Research Article

The Role of Informal Local Institutions in Food Security of Rural Households in Southwest Ethiopia

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Abstract

Among sub-Saharan countries, Ethiopia is known for its dominant informal institutions and chronic problem of food insecurity. However, the role of local institutions in households' food security in Ethiopia is less understood. Thus, the aim of the study was to identify local informal institutions and their roles in household food security. Mixed methods research was used to collect and analyse data relating to membership in local institutions and their food consumption. A logit model was employed to identify the role of local institutions in households' food security. The result showed that 45.1 per cent of households were food insecure. Rural households' membership in Iddir, Equib, Debo and Jarsumma strongly helped them escape food insecurity. On the one hand, participation in women's associations and Jiga did not significantly contribute to their food security. On the other hand, Dado was found to reduce their food security. We conclude that the programmes and policies that target food security should provide support to those informal institutions that successfully contributed to hunger reduction.

Keywords

Ethiopia, food security, livelihoods, local institutions, logit model

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Meaning of Informal Institutions

Iddir is an informal insurance institution that covers different risks such as funeral ceremonies, death of livestock, medical expenses and food shortages (Aredo, 2010). Iddir is a voluntary association established primarily to provide mutual aid in burial matters but may also address other community concerns. Iddir offers loans to members for shocks experienced by them such as destruction of the family home, illness, fire, death of cattle (Butcher, 2007) and property losses from fire or theft (Habtamu, 2010).

Equib financial transaction involves borrowing and lending services for participants. It has thus more advantage to participants as they borrow money at zero or no interest rates unlike the formal credit system. The Equib is based on pre-established social ties. It consists of homogeneous groups: people from the same work place, ethnic background, trade, schooling background or neighbourhood (Aredo, 1993).

Debo is a labour sharing association which is based on neighbourhood and voluntary participation.

Jiga is a voluntary humanitarian institution which provides support for a person or a family faced with severe problems (e.g., sudden death of family member). The help may be in the form of labour, cash or material.

Dado is an association of sharing labour turn by turn within short period during peak agricultural periods (e.g., harvesting).

Jarsumma is a council of elders in a village whose major role is solving conflicts (e.g., conflict over natural resources) and building peace among the community.

Teff is an endemic cereal crop which is produced for cash and consumption for centuries in Ethiopia.

Khat is a leafy vegetative and stimulant plant produced mainly for cash and widely consumed in Ethiopia.

Kebele is the lowest (fourth) administrative level in Ethiopia (Federal–Regional–Zonal–Kebele).

NutriHAF is a project being implemented in Ethiopia and Madagascar which is diversifying agriculture for balanced nutrition through fruits and vegetables in multi-storey cropping systems in Africa. The project in Ethiopia is implemented in Oromia regional state in Yayu and Hurumu districts.

Introduction

The proposition that ‘institutions matter for economic growth and development’ has received intense attention (Jütting, 2007). Local institutions have roles in maintaining the livelihoods and food security at the household level (Tolosa, 2005). Institutions are the rules of the game in a society that can enhance or constrain peoples’ livelihood activities and survival strategies (North, 1990). They are the rules of the game that regulate social interaction. Rural people practise several local institutions, and institutions shape behaviours and

exchanges (Dobler, 2011).The rules of the game can be either formally or informally determined. Formal institutions are devised in a formal setup such as constitutions, political institutions and property rights. Whereas informal institutions are behavioural regularities based on socially shared rules, usually unwritten. Informal institutions are largely self-enforcing through mechanisms of obligation, such as in patron–client relationships or clan networks (Jütting, 2007). They also have an economic context as strategies for getting access to livelihood assets (Tolosa, 2009).

Ethiopia is one of the developing countries which is endowed with various informal and formal institutions (Degefa, 2010). Recently, informal institutions have been getting attention from different actors. Over 70 per cent of the people of Ethiopia are members of informal institutions, particularly Equib (Aredo, 1993). Some of these institutions played a significant role in various livelihood activities mainly in natural resource management as a means to address the needs of people and the environment (Degefa, 2010). For example, traditional credit and saving institution (Equib), informal burial institution (Iddir), labour support institutions (such as Debo, Jiga, Dado) and peace-building institutions (Jarsumma) have greatly contributed to development. Moreover, these institutions help the poor in addressing the destructive effects of shocks, labour constraints and insuring them to cope with the high cost of funerals and health-related issues (Mariam, 2003).

