the World Bank. The unit-record anonymized data and documentation associated with each survey supported by the LSMS-ISA are made publicly available within 12 months of

of producing policy-relevant agricultural data, the LSMS-ISA emphasizes the design and validation of innovative survey methods, the use of technology for improving survey data quality, and the development of analytical tools to facilitate the use and analysis of the data collected.

The surveys supported by the LSMS-ISA are implemented by the National Statistics Office of each participating country. Each survey interviews between 3,000 and 5,000 households at baseline. The panel dimension of the surveys necessitates tracking of households as well as individuals who no longer reside at baseline dwelling locations. Each interviewed household receives a multi-topic household questionnaire, coupled with agricultural questionnaires on crop, livestock and fishery production, conditional on household participation in these domains. While the content of the questionnaire modules can exhibit cross-country variation driven by country specificities, there are also marked similarities in the type and the wording of key questions, and the level at which information is solicited.

On asset ownership, currently, the surveys uniquely identify reported owners with the household (i.e. up to 2 owners identified from the household roster) at the asset level, for agricultural land, livestock, and household non-farm businesses. Specific to agricultural land and non-farm businesses, up to 2 managers are identified from the household roster for each cultivated plot/non-farm business, and in the case of livestock, up to 2 caretakers are again uniquely identified for each livestock type reported to be owned. The surveys require the manager/caretaker of each plot/non-farm business/livestock type to report on the entity in question. If a proxy respondent is used, the proxy respondent is often identified, linked to the household roster, in the questionnaire instrument – though this aspect of survey design does exhibit inter-temporal and cross-country variation. The LSMS-ISA is working towards enhancing the scope of individual-disaggregated information collection on ownership of and rights to physical and financial assets, in line with the recommendations of the methodological research that is reviewed in section 4.<sup>16</sup>

### **3.8 Global Findex**

Launched in 2011 by the World Bank Development Research Group, with funding from the Bill and Melinda Gates Foundation, the Global Financial Inclusion (Global Findex) database collects survey data on how individuals save, borrow, make payments, and manage risk. Thus, it includes detailed information on the financial assets owned by individuals.

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completion of fieldwork in each country. For more information about the LSMS and the LSMS-ISA, please visit [www.worldbank.org/lsmis](http://www.worldbank.org/lsmis).

<sup>16</sup> Expanding the scope and cross-comparability of the information collected on financial assets could be an easy win for the LSMS-ISA, perhaps exploring synergies with the questionnaire design promoted as part of the Global Findex.

Collected in partnership with the Gallup World Poll in 2011 and again in 2014, the Global Findex interviewed approximately 150,000 randomly selected adults (age 15 and over) across countries in each survey round. This sample is representative of more than 97 percent of the world’s adult population, and nationally representative of each of the more than 140 countries included in the database.<sup>17</sup>

The Global Findex includes over 100 indicators of financial inclusion, summarized for all adults and disaggregated by key demographic characteristics—gender, age, and income. Because the Global Findex samples individuals, all the questions are about the respondent and specify whether the respondent should answer about him or herself alone or jointly with someone else. For example, the questionnaire asks, “Do you, either by yourself or together with someone else, currently have an account at any of the following places?” No information is collected on other assets.

## **4 Best Practices and Known Gaps**

Given the various approaches discussed above, in this section, we focus on what we can learn from the different approaches, what their strengths and weaknesses are relative to each other, and the research questions for which each is suited.

### **4.1 Defining and Measuring Ownership, Control, and Use of Assets**

In any discussion of women’s landownership, someone inevitably raises the issue that it is women’s access to land, not their ownership of land, that matters. Yet, no empirical analyses have analyzed the relevance of ownership and access to various outcomes. While access is important for women to produce livelihoods, ownership may imply more secure tenure rights. Figuring out how to identify these different issues within surveys is challenging. There are several key dimensions, including the right to use land and to keep the proceeds from the land and the security of tenure.

