

## **Policy Reform towards Gender Equality in Ethiopia: Little by Little the Egg Begins to Walk**

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*Kes be kes enqullal be-egrwa tihedalech.*

Little by little, the egg begins to walk.

(Ethiopian saying)

## **1. Introduction**

Ethiopia is one of the poorest countries in the world and is striving to provide for its chronically food insecure people. As the third most populous country in Africa, the people of Ethiopia are characterized by substantial ethnic and religious diversity, with over 85 ethnic groups and most major world religions represented, as well as animist belief systems (Webb, von Braun, and Yohannes 1992). This diversity extends beyond the people and culture of Ethiopia to their environment, since the agroecological zones, and consequently, farming systems, vary dramatically around the country. There is also considerable diversity in gender norms related to property ownership, inheritance, and the division of assets after divorce, with men favored in the majority of cases (Fafchamps and Quisumbing 2005). Such gender disparities have important welfare consequences, as evidenced by empirical work on Ethiopia. Dercon and Krishnan (2000) found that poor women in the Southern part of Ethiopia, where customary laws on settlement at divorce are biased against women, fare worst when illness shocks occur. Fafchamps et al. (2009) find that the relative nutrition of spouses is associated with correlates of bargaining power, such as cognitive ability, independent sources of income, and devolution of assets upon divorce, and that several dimensions of female empowerment benefit the nutrition and education level of children. However, research on the impacts of policy reform in other countries suggests that changes in legislation may improve well-being outcomes for women. For example, in Canada, Hoddinott and Adam (1997) show that suicide rates of married women are lower in states with divorce laws that are more beneficial to women. While progress towards gender equality has been slow in Ethiopia, recent developments are promising. The Ethiopian government has passed legislation and reformed its constitution in an attempt to reduce gender discrimination. Some important examples are the land registration process and the new Family Law. The recent Land Registration process led to joint certification of husbands and wives, giving stronger land rights to women, while the Family Law gave equal rights to women and men in terms of marriage, inheritance and property.

In this paper we use data from the Ethiopian Rural Household Survey (ERHS) 2009 to examine the gendered implications of three topics: (1) the experience of food price shocks in 2007-2008; (2) the recent land registration; and (3) changes in Family Law. Although these are only a subset of the issues in which gender differences may be important, they are relevant to current policy discussions and may help inform the future directions of policy reform. We use data from the 2009 round of the Ethiopian Rural Household Survey (ERHS), which covered approximately 1300 households in 15 villages all across Ethiopia.

The rest of the paper is organized as follows. We begin by describing our data source and our sample. In section three we examine the food price crisis and its consequences. Sections four and five study the two interventions, viz., the land registration process and the passage of the Family Law. Section six concludes.

## **1. Data and Sample Descriptives**

The Ethiopian Rural Household Survey is a panel data set with seven rounds of data collection. The data collection was coordinated by the Economics Department at Addis Ababa University in collaboration with the Centre for the Study of African Economies at Oxford University and the International Food Policy Research Institute. For this paper we use the data from the 1997, 2004 and 2009 rounds. This enables us to get a sample of about 1300 households in 15 villages across Ethiopia. Although the 15 villages included in the sample are not statistically representative of rural Ethiopia as a whole,<sup>1</sup> they are quite diverse and include all major agroecological, ethnic, and religious groups. The location of the sample villages is shown in figure 1. About a third (32 %) of sample households are female headed, although there is wide variation across the survey villages (Figure 2). The highest rates of female headship are found in the two Tigray sites (Haresaw and Geblen) and the lowest in Yetmen.

The surveys collected information on household demographic characteristics, occupation, cropping patterns, perceptions of poverty and wellbeing, experience with shocks, access to credit, etc. We present, in Table 1, some of the summary statistics for our sample disaggregated by the gender of the household head. Female-headed households differ significantly from their male counterparts across a number of dimensions. Female heads are, on average, older and less educated than male heads; female heads on average have no education whereas their male counterparts have at least 2 years of schooling. The gender disparity in schooling is not only limited to the education of the head but is also true for the household at large: the highest education level within a female headed household is 4.76 years, which is about a year and half less than that in male headed households. Female-headed households also tend to be smaller, with a larger fraction of female members. Because household size is proportional to the amount of labor resources the household controls in a rural area and because many farm operations (especially plowing) are intensive in male labor, female headed households are at a disadvantage with respect to labor endowments.

Female headed households are also worse off compared to their male counterparts in terms of land and asset ownership. Male-headed households own 2.2 hectares of land, on average, compared to 1.7 hectares for female-headed households. Male-headed households also have 9.4 tropical livestock units (TLUs), which is significantly different from female-headed households' holdings, of 8.8 TLUs. Sixty percent of male headed households are much more likely to have at least some oxen compared to 37 percent of female headed households.

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<sup>1</sup> The ethnic and religious mix of the sample, for instance, does not match what we know of rural Ethiopia: Oromos are underrepresented; Protestants are overrepresented. The small number of Oromo sites is in part due to civil unrest at the time that the initial sample was drawn. Several villages from the Oromo region have been added to the 2000 survey round.

In terms of real per capita consumption, however, there is no significant difference between male- and female-headed households (Table 1). Real per capita consumption of male-headed households in 2004 was 91 birr, and that of female-headed households, 94 birr, but these are not statistically significant.<sup>2</sup> We construct a measure that indicates the proportion of years the consumption of the household fell below average. Table 1 shows that female and male headed households alike experience shortfalls in consumption about 40 per cent of the time. Upon closer analysis, the slight advantage of female headed households in consumption may have come at the cost of slower asset accumulation. Figure 3 presents data on asset holdings, real per capita consumption, and whether or not a household was poor from the previous six rounds of the ERHS, disaggregated by the gender of the household head. Figure 3 shows that, although the female headed households' real per capita consumption was about the same and even surpassed that of the male headed households in the last two rounds, their asset levels were always below their male counterparts. Maintaining consumption levels may have come at the cost of asset accumulation; if female-headed households disposed of assets in order to guarantee consumption, they may be at risk of falling into an asset poverty trap, which may make it more difficult to move out of poverty in the long run.

Next we move on to measures of social capital, namely network size and membership in an *iddir* (burial societies or funeral associations). In the survey, we ask the respondents to count the number of people that they can rely on in times of need. This is what we call network size. Table 1 shows that male headed households on average have larger networks, and that male headed households are more likely to be members of *iddir*. In terms of access to financial institutions and credit, the proportion of households holding a bank account is quite small (about 5%) and is not substantially different for the two groups. However, male headed households have access to a greater number of sources from which they can borrow. In the next section we explore men's and women's differential experience of an aggregate food price shock and the extent to which individual, household, and community characteristics increase the probability of having experienced this type of shock.

## 2. Food Price Crisis

Sharp increases in food and fuel prices over the past few years have eroded the purchasing power of poor households and raised serious concerns about food insecurity and malnutrition in many countries. Recent estimates find that the crisis may push 105 million people in low-income countries below the poverty line, representing a loss of seven years' worth of poverty reduction (Ivanic and Martin 2008). This decline in turn represents a serious erosion of progress toward meeting many of the Millennium Development Goals (MDGs), including those aiming to reduce poverty, hunger, and maternal and child mortality. Analysis of the gender dimensions of the food price crisis has, however, been very limited. This paper represents one of the first attempts to analyze the gendered impacts of the food price crisis using longitudinal data from a relatively large sample.

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<sup>2</sup> Consumption aggregates for the 2009 round are still being computed, so we report the most recent available consumption data (2004).

Figure 4 shows the prices of three main staples and the food price index (based on a basket of goods using the ERHS data) for the seven rounds for which we have data. We observe a steep rise in prices in the last round (2009). This sharp rise also reflects the global food price crisis in 2007-2008.

In the 2009 survey we asked households if they suffered a significant reduction in asset holdings, household income or consumption due to high food prices. We use this data first to identify which households are more vulnerable to such shocks and then analyze how such a shock affects household outcomes.

Figure 5 shows the proportion of households that were affected by the food price shock in 2008 or 2009 by the gender of the head, for each village in our sample. We find that on average female headed households are more likely to be affected by the rising food prices compared to male headed households, although there is some regional variation. In Tigray (Haresaw and Geblen sites), the occurrence of this shock is similar across all households, whereas in Oromiya, female headed households are much more likely to be affected by the food price shock. This may reflect the relatively higher power or control over resources that women in Tigray have relative to women in the southern regions.