In the absence of well-established factor markets in Ethiopia, the role of informal institutions can be substantial for mobilizing factors for agricultural production (Abay, Kahsay, & Berehane, 2018) and for addressing the challenges in land management (Yami, Vogl, & Hauser, 2011). In rural areas of Ethiopia informal institutions can make transactions smooth (Banerjee & Duflo, 2007). Rural people in Ethiopia have indigenous knowledge that has been shown to generate strong relational bondage. Such strong tie among people is the result of culture, trust and norms. People are free to join or withdraw in the informal institutions and their participation allows them to share information and cooperate among themselves (Habtu, 2012). Informal institutions are a ready-made set of power structures that enable a group of people to organise themselves, to take decisions, to enforce regulations and to resolve conflicts informally. Apart from being the warehouse for indigenous knowledge and beliefs, local institutions have the potential to effectively link service providers and the local communities. Dixon and Wood (2007) argue that local institutions are more efficient in promoting sustainability because they are dynamic, flexible and responsive to societal and environmental change.

According to the Ethiopian Rural Smallholders Survey in 2005, approximately 40 per cent of all smallholder households are members of at least one type of traditional institutions, most often a funeral group. In the process of the pursuit of better livelihoods, the vital roles of informal institutions are manifested in mediating and channelling access to livelihood resources, providing strong social security or safety nets, food security and facilitating local self-governance (Nigatu, Eden, & Ansha, 2013).

Ethiopia is one of the many African countries deeply affected by food insecurity. Despite some improvements in recent years, food insecurity remains to be one of the main challenges in Ethiopia. Over 30 per cent of the population is below the poverty line, and nationally, 40 per cent of households are food energy deficient (CSA, 2014). Many studies have been carried out on local institutions around the world. Stone (2001) argues that many of the current attempts to empirically measure local institution fail to recognise and account for its multi-dimensional nature. Furthermore, the linkage between local institutions and food security has not been extensively studied in the sub-Saharan region, although the region faces food security challenges. Informal institutions could be important entry points to mobilise local community towards achieving food security.

Although local institutions have roles in people's livelihoods and food security, a study on local institutions is missing—particularly in southwest Ethiopia, little information is available regarding the role of local institutions. The southwestern part of Ethiopia, Yayu and Hurumu districts, is known for hosting the Yayu Coffee Forest Biosphere reserve, which is registered by United Nations Educational, Scientific and Cultural Organisation (UNESCO). Hence, the implication of this study could be used for similar countries in Africa. The major livelihood strategy in both Yayu and Hurumu district is agriculture, which employs over 90 per cent of the labour force. The agricultural practice in the area is mainly smallholder subsistence farming. For more than 60 per cent of the population coffee production, processing and marketing are the major sources of employment (Fite, 2008). They produce crops such as maize, teff and coffee. They also produce vegetables, fruits and khat. They rear animals such as cattle, sheep, goats and poultry, and practise beekeeping (Zewde, 2011). In agriculture-based livelihoods land, labour and capital are very crucial. Hence, most of the existing informal institutions in the study areas are related to labour, risk management and financial access.

Several factors can influence household food security. In this study, our emphasis is on how local institutions influence household food security. Participation in Iddir insures people during the time of risks and shocks, such as livestock death and crop failure (Aredo, 2010), as they receive cash or in kind support from fellow members. Hence, Iddir would help rural households to withstand the adverse effects of shocks and become less vulnerable to food insecurity. Equib also enables farmers to obtain the necessary funding for purchasing input, building a house or starting a new business. It enhances cash availability and households' ability to access food. Jarsumma, which is an association of elders, enables rural households obtain social respect and acceptance by the community. It enhances the social capital of the households and offers mutual support, trust and respect, which in turn channels households' access to livelihood assets.

Similarly, participation in different labour sharing institutions such as in Debo, Jiga and Dado helps solve labour shortages. For instance, participation in Dado has an influence on use and management of natural resources in

general and agriculture in particular which improves food security of households (Deresse, 2010). Jiga is engaged in performing various agricultural duties such as ploughing, sawing, construction of houses, clearing undergrowth in forest coffee and coffee planting (Deresse, 2010), which have an influence on food production, food availability and food security of the community. Dado helps households do agricultural activities by sharing labour in rotation (turn by turn). This further minimises the risk of crop damage due to weather shocks during harvesting time. Therefore, the study aims to examine the role of informal local institutions on food security of rural households in Yayu and Hurumu districts of southwest Ethiopia.

Objectives of the Study

The main aim of this study is to look into informal institutions in Ethiopia and enhance our understanding of their contributions food security. The specific objectives are as follows:

- To identify and characterise informal local institutions in the study areas.
- To assess the role of informal local institutions on households food security.