When considering ownership, the first challenge is to define it. Often, we simply ask the respondent whether he or she is an owner; occasionally we also ask if there is an ownership document. The potential of what ownership will mean varies across contexts. In some places, the state officially owns all the land and individuals only have use rights. Yet, when these rights are transferable, they are often similar in practice to ownership rights. In other

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<sup>17</sup> In economies where less than 80 percent of the population has telephone coverage, surveys are conducted face to face. This is also the case in countries where in-person interviews are the customary method of conducting surveys. In all other countries, the questionnaires are administered over the telephone. For more information, please visit <http://www.worldbank.org/en/programs/globalfindex>.

places, the right to use the land is allocated by the community; the rights may provide long-term tenure security or may be quite vulnerable to transfer. To develop measures that are both internationally comparable and locally relevant, one approach is to define ownership as the strongest bundle of rights possible in that context.

To measure control and use rights, surveys have used two approaches. One is to ask about the rights that individuals have over property. These may include the right to transfer (through sales or bequests) or the right to manage or change the asset (such as by planting permanent crops or building terraces). The second is to ask about who makes decisions about the property, such as what to plant on the land.

While numerous studies focus on a particular set of rights, claiming that the other rights are correlated, no systematic study has considered the correlation across the bundle of rights in a variety of contexts. The one paper that does this only considers six countries in Africa. It finds that ownership, management, and control over output do not necessarily overlap and that the patterns differ markedly across contexts and for men and women (Slavchevska et al, 2017). It would be useful to compare these rights across a broader range of contexts.

## **4.2 Exclusive and Joint Ownership**

Any of the property rights discussed above—ownership, control, and use—may all be held individually or jointly.<sup>18</sup> Much of the literature on asset ownership as an indicator of women’s bargaining power has not considered whether the property is owned individually or jointly. Depending on the marital regime, assets acquired within marriage may be owned jointly or individually. Further, the social norms regarding ownership within marriage may or may not match the legal regulations. Ownership may also be shared intergenerationally; the transfer of land and housing may happen over time as the parents turn over responsibility for the farm to their children.

There are two approaches to identifying individual and joint ownership, again based on the unit of analysis at the level of the assets or of the individuals. First, if the data are collected about each asset, it is possible to identify the owner(s) of each asset. Then, for each asset we know whether it is owned individually or jointly and by whom. The second approach asks each individual respondent who owns any of a specific asset type, whether they own it individually, jointly, or at least one individually and one jointly.

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<sup>18</sup> In addition, some property such as land may be held by a community as common property. There are a range of issues regarding how to obtain data on common property which are beyond the scope of this study.

The Gender Asset Gap Project found that the patterns of individual and joint ownership varied widely across the three countries and across assets. Savings were almost always reported as being owned individually, while land ownership patterns varied across Ecuador, Ghana, and Karnataka. In addition, the Gender, Assets, and Agriculture Program found that women in different parts of the world had different preferences for whether they own land and other assets individually or jointly.

Knowing the identity of the joint owners does not necessarily tell us whether the ownership rights are shared equally among them. Ownership may be joint but not equal. One analysis of land rights in Uganda finds that even when spouses jointly own land, women are reported as having fewer rights regarding land (Doss, Meinzen-Dick, and Bomuhangi, 2014). Additional work on the rights held by joint owners would provide useful insights into how the rights are shared.

Asset ownership is often used as an indicator of women's bargaining power. However, little research has considered whether the level of bargaining power depends on whether the asset is owned individually or jointly. As a richer set of data becomes available, this will be an important area to explore.

### **4.3 Questionnaire Design**

There are two main approaches to the design of survey modules on asset ownership.

The first uses the asset as the unit of analysis, identifying the owner(s) and potentially the value of each asset. This approach is used by the Gender Asset Gap Project, MEXA, and the surveys supported by the LSMS-ISA. Consequently, the researcher can develop measures at the asset level, such as the share of land or livestock that is owned by women. In addition, if the owners are associated with a unique ID code that allows us to match them with their individual characteristics, one can identify which individuals within the household are owners, and develop incidence measures of ownership of assets by sex, age, marital status, and/or other individual attributes.