Female-headed households are also more likely to report having difficulty meeting their consumption needs (Table 2). On average, female headed households faced problems in satisfying their households' food needs for about four months in the past year, which is significantly higher than the corresponding figure for male headed households (2.6 months). More than two-thirds (67 percent) of female headed households report having suffered food shortages in the last rainy season compared to 58 percent of male headed households. During times of food shortage, however, coping behavior in terms of cutting back on quantities served to men, women, boys, and girls within the household does not differ significantly between male- and female-headed households. While male-headed households are likely to reduce quantities served to adult males, this may be a reflection of the larger number belonging to this demographic group in male-headed households, as well as the possibility that, in normal times, adult males eat better than other household members, and can therefore afford to give up some surplus. On average, adults eat fewer meals than children irrespective of the gender of the head and whether or not the household is facing a food shortage. This does not mean that children are favored relative to adults, but rather that children typically eat smaller, but more frequent, meals. However, male headed households are able to serve a greater number of meals to their children in both good and bad times. In good times, children in male headed households eat 3.61 meals (compared to 3.49 meals in female-headed households), while in the worst of times, children in male-headed households eat 2.63 times, compared to those in female-headed households eat 2.53 times a day. These differences are statistically significant.

Understanding the characteristics of households that are correlated with experiencing a food price shock is important in order to identify the most vulnerable groups. Any household that is a net buyer of food is likely to be affected by a sharp rise in food prices. From our survey we can identify households that usually buy food from the market and are thus "net buyers" of food.<sup>3</sup> Other characteristics that may affect

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<sup>3</sup> It is possible that being a net buyer of food may be affected by the experience of the food price shock. However, this question was asked about a typical year, not exceptional years, and is phrased in the following way: " Are there any months in a **typical year** when the household runs out of home-grown food and therefore has to buy food, ask for gifts or has less to eat than otherwise? [WE ARE INTERESTED IN SEASONAL PROBLEMS, NOT EXCEPTIONAL YEARS, THE ISSUE IS TO KNOW WHEN STOCKS TYPICALLY GET DEPLETED.]" Regression results with or without the "net buyer" variable are not qualitatively different.

the vulnerability of the household are: demographic characteristics, asset holdings, networks, iddir membership, access to credit and relative wealth in the village. We run a linear probability model with “having experienced a food price shock in the last 2 years” as the dependent variable and the above mentioned household characteristics, measured as of the previous survey round in 2004, as independent variables. With the exception of household demographic characteristics, which refer to the current round, we use lagged household characteristics because current household characteristics (for example, asset holdings) could be correlated with the experience of a food price shock if households disposed of assets to finance consumption. We run this regression with and without village fixed effects. The results are shown in Table 3. <sup>4</sup>Columns 1-3 show results without village fixed effects. We find that being a female headed household, a net buyer of food and (surprisingly) having higher livestock holdings increases the probability that the household is affected by the food price shock. Having more land, and a higher proportion of land that is of good quality reduces the probability that the household faces such a shock. Membership in an *iddir* makes the household 16 percentage points less likely to be affected by the shock; the length of time the household has had the membership and previous receipt of a loan from the iddir are also associated with lower probabilities of experiencing the shock. Note again that all these variables are evaluated in 2004, and thus are not endogenous to the recent experience of the shock. When we add in the village fixed effects, some of these coefficients become insignificant, indicating that some of the results arise from variation across villages. What remains robust to the inclusion of these fixed effects are gender of the household head, land owned and its quality. That is, even when we control for (unobserved) village characteristics, female-headed households are more likely to experience a food price shock, while larger areas of land owned and a higher proportion of high-quality land help protect households against food price shocks. The sign of the coefficient on *iddir* membership changes, indicating that households that belong to burial societies are more susceptible to such shocks. This is a surprising result that has several alternative explanations. One possibility is that villages that had the highest *iddir* membership rates were also the ones that were the hardest hit in terms of price hikes. Alternatively, it is possible that households that are more vulnerable would have tended to become members of *iddir*, and using past values of *iddir* membership did not correct for this possible bias. The protective effect of land ownership and the higher probabilities of female headed households’ experiencing a food price shock suggest that if (1) increasing control of land (particularly land of higher quality) can help protect the rural poor from food price shocks and (2) women are more vulnerable to these types of shocks, one possible policy intervention is to strengthen women’s land tenure security. In the next section, we examine the extent to which male- and female-headed households were able to participate in, and benefit from, the recent land registration process.

### 3. The Land Registration Process

There is a large body of literature (e.g. Banerjee et al 2002, Bardhan-Mookherjee 2009, Feder et al 1988 and Feder and Nishio 1997) that shows providing tenure security among users of land (owners or sharecroppers) increases its productivity. Such security improves the incentives to invest in land and increases their ability to get credit. The positive effects of land tenure security on land productivity have been used to justify land titling, or full individualization of property rights. However, there may be cases

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<sup>4</sup> We also ran these regressions for female and male headed households separately. However, the results were not very interesting. Therefore, we do not report these here but can be provided if there was an interest to see them.

where land registration is not feasible (either because the cost-benefit ratio is too high or the institutional machinery is not well established) or is not required (because land rights are already well defined). Land legislation may not always lead to efficient outcomes if, for example, it stimulates land grabbing by the powerful in wake of land reforms (Jansen and Roquas 1998). Moreover, the benefits of land legislation are context specific (Feder and Nishio 1997). Deininger et al (2007) argue that there may be a case for reforms in land tenure security even in situations where land titling has little relevance to begin with. Citing examples from some African countries, they argue that as rural areas become more integrated into the market economy, land transactions increase and in the absence of formal land titles people resort to informal means of transferring land rights.

There may be additional benefits from improving land tenure security for women. Many studies have documented productivity differentials between male and female farmers, particularly in sub-Saharan Africa. In some cases, these productivity differentials stem from women's insecure property rights to land, which exacerbate inefficiencies created by imperfect land markets. In Ghana, Goldstein and Udry (2005) attributed the productivity differential among male and female farmers to women's higher level of tenure insecurity, which renders them less likely to leave their land fallow since they risk losing the land if they are not actively farming it. Imperfections in land rental markets create productivity differentials that are not gender neutral: not only is productivity lower on female-headed households' land, but female household heads also tend to rent-out their land to tenants with much lower productivity (Holden and Bezabih 2007). Indeed, Holden and Bezabih (2007) found significantly higher levels of inefficiency linked to contracts of female landlords with in-law tenants, owing to the difficulty of evicting one's relatives and the high transactions costs of screening and selecting better tenants. An important policy implication of their analysis is that strengthening women's land rights may improve both equity and efficiency of land use.

Ethiopia is one of the few African countries that have successfully implemented a cost-effective and transparent land registration process (Deininger et al 2007). This study points out that the decentralized nature of the land registration process and consistent adherence to procedures accelerated its implementation, and the beneficiaries viewed the process as valuable. Following the land registration process, female heads of households in Tigray were more likely to rent out land, because tenure security increased their confidence in doing so (Holden et al. 2007). The Ethiopia land certification scheme is noteworthy because land administration committees at kebele level (the smallest administrative unit in Ethiopia) were required to have at least one female member and land certificates were issued after public registration for transparency (Deininger et al. 2007). The land certificates included maps and, in some regions, pictures of husband and wife.<sup>5</sup> Holden et al. (2007) argue that land certification had a greater impact on women's participation in the land market because land certificates may be more valuable to women, whose tenure rights have been less secure than that of men. Nevertheless, gaps remained in awareness and information about the process. A related study (Holden and Tefera 2008) found that on average women's knowledge and participation in the land registration process was lower than that of men in Oromiya and SNNPR.

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<sup>5</sup> Having photos instead of signatures may make it more difficult for husbands to sell or rent out land without their wives' consent; photos are also more meaningful in a society with very low literacy rates.

In this section we examine whether male- and female-headed households differ in terms of land owned and cultivated, and in their awareness of and participation in the land registration process. Table 4 indicates that male headed households hold more land (have larger plot sizes), of which a larger proportion is cultivable compared with female headed households. The larger areas and proportions of land cultivated may be partly because of better land quality and the fact that larger plot sizes are more viable for cultivation. Women in male-headed households are very rarely in charge of operating land, but the converse cannot be said for female headed households, where about one-fifth of the time men are operating the land.<sup>6</sup> This may occur because of cultural norms that prohibit women from plowing land because it is perceived to be too strenuous (Frank 1999) Male headed households are also more likely to have a larger fraction of their land registered.