Hypotheses

In addition to the local institutions there are several socio-economic control variables such as age, education, gender and livestock ownerships which influence household food security. Age of the household head is hypothesised to have positive association with household food security because the farmers acquire experience and knowledge with aging. Female-headed households may face some cultural barriers to control resources which lead to lower food security. Family size is a burden when it comes to food consumption. Hence, it is hypothesised to increase households' vulnerability to food insecurity. Education level of the head (in years) gives farmers skills and knowledge to improve their decision-making which enhances access to alternative livelihoods and food sources. Livestock holding and participation in other formal institution like Oromia Credit and Saving Institution (OCSI) is hypothesised to influence food security positively. Table 1 summarises the variables and hypotheses.

Table 1. Definition of Variables and Hypotheses

Variables		Definition	Hypothesis
Dependent variable	Food security status of households	It is a dummy variable used in the logistic model that takes the value of 1 if the household is food secure and 0 otherwise	

(Table 1 Continued)

(Table 1 Continued)

Variables		Definition	Hypothesis
Independent variables	Participation in Iddir (IDDIR)	It is a dummy variable which takes the value of 1 if the household is a member of Iddir and 0 otherwise.	+
	Participation in Equib (EQUIB)	It is a dummy variable which takes a value of 1 if the household is a member of Equib and 0 otherwise	+
	Participation in Jarsumma (JARSUM)	It is a dummy variable which takes value of 1 if the household is involved in *Jarsumma* and 0 otherwise	+
	Participation in Debo (DEBO)	It is a dummy variable which takes the value of 1 if the household is involved in Debo and 0 otherwise	+
	Participation in Jiga (JIGA)	It is a dummy variable which takes the value of 1 if the household participated in Jiga and 0 otherwise	+
	Participation in Dado (DADO)	It is a dummy variable which takes the value of 1 if the household is involved in Dado and 0 otherwise	+
	Participation in local women's association (WOMENS)	It is a dummy variable which takes the value of 1 if the household is involved in local women's association and 0 otherwise	+
Control variables	Age	Refers to the age of the farmer in years	+
	Sex of the head	Indicates the sex of the sample farmer, and measured as a dummy variable 1 for men and 0 for female	+
	Education of head	Refers to formal education of the sample farmer in years	+
	Livestock holding	Number of livestock owned by the sample farmers	+
	Participation in OCSI	The dummy variable takes value of 1 if a household is involved in OCSI and 0 otherwise	+

Source: The Authors.

Data and Methods

Sampling

The study is conducted in Yayu and Hurumu districts of southwestern Ethiopia (Figure 1). Yayu and Hurumu are located at a distance of 582 and 600 km from the capital Addis Ababa, respectively (Deresse, 2010). Hurumu and Yayu districts are neighbours. In Yayu district the forest coffee is registered as a biosphere reserve by UNESCO (Zewde, 2011).

According to 2012 population projection data (CSA, 2012), Yayu district has a total population of 61,361, of which 303,23 of them are females. The district has an average population density of 75.9 people per sq. km. Similarly, the total population of Hurumu is 49, 402 of which the female population is 24,727 (CSA, 2007; Zewde, 2011). The district covers 465.96 km^2 with a population density of 106 per sq. km (Central Statistical Authority of Ethiopia [CSA], 2012).

Two kebeles from each district, that is, a total of four kebeles were selected purposively (i.e., Wabo and Bondo Megela kebeles from Yayu district; Gaba and Wangegne kebeles from Hurumu district). The study kebeles are the intervention areas of NutriHAF project. In these villages, different forms of livelihoods and human activities are common. Sample households were drawn from the selected kebeles employing simple random sampling technique.