In the context of MEXA, Kilic and Moylan (2016) find that questionnaire design affects reporting on personal ownership of and rights to assets. When subject to a questionnaire with a sole focus on respondents' personal ownership of assets in Arm 5, female respondents identify themselves as (overall and joint) owners of dwelling, livestock and financial assets at a substantially higher rate compared to their female comparators in households in Arms 1 through 4 in which one or more respondents may have been subject to a questionnaire with a joint focus on respondents' as well as other household members' ownership of assets. For instance, within the sample of female respondents, compared to

Arm 1 in which the self-identified most knowledgeable household member is the sole respondent, Arm 5 increases the incidence of joint reported dwelling ownership, on average, by 11.4 percentage points. This marginal effect corresponds to 81 percent of the comparable average for Arm 1. The comparable marginal effect associated with Arm 5 estimated within the sample of female respondents with regard to joint reported financial account ownership is 3.9 percentage points, corresponding to 76 percent of the comparable average for Arm 1. Similar treatment effects are derived also for the male respondents in Arm 5 households in the analysis of (overall and joint) documented and (joint) economic ownership of dwelling and agricultural land as well as (joint) reported ownership of livestock and financial accounts.

When multiple people are interviewed from the same household, another challenge is to determine when they are reporting on the same asset. For example, if a man says that he owns a parcel of land individually, and a woman in the same household says she owns one jointly with him, it is useful to know if they are talking about the same parcel. One way to do this is to use the approach of the Gender Asset Gap Project and begin with an asset inventory and then use it to ask respondents further questions about the specific assets identified. Respondents may be asked if they own additional assets that were not listed.<sup>19</sup>

The second approach to questionnaire design uses the individual as the unit of analysis, determining whether the individual is an owner or a right holder. The DHS and the WEAI surveys use a version of this approach, which makes it easy to create measures of the incidence of ownership by sex and individual characteristics. The questionnaire design is closely related to respondent selection, which we now turn to.

#### **4.4 Respondent Selection**

Research demonstrating that the choice of respondent can influence the conclusions of a study highlights the importance of understanding three key issues. First, it is critical to know who can provide the most accurate and complete information on specific topics. Second, in some circumstances, it may be useful to know when household members would provide different information in response to the same question. For example, knowing if the husband and wife disagree about who owns a particular asset may provide useful insights. This disagreement may be correlated with other differences in perceptions or

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<sup>19</sup> The Gender Asset Gap Project found relatively few assets added in the individual interviews. Additional work could be done to determine whether this is because the inventory approach does result in most household assets being listed or whether respondents become fatigued and uninterested in listing additional assets. After experimenting with respondent-specific asset rosters while interviewing multiple adults in each household in the context of MEXA Arm 4 and Arm 5, Kilic and Moylan (2016) recommend the approach followed by the Gender Asset Gap project as well.

outcomes. Finally, biases may arise as a result of interviewing certain individuals and not others.

The literature provides some empirical evidence on the impact of having one household member provide information about others. Fisher et al. (2010) find that when husbands alone are interviewed in Southern Malawi, the information can be used to accurately calculate aggregate poverty measures, including the poverty headcount and poverty gap indexes. However, the reported determinants of poverty differ depending on whether the wife's estimate of her own income is used to calculate household income. In this context, husbands underestimate their wife's income, on average, and do not accurately estimate the total household income in most households (Fisher et al., 2010). Relatedly, Chen and Collins (2014) use cross-reports of spouses' incomes and expenditures to assess the source of information asymmetries and their impact on farm production and efficiency in Ghana. Spouses have very poor estimates of each other's income and expenditures, both in total and by type of good.

On labor, Bardasi et al. (2011) find that female labor statistics do not differ by self/proxy reporting, but that proxy responses produce much lower male employment rates than do self-reports. Similarly, Dammert and Galdo (2013), and Janzen (2015) report significant effects of proxy respondents on child labor estimations in Peru and Tanzania, respectively. Analyzing LSMS-ISA data from Malawi and Nigeria, Palacios-Lopez et al. (2017) find opposite effects of respondent gender on reported female labor share in crop production – 7 percentage points higher if the respondent is female in Malawi, lower but non-significant in Nigeria.

These studies suggest that proxy respondents may not provide adequate information on the income and labor inputs of others, including on that of their spouse. Subsequently for asset ownership and control, the key methodological question is whether it is sufficient to interview one household member regarding the assets owned by all household members. Or perhaps a better formulation of this question is, under what circumstances is it sufficient to interview one household member versus multiple individuals? And if multiple, which household members should be interviewed? The answers depend on the analytical objective, as detailed below.