Next, we explore the differences in awareness, participation and perception of the land registration process between the two types of households, for the entire sample and separately by region (Table 5). In Tigray, only about 3% of the households in our sample reported any awareness about the land registration process, therefore we do not have useful estimates of participation by these households.<sup>7</sup>

Male headed households are much more likely to have heard of the land registration process. Almost all (90%) male headed households had heard of the process compared to about three quarters of female headed households. There is, however, some regional variation. In Oromiya female headed households are just as likely to have heard about the process as the male headed households. We find that, throughout our survey villages, male headed households are more aware of public information meetings held before the land registration process, are more likely to have attended such meetings as well as a greater number of meetings and are more likely to have received some written material about the program.

Most households acknowledged that their plot boundaries were well demarcated before the land registration process started and about a quarter to a third of the households reported facing land disputes before the registration process. They perceive the land title as a protection against encroachment and agree that the number of land disputes have decreased after the land registration process was complete. In Oromiya, households do not value the title so much as a means of protection against encroachment (42-48% compared to the sample average of 62-65%) probably because their plot boundaries were clearly demarcated even before the process. All households, regardless of the sex of the household head, believe that the title increases their incentive for planting trees (more so for male headed households) and increases the probability of receiving compensation in case of appropriation. Both male and female household heads also believe that having a land certificate improves the position of women. All in all, the data in Table 5 suggests that most households perceive the land registration process as valuable. The major difference between male and female headed households lies in their knowledge of and participation in the program. Figures 6 -8 show that there is some regional variation in the extent of this difference. We use information on the awareness of and participation in the land registration process to construct an index of participation that ranges between 0 and 5 –where 0 represents no awareness or participation and

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<sup>6</sup> Some of this may be driven by respondent bias- since the agriculture module of our survey was administered to the household head.

<sup>7</sup> While these low numbers may raise doubts about survey implementation, these results are not surprising to those familiar with the land registration. The land registration process in Tigray was very rushed, and took place without pictures, public awareness campaigns, or area measurement. This implies that land records were often quite of date, and that most of the farmers have the land certificate issued by this process as one of many. (Klaus Deininger, personal communication, February 13, 2010).



5 represents a lot of awareness and participation. We estimate alternative regression models that examine the determinants of awareness about the land registration process, participation in the process by way of attending meetings, and the index of participation in the land registration process, with lagged household characteristics as regressors, as well as a variable indicating the presence of female members in the Land Administration Committee (LAC).<sup>8</sup> These regressions were run for the pooled sample with a dummy for the sex of the household head, but this variable was not significant. The regression estimates, reported in table 6, show that on average being a member of an *iddir* and the presence of female members in the (LAC) increases knowledge of and attendance at meetings during the land registration process. This is reasonable because the *iddir* is a kind of social network that facilitates information sharing in addition to its insurance objectives. The presence of female members in the LAC is a channel of information for women in general and also improves their participation. Surprisingly, households with higher schooling level are less likely to know of the land registration process. Being in the third land quartile makes the household less likely to have attended a meeting during the land registration process compared to those in the top quartile. Households whose heads think they have some power to change their circumstances are more likely to attend these meetings compared to those who think they have no control over circumstances. The index is higher for households that live in villages with at least one female member in the LAC, are members of an *iddir*, and are in the top land quartile within the village. The coefficients on interaction terms when we run a model (not reported) with all covariates interacted with the gender of the household head are jointly significant, indicating that the impact of these variables varies by gender. For ease of exposition and interpretation we restrict the sample by the gender of household head and rerun these regression (reported in table 6).

In terms of the knowledge of the land registration process, the characteristics that differ across male and female headed households are highest grade obtained in the household and total plot area. For male headed households, education has a negative effect whereas this effect is positive (though not significant) among the female headed households. Also, female headed households with lower amounts of land are more likely to have heard about the land registration process which is not the case among the male headed households. For the attendance regressions the main difference comes from total livestock holdings, being in the third land quartile in the PA and presence of female members in the LAC. Female headed households with large livestock holdings (and in the third land quartile) are less likely (than those in fourth quartile) to have attended a meeting. An interesting finding is that presence of female members in the LAC encourages participation by female headed households and certainly does not discourage participation by male headed households. This indicates having female members in the LAC has a positive impact on attendance at meetings relating to the land registration.

#### **4. Family Law**

As mentioned in the introduction, the Revised Family Code (2000) gave equal rights to women and men in terms of marriage, inheritance, and property. The Land Registration process discussed above favored joint certification of husbands and wives, in most regions, which gives greater power to women. In this

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<sup>8</sup> This index is created by aggregating responses to questions relating to knowledge and participation in the land registration process (these questions are shown in rows 1-5 in Table 5).

section we use data from the 1997 and 2009 rounds of the ERHS survey to assess changes in perceptions about the allocation of assets upon divorce.

In the 1997 and 2009 survey rounds, we asked female heads or the spouses of male heads how children and various assets would be allocated upon a divorce when:

- neither the husband nor the wife were at fault
- the husband was at fault
- the wife was at fault.

Figures 9-14 compares these responses for 1997 and 2009, and clearly shows that, regardless of who is at fault when a divorce occurs, there is a trend towards splitting half-half between the husband and the wife, with the exception of children, who tend to stay with the wife. This change is probably driven by the changes in the family law that occurred in 2001, and tends to be observed throughout the sample, albeit with some regional variation.

We construct a variable that indicates whether household heads perceived that allocations of land and livestock acquired after marriage shifted towards equal allocations across spouses in case of a no fault divorce (Table 7). On average, a large fraction of households (44% and 35%, respectively) moved towards perceiving a more equal distribution of land and livestock in case of a no fault divorce, although there is substantial regional variation. In Tigray, the fraction of households that moved towards a more equal distribution of assets is relatively small, about 14%, primarily because, to begin with, the local norms regarding the distribution of assets after divorce were already more equal in Tigray. In 1997, about forty percent of households (40%) in Tigray reported that land is allocated equally between the couple upon a no fault divorce. On the other end of the spectrum lies SNNPR, where almost two-thirds of the households changed their response towards a more equal allocation. This is also due to initial conditions: a very small proportion of households reported equal division in 1997. These statistics show that not only did the greatest changes towards more equal allocations occur in the regions where the distribution was most unequal, but there was improvement even in the regions with relatively gender-fair post-divorce allocations.

Regression results (table 8) show that awareness about the land registration process is positively correlated with the shift in perceptions towards equal division of land and livestock upon divorce, especially for male headed households, indicating that interventions can reinforce each other.. However, among male headed households, those with large quantities of land (livestock) are less likely to have changed their perceptions that land (livestock) will be equally allocated after divorce. This indicates that households where the husbands have more at stake are less likely to report having changed their perceptions towards an equal division upon divorce. This variable is not significant for female headed households in the case of land, but is significant in the case of livestock. Female-headed households who own more land are less likely to perceive that the allocation of livestock upon divorce tends towards an equal split. It is possible that wealthier males, precisely because they have more wealth to lose, will resist efforts to achieve greater equality between ex-spouses after divorce. Having at least one female member in the LAC also has a positive correlation with the move towards equal allocation of land among female headed households and livestock allocation for all samples.

Are these results robust to the inclusion of village fixed effects that may capture unobserved social norms regarding the division of property upon divorce? To test this, we add village fixed effects (Table 9) to the regressions. While some results change, some key results remain. Having larger areas of land still reduces the probability that perceptions of male heads will tend towards equal division of land and livestock upon divorce, but the impact of landholdings on the perceptions of female headed household regarding the division of livestock is no longer significant. Neither do livestock holdings influence perceptions regarding the division of land or livestock after marital dissolution when village fixed effects are included. Interestingly, the positive impact of the presence of females in the LAC on shifting perceptions towards an equal split in both land and livestock for both male and female-headed households is robust to the inclusion of village fixed effects. This indicates that, even controlling for local norms regarding the distribution of assets upon divorce, the presence of females in an important village-level committee may provide support to women who are asserting their legal rights, whether in the area of land registration, or in divorce negotiations. This suggests that increasing women's representation in village committees may have spillover effects that lead to improvements in gender equality.

## **5. Summary and policy implications**

The preceding analysis shows that female headed households have fewer resources, have fewer years of schooling and have smaller networks. These households have a larger food gap (defined as the number of months they cannot fulfill their food needs), more likely to have food shortages and can provide fewer meals to children when compared with male headed households. We also find that female headed households are about 5-15 percentage points more likely to experience loss of income, consumption and/or assets as a result of a food price shock. Findings suggest that land has a protective effect against food price shocks, which reinforces the case for interventions that strengthen women's land rights.