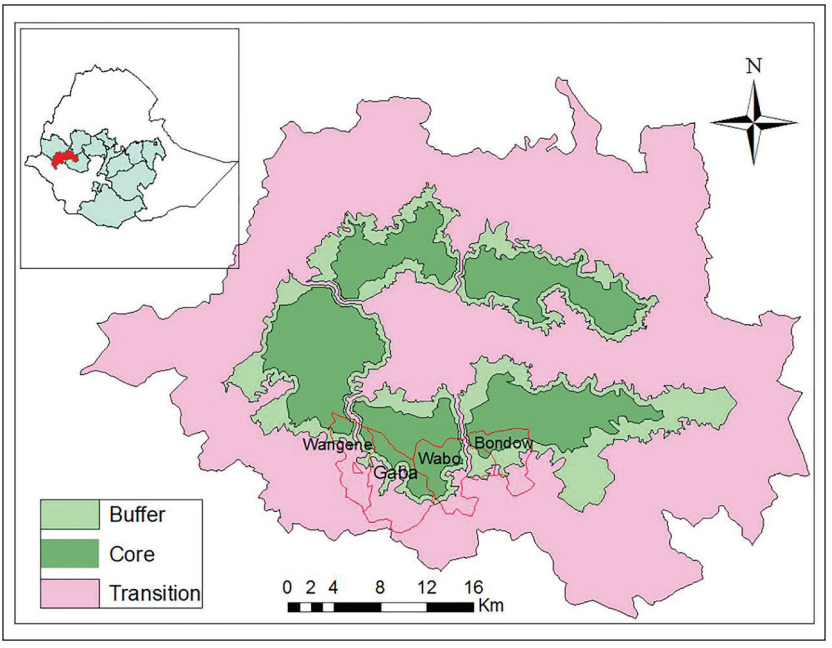

Figure 1. Map of the Study Area

Source: The authors.

Sample size was determined at 93 per cent confidence level using Yamane formula (Yamane, 1967).

$$n = \frac{N}{1 + N(e)^2} \quad (1)$$

A total of 182 households (38 of them are female-headed households) from the four kebeles were selected proportionate to the total household numbers in each kebele.

Data Collection Instruments

In this study both structured questionnaire and semi-structured checklists were used for data collection. The structured questionnaire consists of households' socio-economic characteristics, food consumption and membership to informal local institutions. Local enumerators who have college education and speak the local language were hired for conducting face to face interviews. The questionnaire was pretested before data collection to ensure clarity and appropriateness to the study community. The focus group discussion (FGD) checklists consists of questions on trends of membership to local institutions, benefits, strengths and weaknesses of local institutions.

Data Collection

This study uses the mixed methods research where both quantitative and qualitative data are collected, analysed and interpreted to achieve the objectives of the study. This is the most effective method to research about local institutions and livelihoods of local communities (Prowse, 2010). The combined use of quantitative and qualitative approaches provides a better understanding of the research problems (Cameron, 2015). The qualitative method is used to understand the trends, characteristics and purposes of informal institutions in the study area, whereas the quantitative method is used to measure the effectiveness of the informal institutions in ensuring household food security.

Primary data were collected from farm households through structured questionnaire. FGDs were conducted on six to eight members of elder farmers in each kebele. A total of twenty seven farmers participated in the FGDs, of which ten of them were women. In addition, key informants interview was conducted on eight key informants consisting four local institution leaders and three village leaders and one local expert. The purpose of key informant interview was to get an in-depth understanding of the situation of local institutions in the study area.

Data Analysis

Quantitative Data Analysis

Both descriptive statistics (mean, standard deviations and frequencies) and inferential statistics (chi-square tests and binary logit) were used to analyse the

data. Unlike linear probability model, logit model guarantees that the estimated probabilities increase but never step outside the 0 to1 interval and the relationship between probability (Pi) and explanatory variable (Xi) is non-linear (Gujarati, 2008). Thus, a logistic model was used to identify the role of local institutions on household food security. The model is written as follows:

$$Li = ln\left[\frac{Pi}{1-Pi}\right] = Zi = \beta o + \beta 1X1 + \beta 2X2i + \& + \beta nXn + Ui \quad (2)$$

where log of the odds ratio. It shows how log odd in favour of change in food security status as respective independent variable (Xi) change by a unit.

Pi = is food security status which ranges from 0 to 1

Xi = explanatory variables that is local institutions and control variables

βi = Slopes of the equation in the model

Zi = is a function of n explanatory variables (x)

Xi = is vector of relevant household characteristics (explanatory variables i.e., local institutions and some socio-economics variable).

Ui = is the error term.

Qualitative Data Analysis

The qualitative data was analysed through transcription and organisation of similar ideas in different sections of the paper. FGD and key informant interview results were transcribed immediately after the field work and we integrated the results into the quantitative finding for further triangulation.

Results and Discussion

This part presents the results and discussions from descriptive statistics, econometric models and qualitative results on the effect of local institutions on food security.

Concepts and Measuring Household Food Security

According to the world Bank (1986), food security is defined as 'access by all people at all times to enough food for an active, healthy life'. A household is food secure when it has access to the food needed for a healthy life for all its members and when it is not at undue risk of losing such access (Bajagai, 2014).

Collecting data for a complete analysis of food security can be a virtually impossible task in a situation where household composition is variable (Maxwell, 1996). To get out of such difficulty, most studies rely on measuring food consumption. Therefore, to measure food security of households, this study used food consumption score (FCS). FCS is an index that was developed by the World

Food Programme (WFP). FCS aggregates household-level data on the diversity and frequency of food groups consumed over the previous 7 days, which is then weighted according to the relative nutritional value of the consumed food groups. Since it combines food diversity and frequencies, it is a strong proxy for food intake and food security. Based on this score, a household's food consumption can be further classified into one of three categories: poor, borderline or acceptable (Vhurumuku, 2014; WFP, 2008a).