Many large-sample household surveys, including the LSMS-ISA, end up collecting individually disaggregated data regarding the ownership of assets of all household members, often through proxy respondents. Table 2 provides, by sex, the module-specific incidence of use of proxy respondents for information on individuals 18 years of age or older in selected LSMS-ISA-supported household surveys. Even for a household survey program that has achieved remarkable success on many fronts since 2009, the level of

reliance on proxy respondents leaves significant room for improvement. In the case of the DHS and the WEAI, the respondents are women and men of reproductive age, and the principal man and woman, respectively. The disadvantage, in turn, is that we do not have information on ownership of and rights to physical and financial assets among non-respondents.<sup>20</sup>

There are a handful of studies that allow us to explore the implications of interviewing multiple interview targets in the same household while collecting information on individual asset ownership and control. Jacobs and Kes (2014) report that the majority of couples in the study sites in Uganda and South Africa disagree on whether land or housing is owned jointly by couples. Women are more likely than men to report joint ownership of these assets. Twyman et al. (2015) find higher levels of agreement on who jointly owns land in Ecuador, with couples agreeing that 79 percent of parcels are owned jointly. They note the existing disagreement stems from women owners reporting joint ownership on parcels to which men claim sole ownership.<sup>21</sup>

Unfortunately, there is no “gold standard” against which to measure these different approaches. For a few large assets, such as land, housing, and potentially vehicles, there may be legal records identifying the owner. However, it has not yet been possible to match administrative records with the survey results and there are a multitude of reasons why a gold standard measurement approach anchored in administrative records could prove to be elusive (Kilic and Moylan, 2016).

Qualitative fieldwork conducted in the Gender Asset Gap Project found that an individual was more likely to know about the physical assets owned by other household members than about the financial assets held by others. Thus, the survey instruments treated physical and financial assets differently. While information on physical assets were collected in both the household and individual survey instruments, data on financial assets were only collected in the individual survey instrument; each of the two respondents was asked only about his or her own financial assets, and whether these were held individually or jointly with someone else.

Kilic and Moylan (2016) report the results from MEXA, which sought to explore, in the context of a randomized household survey experiment the impacts of different approaches to respondent selection and questionnaire design on the analysis of ownership of and rights to physical and financial asset assets. The authors find that with respect to the standard

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<sup>20</sup> While it would be possible to ask a proxy respondent to provide information on each household member, this has not yet been done in the context of the DHS and the WEAI.

<sup>21</sup> An open empirical question is whether women are more likely to report joint ownership if the legal system supports and enforces it, and are less likely to do so where the enforcement is weak and customary law prevails, as in Africa.



practice of interviewing the most knowledgeable household member (Arm 1), interviewing multiple adult members in the same household with a questionnaire that asks the respondents to identify the assets owned by each member of the household, exclusively or jointly with others within or outside the household (Arm 4) drives both female and male respondents to be more inclusive in their reporting of which household members of the opposite sex own the priority asset classes, namely dwelling, agricultural land, livestock and financial assets.

While the effects are large in magnitude, they are underlined by distortionary proxy respondent effects. These effects are most evident in the comparison of respondent versus proxy-respondent reporting regarding the respondent's reported ownership, economic ownership and right to bequeath in Arm 4 households with 2 or more individual interviews. This comparison, in the context of dwelling, agricultural land and financial accounts, reveals that even when respondents, both men and women, do not claim to be owners or rights holders, they may be tagged as reported owners, economic owners and rights holders by other respondents within their household. For instance, 9 percent of the female respondents that do not consider themselves to be dwelling owners are classified as joint reported owners by others. Similarly, 11 percent of the female respondents that do not report owning a financial account are reported to be exclusive financial account owners by others.

These types of distortionary proxy respondent effects are also observed in Arm 5 households with 2 or more interviewers, but they are markedly smaller in magnitude since the Arm 5 individual questionnaire focuses only on respondents' personal ownership of, and rights to assets, and is set up to identify alternative household members as owners and/or right holders in a given interview only through joint arrangements with the respondent.

In view of these findings, together with the Arm 5 questionnaire design effects reviewed in the previous section, Kilic and Moylan (2016) recommend, for those intending to collect intra-household information on individual ownership of, and rights to physical and financial assets as part of household surveys, 1) reducing the reliance on a single respondent, 2) expanding the practice of interviewing multiple age-eligible individuals per household, with a focus on the members of the principal couple if a couple is present, and 3) probing directly regarding respondents' personal ownership of and rights to assets, whether exclusively or jointly with someone else, as in Arm 5.