As noted earlier, Ethiopia has recently implemented a land registration process that has increased tenure security among women and if implemented properly can have even greater impacts. Our analysis confirms gender gaps in awareness and information about the process as acknowledged by previous studies. In particular, we find that male headed households are on average more likely to have heard about the land registration process, attended meetings (and a greater number) and have received some written material with information about the process. An interesting finding is that the presence of female members in the LAC encourages participation by female headed households and certainly does not discourage participation by male headed households. This indicates that having female members in the LAC has positive impact on attendance at meetings relating to the land registration.

In our analysis of the changes in the family law we find that awareness about the land registration process is positively correlated with the shift in perceptions towards equal division of land and livestock upon divorce. This is especially true for male headed households, indicating that interventions to improve gender equality can reinforce each other. Presence of female members in the LAC has a positive effect on the changes in perceptions towards a more equal distribution of assets upon divorce. This effect is robust to inclusion of village fixed effects which implies that even after controlling for local norms regarding the distribution of assets upon divorce, the presence of females in an important village-level committee may provide support to women and also may be a source of information regarding the new family code.

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## Tables

Table 1. Descriptive Statistics by Gender of Household Head, ERHS 2009

	Female headed HH	Male headed HH	p-value
Age of head	54.28	52.53	**
Education of head	0.33	2.22	***
Highest grade obtained	4.76	6.28	***
Fraction of female members in hh	0.62	0.47	***
Fraction of dependent members in hh	0.51	0.52	
Household size	4.39	6.38	***
Total Land owned, Ha	1.73	2.198301	***
Total livestock owned, tropical units	8.82	9.394687	***
Fraction households own any oxen	0.37	0.6147388	***
Per capita consumption in 2004 (birr)	94	91	
Prop. of years in which consumption fell below average	0.39	0.4097105	
Fraction of hhs that are member of an iddir	0.76	0.8930582	***
Network size	8.61	11.41048	***
Fraction of hhs that have a bank account	0.05	0.0628638	
Number of sources from which a household can borrow	1.32	1.574347	***

Table 2. Consumption Habits by gender of household head, ERHS 2009

Consumption habits	Female Headed Household	Male Headed Household	p-value
How many months in the last 12 (13 Ethiopian) months did you have problems satisfying your food needs?	3.81	2.63	***
During the last rainy season, did your household suffer any shortage of food?	0.67	0.58	***
Compared to your usual diet, did you eat foods that you ordinarily would not eat?	0.69	0.65	
Compared to your usual diet, did you cut back quantities served per meal to adult males	0.85	0.90	**
Compared to your usual diet, did you cut back quantities served per meal adult females	0.89	0.90	
Compared to your usual diet, did you cut back quantities served per meal to boys	0.77	0.79	
Compared to your usual diet, did you cut back quantities served per meal to girls	0.79	0.79	
During the worst month, how many times a day did adults in your household eat?	2.04	2.09	
During the worst month, how many times a day did children in your household eat?	2.53	2.63	**
During a good month, how many times a day did adults in your household eat?	3.00	3.03	
During a good month, how many times a day did children in your household eat?	3.49	3.61	***

Table 3. Regression Results for Having Experienced a Food Price Shock in the last two years

VARIABLES	(1)	(3)	(5)	(2)	(4)	(6)
Gender (male=1 , female=0)	-0.148*** (0.036)	-0.147*** (0.047)	-0.118*** (0.037)	-0.061** (0.029)	-0.089** (0.038)	-0.052* (0.029)
Household size	-0.010 (0.008)	-0.004 (0.009)	-0.008 (0.007)	-0.003 (0.006)	0.001 (0.007)	-0.003 (0.006)
Net buyer of food	0.202*** (0.033)	0.162*** (0.036)	0.188*** (0.034)	0.012 (0.031)	0.013 (0.034)	0.014 (0.032)
Dummy for Land quartile 1, 2004 survey	0.023 (0.039)	0.060 (0.047)	0.031 (0.039)	0.055* (0.030)	0.074** (0.038)	0.058* (0.031)
Dummy for Land quartile 2, 2004 survey	0.034 (0.040)	0.053 (0.047)	0.040 (0.040)	0.024 (0.033)	0.034 (0.041)	0.030 (0.034)
Dummy for Land quartile 3, 2004 survey	0.022 (0.038)	0.031 (0.045)	0.023 (0.038)	0.050 (0.030)	0.040 (0.037)	0.053* (0.031)
Total plot area, hectares	-0.011*** (0.004)	-0.008*** (0.003)	-0.010*** (0.003)	-0.009*** (0.002)	-0.008*** (0.001)	-0.009*** (0.002)
Fraction of cropped land that is Good or Medium Quality	-0.274*** (0.037)	-0.202*** (0.064)	-0.195*** (0.040)	-0.088** (0.035)	-0.140** (0.056)	-0.089** (0.036)
Total livestock holdings, , 2004 survey (Tropical units)	0.025*** (0.004)	0.026*** (0.005)	0.028*** (0.004)	0.003 (0.004)	0.004 (0.004)	0.003 (0.004)
Whether any household member is currently a member of at least one Iddir, 2004 survey		0.214 (0.205)	-0.232*** (0.032)		0.011 (0.145)	0.063 (0.039)
No. of years since joined Iddir, 2004 survey		-0.006*** (0.001)			-0.003*** (0.001)	
Received a loan from the Iddir, 2004 survey		-0.025 (0.041)			-0.058* (0.035)	
Taken out a loan of at least 20 Birr, 2004 survey		0.068** (0.033)			0.023 (0.029)	
Household has a bank account, 2004 survey		-0.161 (0.104)	-0.101 (0.062)		-0.137 (0.090)	-0.094* (0.050)
Village fixed effects	No	No	No	Yes	Yes	Yes
Observations	1180	881	1142	1180	881	1142
R-squared	0.126	0.135	0.161	0.455	0.419	0.466

**Table 4. Characteristics of Land Owned and Cropped**

	Female headed HH	Male headed HH	p-value
Total plot area, hectares	1.60	2.00	**
Total cropped area, hectares	1.19	1.69	***
Fraction of total land that is cropped	0.71	0.85	***
Fraction of cropped land that is Lem or Lem-Teuf	0.83	0.89	***
Fraction of total land that is Lem or Lem-Teuf	0.83	0.88	***
Fraction of cropped area operated by women	0.82	0.01	***
Fraction of plot area operated by women	0.84	0.01	***
Fraction of cropped area registered	0.95	0.97	**
Fraction of total land area registered	0.96	0.97	*



**Table 5: Land Registration Process: Knowledge and participation**

	Whole sample			Amhara			Oromiya			SNNPR		
	Female Headed	Male Headed	p-value	Female Headed	Male Headed	p-value	Female Headed	Male Headed	p-value	Female Headed	Male Headed	p-value
Are aware of the land registration process	0.75	0.90	***	0.90	0.96	***	0.96	0.96		0.83	0.95	***
Public information meetings were held before the land registration program started	0.79	0.91	***	0.83	0.91	**	0.74	0.90	***	0.86	0.93	*
Any member of the hh attended any of these meetings	0.81	0.89	***	0.83	0.87	**	0.80	0.90	**	0.83	0.91	*
Number of these meetings attended	2.19	2.71	***	2.28	2.74		2.07	2.66	**	2.30	2.79	**
Receive any written material on this program	0.15	0.22	***	0.17	0.18	**	0.03	0.08	**	0.30	0.47	***
The plot borders were clearly demarcated before the land registration	0.88	0.88		0.84	0.82		0.92	0.94		0.89	0.86	
Did you face border disputes before the land registration?	0.28	0.26		0.31	0.22		0.27	0.28		0.29	0.28	
The plot borders were clearly demarcated during the land registration	0.97	0.96		0.96	0.93	*	0.96	0.97		0.99	0.96	*
The land registration reduced the number of border disputes during the process	0.39	0.38		0.42	0.41	*	0.27	0.24		0.55	0.56	
The land registration reduced the number of border disputes after the process was completed	0.39	0.39		0.45	0.42		0.26	0.25		0.49	0.54	
Having a certificate protects against encroachment on land by neighbors	0.62	0.65		0.80	0.80		0.42	0.48		0.72	0.76	
Need for a new land demarcation to make borders clearer	0.35	0.37		0.32	0.44		0.30	0.30		0.46	0.41	
Have sufficient witnesses that can confirm the borders of their plots in case it was contested	0.94	0.92		0.93	0.91	**	0.92	0.90		0.98	0.94	**
Interested in planting trees on any of their plots	0.77	0.81		0.81	0.86		0.70	0.73		0.83	0.87	
Having the land certificate increases their incentive to plant trees	0.74	0.81	***	0.79	0.85		0.65	0.74	**	0.83	0.87	
Having a certificate will increase the possibility of obtaining compensation in case land is appropriated	0.92	0.92		0.93	0.90		0.95	0.92		0.87	0.94	*
Having a land certificate improves the position of women	0.94	0.95		0.98	0.99		0.90	0.93		0.97	0.94	