The respondent is asked about the household's frequency of consumption over the past week for each food group/item. To calculate FCS, the consumption frequencies are summed and multiplied by the standardised food group weight. Households can then be further classified as having poor, borderline or acceptable food consumption by applying WFP's recommended cut-offs (Vhurumuku, 2014; WFP, 2008b, 2011)) to the food consumption score which consider poor (FCS 0–21) and borderline (FCS 21.5–35) categories as food insecure whereas acceptable (FCS > 35) category as food secure. Studies have shown that an increase in dietary diversity (food consumption frequency) is associated with socio-economic status and household food security (Hoddinott & Yohannes, 2002). The weighting of food groups has been determined by WFP according to the nutrition density of the food group which is showed in Table 2.

By using FCS, we classified households into food secure and food insecure. Accordingly, 54.9 per cent and 45.1 per cent were respectively food secure and food insecure (Table 3). The proportion of food insecure households (45.1%) in the study area is higher than the national level of 30 per cent (FAO, 2013). This shows the severity of food insecurity in the study areas.

Table 2. Description of Food Group Weights

	Food Items	Food Groups	Weight
1	Maize, maize porridge, rice, sorghum, millets, pasta, bread and other cereals	Main staples	2.0
	cassava, potatoes and sweet potatoes, other tubers, plantains		
2	Beans, peas, groundnuts and cashew nuts	Pulses	3.0
3	Vegetables and leaves	Vegetables	1.0
4	Fruits	Fruits	1.0
5	Beef, goat, poultry, pork, eggs and fish	Meat and fish	4.0
6	Milk yogurt and another diary	Milk	4.0
7	Sugar and sugar products, honey	Sugar	0.5
8	Oils, fats and butter	Oil	0.5
9	Spices, tea, coffee, salt, fish powder, small amounts of milk for tea	Condiments	0.0

Source: WFP, 2011, 2014.

Table 3. Food Security Status of Households Based on FCS

	Food Secure		Food Insecure	
FCS	***N***	**Percentage**	***N***	**Percentage**
Acceptable (FCS >35)	100	54.9		
Borderline (FCS = 21.5–35)			24	13.2
Poor (FCS 0–21)			58	31.9
Total	100	54.9	82	45.1

Source: Survey Result, 2016.

Types and Characteristics of Local Institutions in the Study Areas

The qualitative data collected through FGDs and key informant interviews are tabulated in Table 4. There are seven major informal institutions (Iddir, Equib, Debo, Dado, Jiga, Jarsumma) which are identified and characterised in the study areas. Table 4 shows local names, English equivalent names, who participate, primary functions, trends, and strengths and weaknesses.

Table 4. Descriptions of Local Institutions Functional in the Study Areas

Local Names	English Names	Who Participate	Primary Functions	Trends	Strength	Weakness
Iddir	Informal insurance	Both men and women	Risk coping (during death of family members and hazards).	Increasing	Informal insurance during shocks and hard time	Weak coordination and low financial capacity
Dado	Labour share	Men (youth and adults)	To share labour with reciprocity	Decreasing	Solving problem of human labour during peak time	Not permanent i.e., it depends on season
Debo	Labour share	Men (youth and adults)	Using labour of voluntary neighbour-hood to proceed farming activity on time with no reciprocity	Not changed	Solving labour shortage for small households	It depends on farmers' voluntariness

(Table 4 Continued)

(Table 4 Continued)

Local Names	English Names	Who Participate	Primary Functions	Trends	Strength	Weakness
Equib	Informal credit and saving institution	Men, Women and youth	Providing credit and saving services turn by turn to members	Increasing	Solve financial problem of households by giving credit and saving	In some villages there is a lack of punctuality and honesty of members
Jiga	Emergency aid or campaign	Men and youth	Help-ing each other during shocks via emergency campaign (e,g,, build-ing a house damaged by fire,)	Not changed	Solving human labour, material or financial problem during shocks	Weak of management during emergency
Jarsum-ma	Council of elders	Elders	Maintenance of house-hold and community peace	Increasing	Creating peace and solving conflicts	Shortage of educated members
Raya dubart-oota	Local Women's Association	Women	Provision of credit, saving, marketing and risk coping	Increasing	Empower-ing women	Low community perception
WALQO	OCSI (formal)	Both men and women	To serve households by giving credit and saving services	Increasing	Solve financial problem of households	Low awareness among the community

Source: Survey Result, 2016.