These recommendations are buttressed by previous calls for collecting data on ownership of, and rights to assets at the individual level as well (Grown et al., 2005; Doss et al., 2011), and have already informed the design of the Malawi Fourth Integrated Household Survey

(IHS4), which was implemented by the National Statistical Office from April 2016 to April 2017 with support from the LSMS-ISA initiative. The IHS4 interviewed 12,480 cross-sectional households across 780 enumeration areas (EAs), and in parallel attempted to track an additional national sample of 1,989 households that have been previously interviewed in 2010 and 2013 by the Third Integrated Household Survey (IHS3) and the Integrated Household Panel Survey (IHPS). The IHS4 cross-sectional and panel components administered a multi-topic Household Questionnaire, and if applicable, Agriculture and Fishery Questionnaires, in each sampled household. As part of the panel component specifically, the IHS4 aimed to administer an Individual Questionnaire to all adult household members, with the ultimate response rate of 80 percent among the age-eligible interview targets. The individual interviews administered augmented and contextualized versions of selected Arm 5 MEXA questionnaire modules<sup>22</sup>, and the existing IHS4 questionnaire modules on education, health, employment and food insecurity<sup>23</sup>. Further, in case of an agricultural household that is reporting to own and/or cultivate land in the reference rainy season, the household inventory of agricultural parcels that is created as part of the IHS4 Agriculture Questionnaire were fed into each individual interview.<sup>24</sup>

Ultimately, the purpose of the survey may shape the choices regarding whom to interview. If we want to understand the bargaining power or empowerment effects of asset ownership, then asking individuals about their own ownership or rights over assets is likely to best capture their perceptions, in line with the empirical evidence reviewed above. For intra-household analyses that the individual disaggregated data on asset ownership and control would seek to inform, multiple age-eligible individuals should be interviewed, with the possibility of (i) attempting to interview of age-eligible household members as in MEXA or (ii) focusing on the members of the principal couple in the married/co-habiting household sub-population or (iii) selecting a random age-eligible household member and his/her partner if applicable across the entire household population.<sup>25</sup>

If multiple people are interviewed for intra-household analysis, there may be multiple responses about the same asset. There are different ways to handle this, depending on the

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<sup>22</sup> These modules include dwelling, agricultural land, and financial accounts, loans and liabilities.

<sup>23</sup> On individual-level measurement of food insecurity, the IHS4 Panel Subcomponent used the individual-referenced questionnaire module that is developed by the FAO Voices of Hungry Project for the computation of the Food Insecurity Experience Scale (FIES), an SDG indicator.

<sup>24</sup> The IHS4 cross-sectional Agriculture Questionnaire also collected parcel-level data on reported, economic and documented ownership, and rights to sell and bequeath but following the Arm 1 approach, per usual practice in Malawi. The parallel implementation of the IHS4 cross-sectional and panel components will, therefore, offer another opportunity to assess potential Arm 5 effects, vis-à-vis Arm 1, on the agricultural land-related outcome variables. Within Arm 5 specifically, the IHS4 data will allow for the comparison of respondent and proxy respondent reporting regarding respondent ownership of and rights to agricultural land, but this time at the asset-level.

<sup>25</sup> The UN EDGE international guidelines on individual-level measurement of asset ownership and control are expected to expand on these scenarios and their implications for fieldwork design and sampling.

research question. The fallback option could always be to accept each person's response as to whether they are an owner. An alternative option is to reconcile the responses so that one owner or set of owners is identified for each asset, based on reconciling the responses to arrive at one answer. The Gender Asset Gap Project, particularly for Ecuador, used information on the marital property laws, the respondents' marital status, and when the asset was acquired to report the owner or owners when there was a discrepancy among respondents.

#### **4.5 Quantification, Valuation, and Quality Assessment**

Beyond knowing whether individuals own particular types of assets, we may want to know whether they own more than one and whether their assets are valuable. While simply identifying the owners of assets allows us to calculate measures of the incidence of ownership, often we want more information about their assets such as quantity, value, and/or quality.