**Table 6. Regression results for Knowledge and Participation in Land Registration Process with PA fixed effects**

VARIABLES	All			Male Headed		Female Headed	
	Knowledge	Attendance	Index	Knowledge	Attendance	Knowledge	Attendance
Age of household head	0.001 (0.001)	-0.001 (0.001)	-0.006 (0.007)	0.000 (0.001)	-0.001 (0.002)	0.001 (0.001)	-0.000 (0.003)
Gender of household head (1= Male, 0= Female)	0.034 (0.021)	0.012 (0.041)	0.236 (0.197)				
No. of years of schooling of the head	0.002 (0.003)	0.002 (0.005)	0.005 (0.032)	0.003 (0.003)	0.007 (0.006)	-0.009 (0.014)	-0.018 (0.016)
Highest grade obtained in household	-0.002 (0.002)	0.011** (0.004)	0.035 (0.025)	-0.005** (0.002)	0.008* (0.005)	0.004 (0.005)	0.018 (0.012)
Total plot area in hectares, 2004 Survey	-0.012** (0.006)	-0.002 (0.011)	-0.075* (0.045)	0.001 (0.003)	-0.005 (0.011)	-0.013*** (0.004)	0.037 (0.044)
Fraction of total land that is Good or Medium quality	0.048 (0.030)	0.032 (0.058)	0.008 (0.320)	0.037 (0.036)	0.044 (0.065)	0.082* (0.044)	-0.081 (0.135)
Fraction of total land area registered	0.013 (0.050)	0.078 (0.112)	-0.119 (0.612)	-0.035 (0.025)	0.058 (0.113)	0.061 (0.117)	0.104 (0.304)
Total livestock holdings, , 2004 survey (Tropical units)	-0.002 (0.002)	-0.004 (0.005)	-0.021 (0.022)	-0.004* (0.002)	0.001 (0.005)	-0.005 (0.004)	-0.025* (0.013)
Dummy for Land quartile 1, 2004 survey	-0.007 (0.018)	-0.060 (0.038)	-0.730*** (0.200)	0.011 (0.018)	-0.041 (0.045)	-0.063 (0.055)	-0.134 (0.085)
Dummy for Land quartile 2, 2004 survey	0.001 (0.018)	-0.035 (0.034)	-0.223 (0.196)	0.010 (0.016)	-0.044 (0.039)	-0.046 (0.055)	-0.096 (0.080)
Dummy for Land quartile 3, 2004 survey	0.017 (0.017)	-0.057* (0.032)	-0.334* (0.183)	0.014 (0.017)	-0.026 (0.035)	-0.004 (0.054)	-0.268*** (0.088)
Are there any female members in the LAC	0.846*** (0.051)	0.386 (0.273)	6.871*** (0.703)	0.893*** (0.062)	0.154 (0.386)	0.974*** (0.077)	1.072*** (0.187)
Hh head perceives to have some power to change the course of his/her life	0.001 (0.021)	0.122** (0.053)	0.306 (0.225)	0.015 (0.022)	0.110* (0.067)	-0.029 (0.038)	0.171** (0.086)
Hh head perceives to have a lot of power to change the course of his/her life	0.005 (0.019)	0.072 (0.054)	0.225 (0.226)	0.015 (0.021)	0.056 (0.067)	0.003 (0.035)	0.145* (0.086)
Member of an Iddir, 2004 survey	0.086** (0.039)	0.101 (0.074)	0.824*** (0.279)	0.062 (0.045)	0.072 (0.086)	0.066 (0.056)	0.211 (0.163)
Network size, 2004 survey	-0.000 (0.000)	-0.001 (0.001)	-0.003 (0.004)	-0.000 (0.000)	-0.000 (0.001)	0.002 (0.002)	0.002 (0.006)
Whether any household member has a bank account	0.013 (0.023)	-0.000 (0.056)	0.455 (0.328)	0.024 (0.027)	-0.044 (0.069)	0.012 (0.035)	-0.018 (0.135)
Observations	1017	773	1018	708	588	309	185
R-squared	0.751	0.127	.	0.741	0.114	0.799	0.353

**Table 7. Summary statistics: Changes in perceptions regarding allocation of land and livestock upon divorce, 1997-2009**

<b>% households...</b>	<b>All</b>	<b>Female Headed</b>	<b>Male Headed</b>
Moved towards equal allocation of land upon a no fault divorce	44	40	46
Moved towards equal allocation of livestock acquired after marriage upon a no fault divorce	35	34	36
<b>Tigray</b>			
Moved towards equal allocation of land upon a no fault divorce	13	17	7
Moved towards equal allocation of livestock acquired after marriage upon a no fault divorce	14	18	9
<b>Amhara</b>			
Moved towards equal allocation of land upon a no fault divorce	30	33	28
Moved towards equal allocation of livestock acquired after marriage upon a no fault divorce	21	24	20
<b>Oromiya</b>			
Moved towards equal allocation of land upon a no fault divorce	52	48	54
Moved towards equal allocation of livestock acquired after marriage upon a no fault divorce	35	33	36
<b>SNNPR</b>			
Moved towards equal allocation of land upon a no fault divorce	62	54	66
Moved towards equal allocation of livestock acquired after marriage upon a no fault divorce	58	61	57