The Association of Participation in Local Institutions with Household Food Security (Pearson's chi-squared test)

We assessed households' membership and participation in the existing local institutions and found that majority of the rural households were involved in Jiga (71.43%) followed by Iddir (55.5%) and Debo (54.9%), respectively. Whereas Jarsumma and women's associations restrict membership by age and sex, respectively, and hence joined by small households.

Table 5. Household's Participation in Local Institution by Food Security Status

Local Institutions	Food Secure		Food Insecure		Total		
	N	%	*N*	percent	*N*	%	χ2-value
OCSI	81	81	7	8.50	88	48.35	94.735***
Iddir	83	83	18	22.00	101	55.50	67.988***
Debo	62	62	38	46.30	100	54.90	10.555***
Dado	24	24	28	34.15	52	28.57	2.273
Jiga	73	73	57	69.51	130	71.43	0.269
Equib	71	71	17	20.73	88	48.35	45.589***
Jarsumma	50	50	16	19.50	66	36.30	18.119***
Women Association	18	18	13	15.85	31	17	0.147
Total	100	54.9	82	45.10	182	100	

Source: Survey Result, 2016.

Note: ***Indicates statistically significant difference at 1 per cent significance level.

We used Pearson chi-square for testing relationships between participation in institutions and food security. Majority of the members of Iddir, Debo, Equib and Jarsumma are food secure, while only few fall under food security and the variation between food secure and insecure households is significantly explained by households participation (or non) participation in each institutions. About, 48.35 per cent of households were also members of OCSI and this variable is significantly associated with food security at 1 per cent probability level (Table 5). OCSI is the only source of formal finance for rural people in Ethiopia.

Iddir is a traditional community welfare organisation that provides support to families especially for funerals (Ellis & Woldehanna, 2005). It is the most important informal insurance institution in the study areas which reaches members at hard and risky times through provision of labour, materials and cash services. There are no formal insurance mechanisms in rural Ethiopia that help farmers to cope with shocks such as crop damage and livestock deaths. In the absence of formal insurance services, smallholders are devoid of choice than relying on Iddir to minimise the adverse effects of shocks arising from different sources of risks (Aredo, 2010). Iddir also serves as an institution of risk-sharing and risk-pooling arrangements by the rural people. The survey result revealed that 55.5 per cent of the rural households have participated in Iddir, while 44.5 per cent households have not. Regarding food security, majority of food secure households, that is, 83 per cent were members of Iddir while only 22 per cent of the food insecure participated in Iddir. Membership to Iddir was statistically and significantly affecting household food security at 1 per cent probability level (Table 5).

Equib is community or group-based rotating saving and credit association (Ellis & Woldehanna, 2005). It is the most important informal financial institution. Ethiopia has one of the least developed formal financial sectors in the world and the role of traditional informal, community-based revolving savings and credit

associations is vital (Wikileaks, 2008). The great bulk of the Ethiopian population makes little or no use of the formal savings and lending institutions (Aredo, 1993). The country has also a highly biased formal financial sector which only benefits the higher economic classes because of its highest interest rate (>12%) and pre-requisite collateral for getting a loan. Our study shows 48.4 per cent of respondents have participated in Equib in the survey year. About 71 per cent of food secure and 20.7 per cent of food insecure households have participated in Equib. This variable influences household food security significantly at 1 per cent probability level. This implies that those households who got access to finance through Equib would enhance access to food through purchase.

There are different labour sharing institutions in the study areas such as Dado, Debo and Jiga. Among these Dado is pooling the labour from an area to assist one or more individuals with cultivating a large piece of land, ploughing, harvesting crops, clearing forests for ploughing and similar tasks through promises of future reciprocity among member participants, which is the building block of social relations. On the other hand, Debo is a form of festive labour, where a person provides food and drink for a large work party in order to carry out a time-sensitive agricultural task while there is no reciprocity. It seems the person requiring labour typically provides food and drink in exchange for labour (Ellis & Woldehanna, 2005). In our study, the proportion of households who participated in Debo and Dado are 54.90 and 28.57 per cent, respectively. This implies that most people prefer Debo for labour sharing when compared to Dado because Dado forces for repaying the labour utilised and Debo refreshes participants with foods and drinks. When we compare participation in Debo and Dado by food security status, our result indicates majority of the food secure joined Debo than Dado and this is statistically significant at 1 per cent significant level. As we indicated previously, Debo requires a big festival which is not affordable for food insecure households.