Identifying the quantity owned of most assets is relatively straightforward. Survey designers use two approaches. The first approach uses the asset as the unit of analysis and identifies the owners of each asset. It is then possible to calculate the quantity owned by each individual.<sup>26</sup> A second approach, which can be employed when the individual is the unit of analysis, is to ask each respondent how many of each asset they own, whether individually or jointly with someone else.

When the asset is the unit of analysis in the survey, then it is relatively easy to ask additional questions about the quality or value of each item. Identifying the value of each asset allows for the aggregation across assets and the calculation of the gender wealth gaps.

There are, however, a number of challenges to obtaining good measures of asset values. For consistent answers, one should specify the measure of value being asked. Asking the original purchase price and the year of acquisition facilitates calculation of the depreciated value, assuming a typical amount of wear. A common approach is to ask the price that would be received if the asset were sold, assuming that there are markets for such goods and the respondent is aware of the market price. When sales markets are limited, rental markets for land or housing may provide insights into value. A final measure is cost to replace the asset.

When markets are thin or nonexistent for a particular asset, it may be hard to have respondents provide a value. For example, rural houses that are constructed by the

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<sup>26</sup> At least one exception in reliable self-reported asset quantification is farmer-reported land area measurement (Carletto et al., 2015; 2016).

household may not have an explicit market value. In addition, respondents may be unwilling to name a price if they think the enumerator is interested in purchasing it. In such case, they may want to say that it is invaluable.

A further challenge is that there may be some systematic bias in reported values depending on who is asked. Doss et al (2016), using the Gender Asset Gap Project data, find that the values provided by women have a narrower distribution than those provided by men for housing and agricultural land. Linked to the discussion in Section 4.4, respondent selection may too influence the size of the calculated gender wealth gap. There is much more scope for understanding how patterns of reported values vary systematically in accordance with sex and other individual attributes. Additional research with the MEXA data may be able to provide further insights into this question.

Given the difficulties associated with obtaining monetary values for some assets, it may be possible to obtain information on the characteristics of the asset. For example, many surveys collect data on housing characteristics such as size, amenities, construction materials, etc. This allows for the construction of a housing quality index that may be compared across owners.

Finally, to understand gender gaps in land ownership, it is useful to have information on land areas. Carletto et al. (2015), using the LSMS-ISA data for 4 African countries, document substantial measurement errors in farmer-reported plot areas compared to the GPS-based area measures for the same plots. These differences result in underestimation of land inequality, as measured by the Gini coefficient and biased estimates of the relationship between land and productivity. Carletto et al. (2016) further show that GPS provides highly accurate land area measures compared to the gold standard methodology of using compass and rope, and does so across the entire distribution of plot areas. Although research has not addressed whether men and women provide systematically different estimates of land area, using GPS would avoid these potential biases.

## **5 Conclusions and Moving Forward**

While there is strong evidence that ownership, control, and use of assets is important for creating livelihoods, reducing vulnerability, and increasing voice within the household and community, there are still numerous gaps in our knowledge about how best to obtain these data and what aspects of the data are most relevant.

Many research questions remain. We can begin to answer some of them with existing data, while others will require collection of additional data. First, to what extent are the various

rights regarding assets correlated? For example, in which contexts are the ownership, management, and rights to the economic benefits of land all held by the same person? When are they held by different people? Which of these rights is most closely associated with the benefits of ownership? If women have access and control rights, does providing them with ownership rights result in any changes in their decisions or well being? Which assets matter for which outcomes? As land becomes scarcer, it may become even more difficult to secure women's land rights. However, to what extent can women's rights to housing or businesses provide similar levels of security, empowerment, and/or livelihoods? A recent literature suggests that there are asset poverty thresholds, below which it is difficult for a household to move out of poverty (see Kraay and McKenzie 2014 for a review). The empirical results are mixed, but the concept has had a significant influence on policy. It suggests that if people have below the threshold level of assets, they will need to sell them to cover basic expenses. However, above the threshold, they will be able to generate income and begin to move out of poverty. Yet the question of whether there is a threshold level of assets for individuals within households remains unexplored. Is there some minimum share of assets that a woman must own to have a voice in household decision-making or to allow her an adequate fallback position?<sup>27</sup>