**Table 8. Regression results for Changes in perceptions regarding allocation of land and livestock upon divorce**

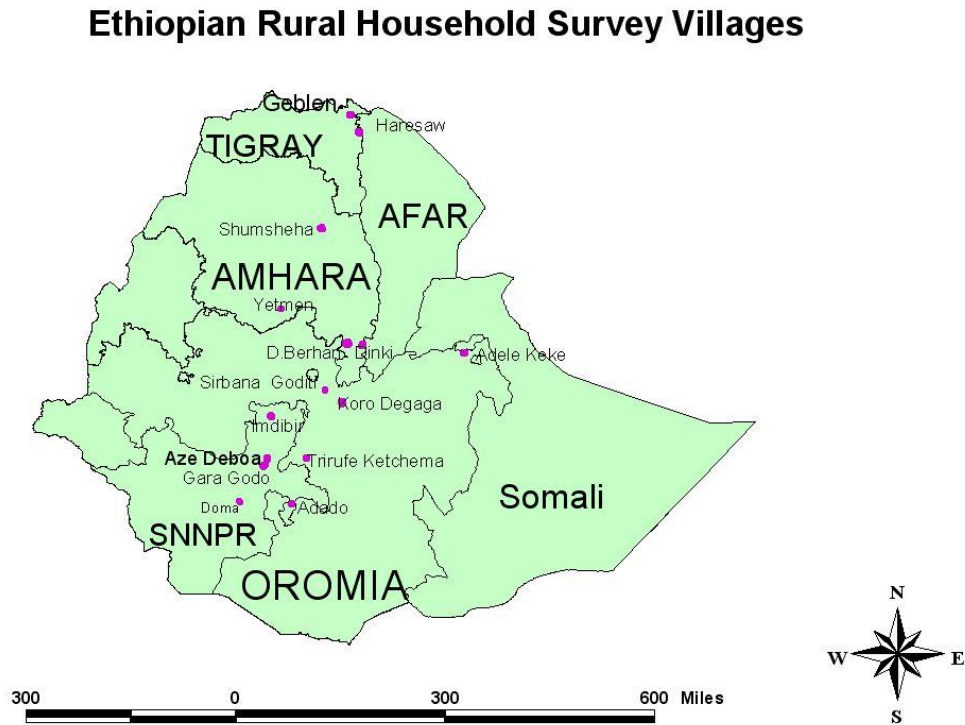
VARIABLES	Moved to split land half-half			Moved to split livestock half-half		
	All	Male Headed	Female Headed	All	Male Headed	Female Headed
Age of household head	0.000 (0.002)	0.002 (0.002)	-0.003 (0.003)	0.001 (0.001)	0.002 (0.002)	0.002 (0.003)
Gender of household head (1= Male, 0= Female)	0.030 (0.048)			0.058 (0.046)		
No. of years of schooling of the head	0.019*** (0.007)	0.023*** (0.008)	-0.006 (0.022)	0.008 (0.006)	0.007 (0.007)	0.011 (0.023)
Highest grade obtained in household	-0.007 (0.006)	-0.009 (0.007)	0.001 (0.010)	-0.007 (0.005)	-0.009 (0.006)	-0.000 (0.010)
Total plot area in hectares, 2004 Survey	-0.031*** (0.011)	-0.032*** (0.012)	-0.025 (0.029)	-0.062*** (0.011)	-0.061*** (0.012)	-0.063*** (0.031)
Fraction of total land that is Good or Medium quality	0.044 (0.057)	0.062 (0.074)	0.044 (0.091)	0.037 (0.054)	0.087 (0.068)	0.016 (0.086)
Dummy for Land quartile 1, 2004 survey	-0.015 (0.047)	0.058 (0.056)	-0.173* (0.094)	-0.048 (0.043)	-0.005 (0.053)	-0.114 (0.087)
Dummy for Land quartile 2, 2004 survey	-0.040 (0.046)	-0.017 (0.054)	-0.132 (0.099)	-0.060 (0.042)	-0.064 (0.048)	-0.065 (0.094)
Dummy for Land quartile 3, 2004 survey	-0.017 (0.045)	-0.028 (0.050)	-0.012 (0.102)	-0.001 (0.040)	-0.002 (0.045)	-0.014 (0.092)
Total livestock holdings, , 2004 survey (Tropical units)	-0.013** (0.005)	-0.012* (0.006)	-0.022** (0.011)	-0.019*** (0.005)	-0.017*** (0.005)	-0.029*** (0.010)
Are there any female members in the LAC	0.081** (0.041)	0.038 (0.048)	0.214*** (0.079)	0.301*** (0.035)	0.262*** (0.042)	0.375*** (0.069)
Member of an Iddir, 2004 survey	0.011 (0.053)	-0.021 (0.069)	0.043 (0.089)	-0.059 (0.049)	-0.072 (0.062)	-0.063 (0.079)
Network size, 2004 survey	-0.001 (0.001)	-0.001 (0.001)	0.003 (0.006)	-0.001 (0.001)	-0.001 (0.001)	0.004 (0.006)
Are you aware of the land registration process?	0.203*** (0.060)	0.329*** (0.079)	-0.020 (0.099)	0.123** (0.051)	0.168** (0.066)	0.014 (0.081)
Observations	970	657	313	964	658	306
R-squared	0.094	0.117	0.108	0.166	0.198	0.173

**Table 9. Regression results for Changes in perceptions regarding allocation of land and livestock upon divorce with PA fixed effects**

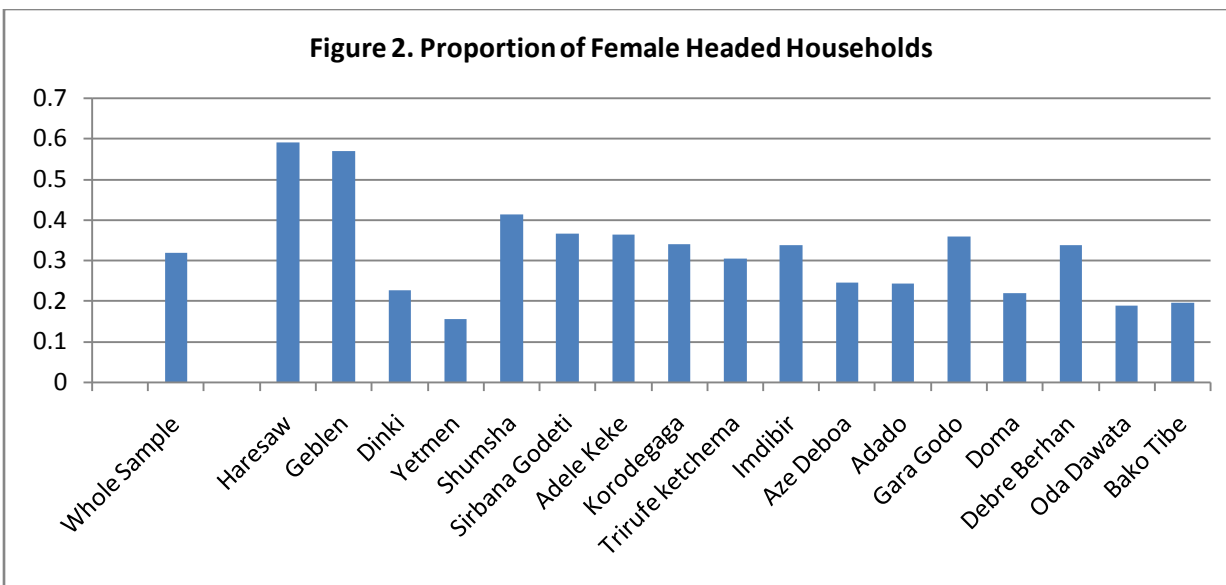
VARIABLES	Moved to split land half-half			Moved to split livestock half-half		
		Male	Female		Male	Female
	All	Headed	Headed	All	Headed	Headed
Age of household head	-0.000 (0.001)	0.001 (0.002)	-0.002 (0.003)	-0.000 (0.001)	0.000 (0.002)	0.003 (0.002)
Gender of household head (1= Male, 0= Female)	0.048 (0.047)			0.016 (0.043)		
No. of years of schooling of the head	0.006 (0.007)	0.005 (0.007)	0.000 (0.023)	0.002 (0.006)	-0.003 (0.007)	0.024 (0.020)
Highest grade obtained in household	-0.003 (0.006)	-0.006 (0.007)	0.007 (0.010)	-0.003 (0.005)	-0.007 (0.006)	0.008 (0.010)
Total plot area in hectares, 2004 Survey	-0.046*** (0.011)	-0.036*** (0.012)	-0.092*** (0.033)	-0.029*** (0.009)	-0.028*** (0.010)	-0.031 (0.035)
Fraction of total land that is Good or Medium quality	-0.001 (0.053)	0.021 (0.070)	-0.029 (0.090)	-0.020 (0.055)	0.022 (0.071)	-0.039 (0.083)
Dummy for Land quartile 1, 2004 survey	-0.034 (0.042)	0.002 (0.052)	-0.171** (0.086)	-0.009 (0.041)	0.017 (0.051)	-0.025 (0.084)
Dummy for Land quartile 2, 2004 survey	-0.033 (0.043)	-0.030 (0.051)	-0.071 (0.092)	-0.003 (0.040)	-0.021 (0.045)	0.063 (0.090)
Dummy for Land quartile 3, 2004 survey	-0.015 (0.040)	-0.023 (0.045)	0.007 (0.094)	0.018 (0.037)	0.021 (0.043)	0.006 (0.085)
Total livestock holdings, , 2004 survey (Tropical units)	-0.003 (0.006)	0.004 (0.007)	-0.016 (0.010)	0.001 (0.005)	0.007 (0.006)	-0.016* (0.008)
Are there any female members in the LAC	0.406*** (0.127)	0.541*** (0.135)	0.516** (0.241)	0.203* (0.104)	0.234* (0.135)	0.375* (0.194)
Member of an Iddir, 2004 survey	-0.126* (0.069)	-0.129 (0.092)	-0.150 (0.115)	-0.173*** (0.064)	-0.261*** (0.085)	-0.111 (0.108)
Network Size, 2004 survey	-0.002 (0.001)	-0.002 (0.001)	-0.000 (0.006)	-0.001 (0.001)	-0.001 (0.001)	0.005 (0.005)
Whether aware of the land registration process	0.066 (0.069)	0.113 (0.089)	0.000 (0.110)	0.058 (0.058)	0.114 (0.078)	-0.005 (0.086)
Observations	970	657	313	964	658	306
R-squared	0.243	0.287	0.233	0.282	0.317	0.338