According to FGD results, Jiga is a voluntary self-help institution which provides support for a person or a family faced with serious problems that might be death of family member; loss of one's own cattle due to disease or theft; a house burning down due to fire disaster and other similar problems, which are beyond the victim's capacity to control. In the discussion, participants also indicated that Jiga recently diverted to cash provisions from labour support to the affected family. Our study showed that about 71.43 per cent of the respondents have participated in Jiga at least once during the survey period. About 73 per cent food secure and 69.5 per cent food insecure have participated. This informal social capital is a humanitarian and emergency kind of support to a victim individual in the community.

The Jarsumma (elders peace committee) is an informal method of conflict resolution whereby elders of a given community willingly or upon the request of disputants mediate parties through Jarsumma (Miressa, 2018). It is an influential institution in conflict resolution, mediation and negotiation among the neighbours, couples and between the communities when conflict arises due to different reasons. Membership to Jarsumma is age restricted and that is why only 36.3 per cent elders have participated. The finding also show that 50 per cent of the food secure households have participated in Jarsumma, while only 19 per cent of the

food insecure participated. The chi-square test revealed a significant difference between food secure and insecure households with respect to participation in Jarsumma. Hence, we argue that Jarsumma is the strongest social capital favourably influencing food security. FGDs also revealed that majority of the community was depending on Jarsumma for conflict solving.

Raya Dubartoota (women's association) is a voluntary woman group whose primary aim is for providing credit and coping with risk through group-based mutual support. These associations help the members in cash or in kind, in capacity building and by sharing of information. These informal institutions include only women as their members. FGDs explained that women's associations have got more focus from different stakeholders to improve their activities and empower women in the community. The result of our study revealed that 17 per cent of the respondents have participated in women's associations.

Results of the Econometrics Model on the Role of Local Institutions in Household Food Security

Seven informal local institutions and five socio-economic control explanatory variables were hypothesised to influence households food security. Out of the twelve variables that entered into the model, five of the variables were found to be significant (Table 6). Among the informal local institutions, variables' membership to Iddir, Equib and Jarsumma ($p < 0.01$), and participation in Debo ($p < 0.05$) were significant. While participation in Dado, Jiga and women's associations were non-significant, participation in Dado has a negative effect on households food security. Dado is based on reciprocity and this reciprocity may influence labour usage of the households. Membership to OCSI was significant ($p < 0.01$). This indicates that micro-credit institutions play a significant role in household food security. None of the demographic variables such as age and education of head and family size were significant nor the livestock size.

Table 6. * Result of Logit Model on the Role of Local Institutions on Household Food Security

Variables	Coef.	Odds Ratio	Std Err	z	P>z
Membership to OCSI	3.430	30.888***	21.012	5.04	0.000
Membership to IDDIR	2.204	9.064***	5.502	3.63	0.000
Participation in DEBO	1.371	3.941**	2.530	2.14	0.033
Participation in DADO	–0.152	0.859	0.559	–0.23	0.816
Participation in JIGA	0.38	1.462	0.930	0.60	0.551
Membership to EQUIB	2.317	10.143***	7.031	3.34	0.001
Membership to JARSUM	2.547	12.771***	9.741	3.34	0.001
Membership to WOMNAS	0.788	2.198	1.902	0.91	0.363
Age of head	–0.004	0.996	0.023	–0.17	0.864
Education of head	0.054	1.055	0.219	0.26	0.795
Family size	–0.141	0.868	0.159	–0.77	0.441

(Table 6 Continued)

(Table 6 Continued)

Variables	Coef.	Odds Ratio	Std Err	z	P>z
Livestock (tlu)	0.114	1.121	0.175	0.73	0.463
_cons	–4.669	0.010	0.015	–2.97	0.003
Number of obs. = 182; LR chi2(12) = 163.11; Prob > chi2 = 0.0000 Log likelihood = –43.70666 Pseudo R^2 = 0.6511					

Source: Survey Result, 2016.

Notes: *** and ** indicate that local institutions significantly affect food security status of households at 1 per cent and 5 per cent significance levels, respectively.
* Sex of household head was removed from the model due to its association with the variable of membership to women's associations.

The logistic model revealed that the relationship between the OCSI and food security positivity was statistically significant at 1 per cent probability level. This is an indication of participating in OCSI impacts food security positively in the study area. OCSI, besides its direct contribution to meet subsistence and nutritional needs of people, has a vital role in crop production as access to credit enhances access to farm inputs such as fertilizers and improved seeds. Moreover, providing credit and saving services help farmers to accumulate wealth that can be disposed during times of need, especially when season of production solves problem of input supply in the household deteriorate. The odds ratio in favour of food security increases by a factor of 30.9 when a household participates in OCSI. As focus group participants of each kebele indicated that OCSI helps farmers by giving credit to buy fertilizer and improved seeds.