A third set of questions is related to individual and joint ownership of assets. These questions tie in with an earlier debate regarding whether women's individual land rights should be the focus of policy (Agarwal 2003) or whether women's land rights may be strengthened by recognizing their embeddedness in broader social systems that provide forms of joint ownership (Jackson 2003). From an economic bargaining model perspective, individual asset ownership may provide a better fallback position than jointly owned assets, particularly immovable assets such as land. If assets are owned jointly, it may be difficult to obtain one's share of the value when leaving. On the other hand, joint property rights may be embedded in deeper social relationships that provide added benefits. There is substantial scope for further analyses of the relationships of individual and joint property rights with a wide range of outcomes.<sup>28</sup>

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<sup>27</sup> In case of marital dissolution, the fallback position may depend also on norms and traditions governing dissolution. Information on these practices could be solicited in the community surveys that may be a part of the household surveys that would elicit the individual disaggregated data of interest on asset ownership and control.

<sup>28</sup> A related strand of research is interested in relative household and individual welfare gains associated with (1) improving relative bargaining power of spouses versus (2) enhancing intra-household cooperation among them. While the latter may be proxied by individual-level data on joint asset ownership, the comparable scope of information on exclusive ownership could help define the former. McCarthy and Kilic (2017) develop a non-cooperative bargaining model that presents conditions under which relatively large gains would be expected from moving to more equitable bargaining power versus achieving intra-household cooperation. They test their model's predictions using the LSMS-ISA data from Malawi, and specifically the individual-disaggregated data on the control of income, as opposed to asset ownership, across a comprehensive spectrum of income generating activities. The authors find that relative to increasing wives' bargaining power (defined as the share of total disjoint (male + female) income that is under female control), improving cooperation between spouses (defined as the share of total household income that is under joint control) exerts larger and

Other questions need further experimentation and data collection in the field. One set revolves around how the structuring and framing of questions about ownership affect the responses. In this respect, comparisons across countries with different marital and inheritance regimes will be useful. Additional research is also needed to further identify whether there are systematic differences in how men and women report values of assets.

A variety of methods could be useful in filling these methodological knowledge gaps. One would be to design and test anchoring vignettes describing specific scenarios, to provide respondents with more contextual information. In addition, simple tweaks in the interview environment could then provide more insights. For example, do household members' incentives to centralize their responses around various social norms vary with (1) the gender of the enumerator, and (2) whether they respond anonymously in the presence of the enumerator, rather than in the presence of their spouse or others. Some unanswered questions require detailed qualitative work, such as whether there are cognitive gender differences in the interpretation of questions related to reported ownership, economic ownership, and specific rights. This information would allow us to systematically identify and analyze sources of response error and the stage in the cognitive process at which errors occur, and assess whether this differs by sex or other characteristics. Qualitative work will again be needed to complement our analyses of overlaps of asset rights and enhance our understanding of how men and women perceive and value joint versus individual ownership, control, and use of assets.

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statistically significant positive impacts on total household income and consumption expenditures per capita, as well as the share of household consumption devoted to public goods.

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**Table 1. Description of Survey Questionnaires**

Survey	Sample	Unit of analysis	Structure	Interviewee	Scope – which assets?	Definition of ownership	Distinguishes joint and individual	Value
Gender Asset Gap Project	Representative at national level for Ghana and Ecuador, and state level for Karnataka, India	Asset, with individual ID codes so can assign individual ownership to household members	Household asset roster and individual questionnaire	Primary man and woman in each household	Dwelling; Agricultural Land; Livestock; Agricultural Equipment; Other Real Estate; Non-Farm Enterprises; Financial Assets; Consumer Durables;	Reported, Documented, (as applicable) Additional questions on rights over assets in Ghana and Karnataka..	Yes	Yes
MEXA	National sample of 2,027 households, distributed across 140 enumeration areas	Asset, with individual ID codes so can assign individual ownership to household members	Arm 1-Arm 3: One asset roster created in each asset domain Arms 4-5: Independent asset rosters created by each interviewee in each asset domain	Arm 1: Self-Identified Most Knowledgeable Household Member Arm 2: Randomly Selected Member of the Principal Couple Arm 2: Members of the Principal Couple (Together) Arms 4-5: Up to 4 adult household members (alone, simultaneous)	Dwelling; Agricultural Land; Livestock; Agricultural Equipment; Non-Agricultural Land and Real Estate; Non-Farm Enterprises; Financial Accounts; Consumer Durables; Valuables.	Reported, Documented (as applicable), Economic	Yes	Yes
Gender, Agriculture, and Assets Project	Varied across projects	Usually individual	Varies					
WEAI	Representative of USAID Feed the Future Zones of Influence in 19 countries	Individuals	Module of larger survey; questions asked to individuals	Principle man and woman in the household	Productive assets	Reported	Asks who owns most of each asset type; codes include individual and joint options	No