**Figures**

**Figure 1.** Map Showing Location of the ERHS Villages



**Figure 2. Proportion of Female Headed Households**



**Figure 3: Assets and Consumption Over Time**

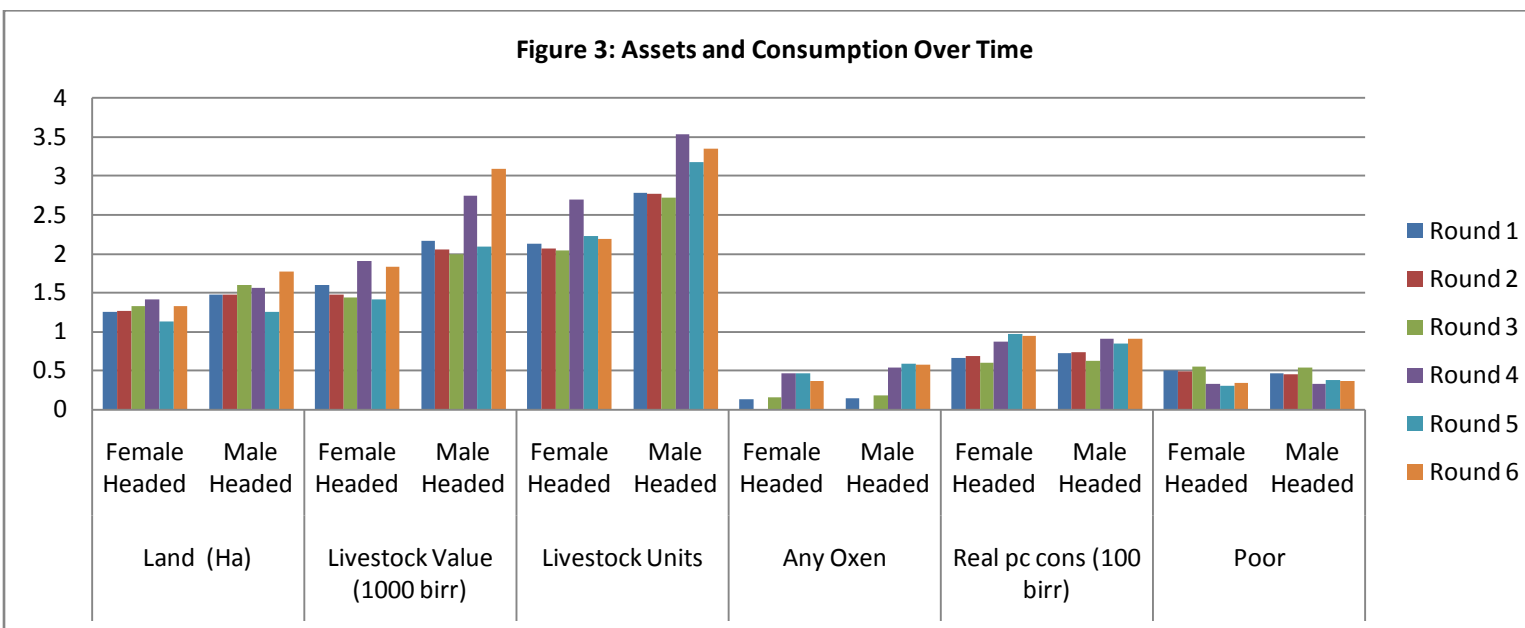


Figure 4. Staple Crop Prices

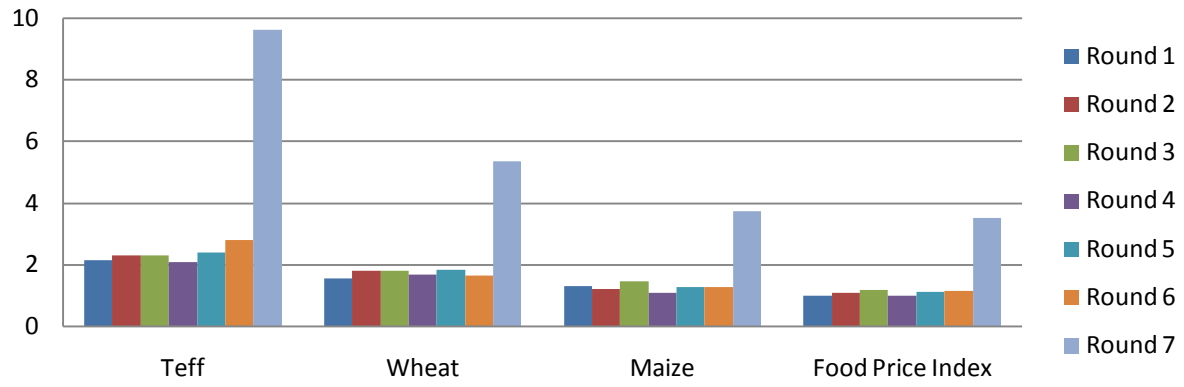
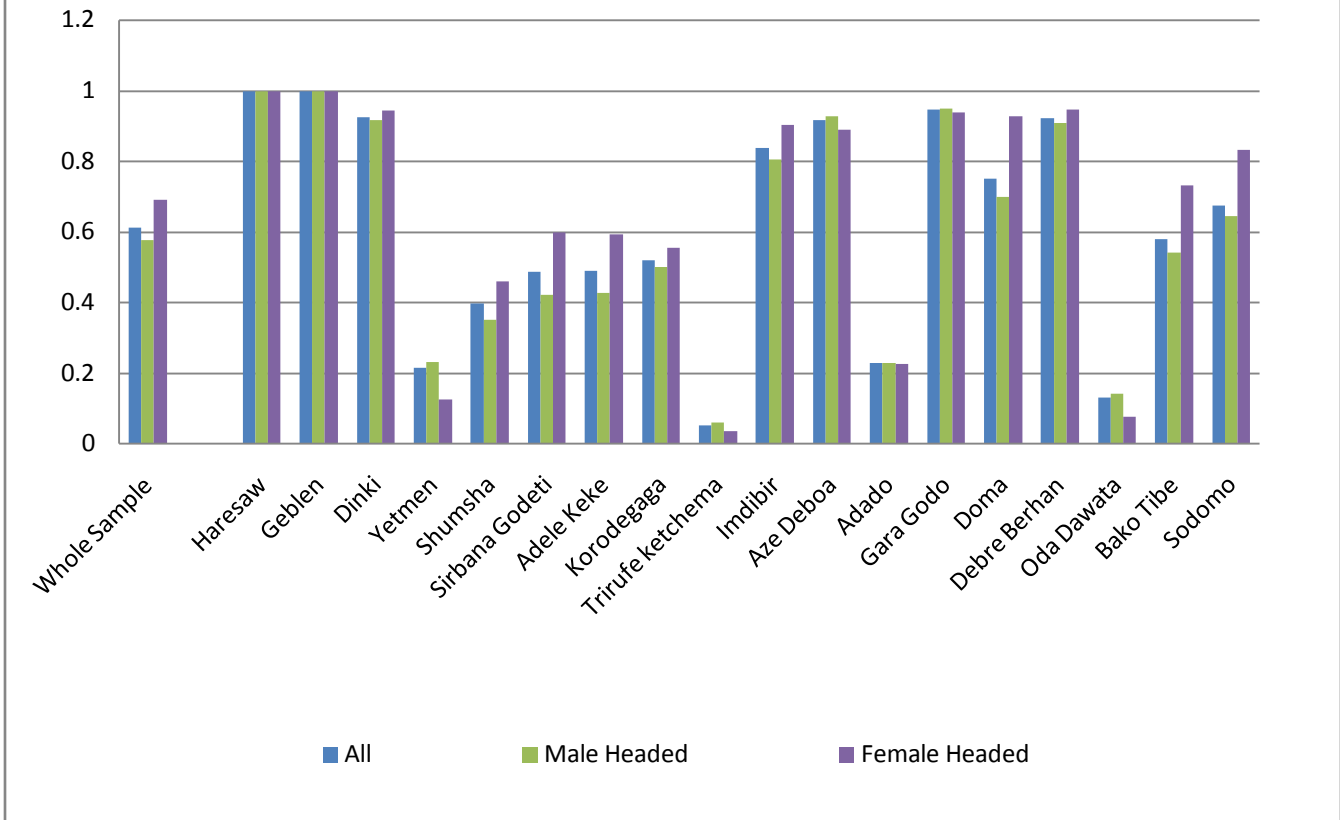
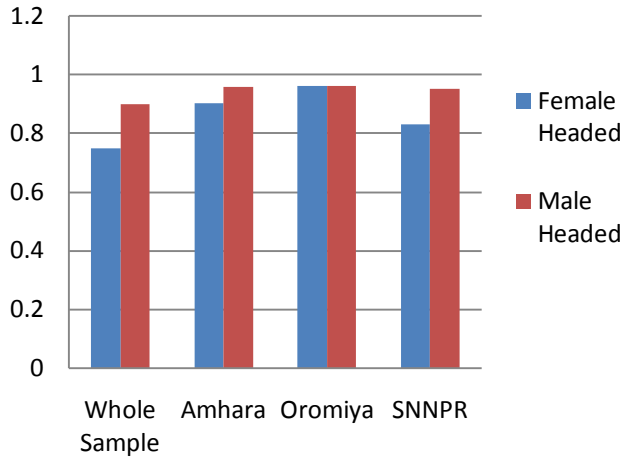