Similarly, the result of logistic model for membership to Iddir is that it influences household food security positively at 1 per cent significance level. This means that households' participation in Iddir had a positive role in household food security in the study areas. The odds ratio in favour of food security increases by a factor of 9.064 when household becomes a member of Iddir. According to FGD, Iddir has a crucial role in improving household food security as it provides support (cash or in kind) to members. Iddir members help each other by ploughing for those who do not have oxen to make household's food secured. They also help households that face hardship (such as sudden shock, family death and other different problems) by different farming works to make households food independent. Another study from Ethiopia similarly indicated joining Iddir improves households' access to land, labour and credit transactions and markets (Abay et al., 2018).

The logistic model also revealed that the household membership to Equib has a positive relationship with household food security and significant at 1 per cent significance level. The odds ratio in favour of food security increases by a factor of 10.143 when the household becomes a member of Equib. Equib is an informal local social capital of a group of people, which may be established based on their mutual benefits and contributions of fixed amount of money monthly, weekly or every two weeks, depending on their agreement and income

(Wossen, Berger, & Di Falco, 2015). There are no entry barriers as in the case of OCSI which require a collateral or guarantee to lend money to farmers. In addition, FGDs showed that Equib serves as credit and saving institution to solve households' cash problem to buy fertilizer and improved seeds, to ensure food security of poor households.

Among the labour sharing local institutions, the result of the model revealed that participation in Debo affects food security of households positively at 5 per cent significance level. This indicates that odds ratio in favour of food security increases by a factor of 3.94 when household participates in Debo. This result is in line with the study which reported Debo influences livelihood of the households positively (Husein, Loos, & Khalid, 2017). Debo is crucial in the farming community especially during the weeding, ploughing or harvesting times. The system is arranged in a way that the members contribute the same working hours to work on their private land such as their crop lands and on the communal land such as watershed management which improves their livelihoods. Debo is organised to facilitate the adoption of improved land management practices through provision of labour exchange option during labour shortage period (Wossen et al., 2015).

Regarding Jarsumma, it was found to have positive and significant effects on household food security in the study area. The Jarsumma is the procedure of solving disputes among individuals, groups or tribes on common or private resources or ethnic-based conflicts through truth and win-win mechanism that positively affect livelihoods of household, that is, directly or indirectly affect food security of households. Therefore, model revealed that Jarsumma influences food security of households positively and is significant at 1 per cent precision level. The odds ratio in favour of food security increases by a factor of 12.77 when a household becomes a member of Jarsumma. This kind of dispute resolution is preferred than the formal court in rural areas (Bayeh, Ayferam, & Muchie, 2015). This is because it is time saving and has low marketing cost and has win-win results unlike the formal court where one must be a winner and the other must be a loser. Jarsumma is run by local elders who have good reputation, extensive and good knowledge of custom, precedent and law of the society, individual talent and experience in dealing with conflict, altruism, good sense and willingness to give their time to reconcile the disputants and help solve their neighbours' problems and restore peace (Miressa, 2018). Those elders who become members of Jarsumma have no direct benefit in the form of cash or material gifts but the benefits they enjoy is social acceptance and respect, which is an intangible asset.

Conclusion and Policy Implications

The research found that four out of seven informal local institutions have strong association with food security. They influenced household food security through provision of finance (credit and saving), agricultural and non-

agricultural labour, insurance and material (food transfers) and peace building. Out of the significant variables, the financial local institutions were dominantly influencing household food security, than labour sharing institutions. For instance, membership to Equib and micro-credit formal institution (OCSI) has a strong association with household food security. But the outreach of the later to remote areas is very low. Iddir, an informal insurance institution and Jarsumma an informal conflict resolution had strong impact on household food security. However, the impact of Jarsumma on participant's food security is not direct. It channels access to intangible assists to the participants.

From this study many policy and research implications can be drawn. The fact that the formal financial institutions (OCSI) become important in improving food security indicates the need for expansion of their branches and services to remote kebeles and revisit entry barriers. Rural households' participation in informal financial (Equib), insurance (Iddir), labour (Debo) and conflict resolution (Jarsumma) informal local institutions has contributed to improved food security. Thus, informal local institutions should be further empowered by research and capacity building so that their contribution to livelihoods improvement would be enhanced. Particularly organisations such as bureau of agriculture, culture and environment should understand the role of local institutions. For instance, an effort should be made by all concerned bodies to increase the understanding on the role of informal local institutions in improving the sustainable livelihood at grassroots level. Provision of capacity building trainings for members of Jarsumma would improve the peace and security of the community. The findings of this study have an implication on African countries that have rich informal institutions and with chronic problem of food insecurity.

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