**Table 1 (Cont'd)**

Demographic and Health Surveys	Nationally representative in over 90 countries	Individuals	Questions including in larger survey	Woman age 15-49; some countries interview men of similar age; Man of similar age.	Land and housing	Reported	Asks if they own any, individually, jointly, both, or neither	No
World Programme for the Census of Agriculture	Nationally representative in many countries	Agricultural holdings	Census questionnaire	Holder	Land, livestock	Holder of land, owner of livestock		No
LSMS-ISA	8 Countries in Africa, nationally representative	Asset With unique individual ID codes so can assign individual ownership to household members		<b>Dwelling:</b> Most knowledgeable household member <b>Agricultural Land:</b> Manager for each plot or holder <b>Livestock:</b> Manager for each livestock type or most knowledgeable household member <b>Non-Farm Enterprises:</b> Manager for each enterprise <b>Consumer Durables:</b> Most knowledgeable household member	Dwelling, Agricultural Land; Livestock; Non-Farm Enterprises; Consumer Durables (selected surveys).	Reported, Documented (as applicable)	Yes	
Global FINDEX	Nationally representative of 140+ countries	Individuals	Individual level survey	Sampled respondent	Financial assets	Ownership	Doesn't distinguish between individual and joint	No

**Table 2: Module-Specific Incidence of Proxy Respondent Use for Data Collection on Individuals 18 Years & Older in Selected LSMS-ISA Countries, By Gender**

Country	Source of Individual-Level Information	Education						Health						Labor					
		Overall		Male		Female		Overall		Male		Female		Overall		Male		Female	
		Obs	Percent	Obs	Percent	Obs	Percent	Obs	Percent	Obs	Percent	Obs	Percent	Obs	Percent	Obs	Percent	Obs	Percent
Malawi	Proxy	3,412	47	1,907	55	1,505	41	3,392	47	1,905	55	1,487	40	3,354	47	1,892	54	1,462	39
	Self	3,797	53	1,589	45	2,208	59	3,813	53	1,588	45	2,225	60	3,852	53	1,600	46	2,252	61
Mali	Proxy	13,062	75	5,002	60	8,060	89	13,151	75	5,056	61	8,095	89	12,961	74	4,965	59	7,996	88
	Self	4,382	25	3,344	40	1,038	11	4,293	25	3,290	39	1,003	11	4,483	26	3,381	41	1,102	12
Niger	Proxy	5,447	50	2,280	44	3,167	55	5,548	51	2,331	45	3,217	56	5,294	49	2,201	43	3,093	54
	Self	5,440	50	2,865	56	2,575	45	5,339	49	2,814	55	2,525	44	5,593	51	2,944	57	2,649	46
Nigeria	Proxy	8,526	52	3,482	45	5,045	58	N/A	N/A	N/A	N/A	N/A	N/A	8,616	53	3,569	46	5,048	58
	Self	7,834	48	4,238	55	3,596	42	N/A	N/A	N/A	N/A	N/A	N/A	7,744	47	4,151	54	3,593	42
Tanzania	Proxy	N/A	N/A	N/A	N/A	N/A	N/A	2,865	22	1,721	28	1,144	17	2,835	22	1,707	27	1,128	16
	Self	N/A	N/A	N/A	N/A	N/A	N/A	10,249	78	4,530	72	5,719	83	10,275	78	4,543	73	5,732	84
Uganda	Proxy	3,481	49	1,951	58	1,530	41	3,610	50	2,008	59	1,602	42	3,489	49	1,938	58	1,551	42
	Self	3,654	51	1,409	42	2,245	59	3,628	50	1,408	41	2,220	58	3,561	51	1,387	42	2,174	58

**Note:** The most recent round for survey data that is publically available is used for each LSMS-ISA country.