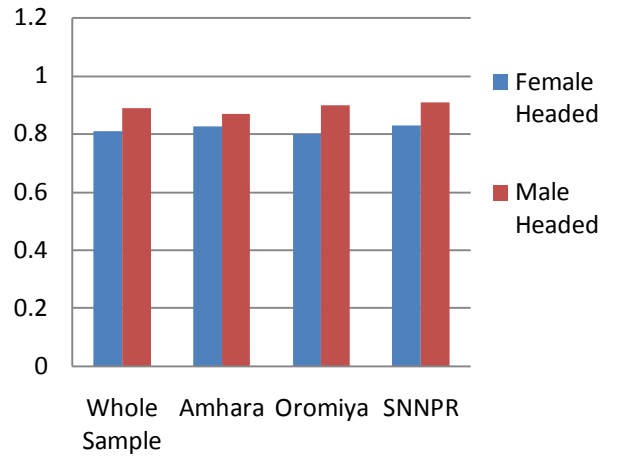
Figure 5. Proportion of Households affected by the Food Price Shock in 2008 or 2009



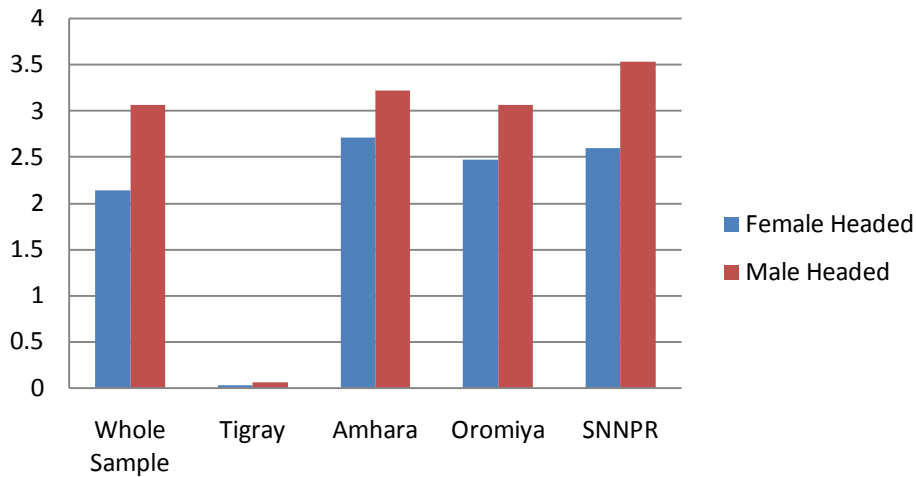
**Figure 6. Proportion of households aware about the land registration process**



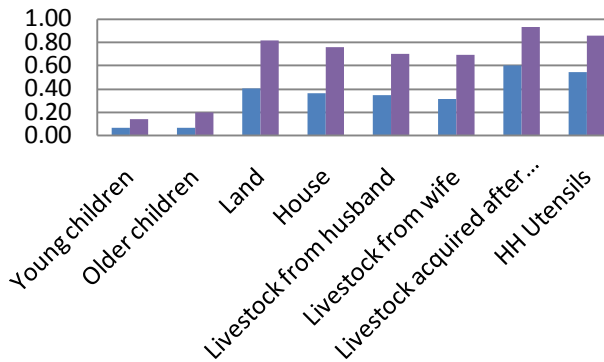
**Figure 7. Proportion of households that attended any meetings held during the land registration process**



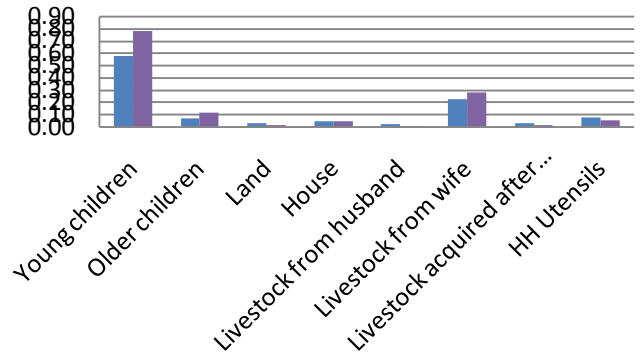
**Figure 8. Index of Participation in Land Registration Process**



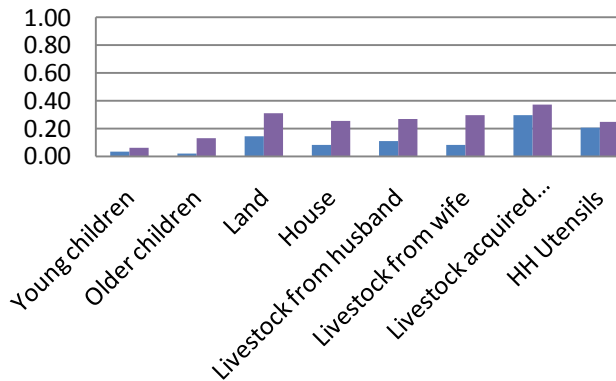
**Figure 9: Divided Half-Half in case of a No-Fault Divorce**



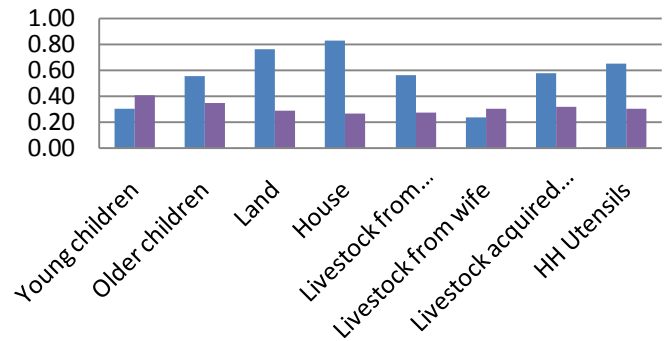
**Figure 10: Given to the wife in case of a No-Fault Divorce**



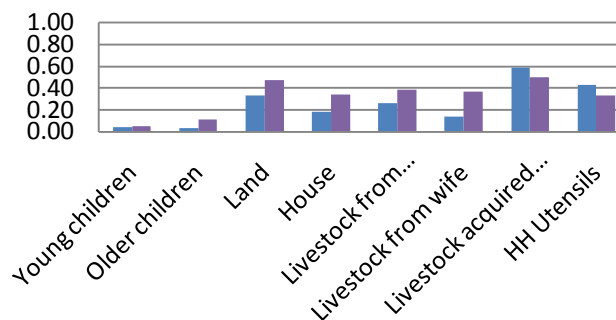
**Figure 11: Divided Half-Half in case of Divorce when wife is at fault**



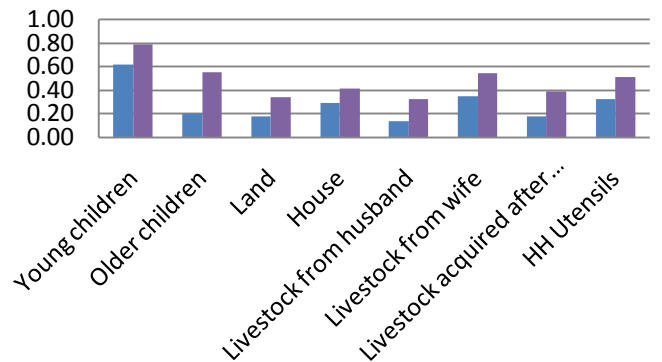
**Figure 12: Given to the husband in case of Divorce when wife is at fault**



**Figure 13: Divided Half-Half in case of Divorce when husband is at fault**



**Figure 14: Given to the wife in case of Divorce when husband is at fault**



1997  
2009

