

Determinants of marketed surplus of wheat by small holders: The case of Hetosa and Tiyo districts, Arsi, Oromia, Ethiopia

Tura Kaso*

* Department of Agribusiness and Value Chain Management, Ambo University, Ethiopia Ambo University, Ethiopia

Degye Goshu ¹

School of Agricultural Economics and Agribusiness, Haramaya University, Ethiopia; P.O. Box: 05, Haramaya University, Ethiopia

Zakerias Shumeta ²

Department of Agricultural Economics and Extension, Jimma University, Ethiopia; P.O. Box: 307, Jimma University, Ethiopia

ABSTRACT

The study was aimed at value chain analyses of wheat in Hetosa and Tiyo districts of Oromia region with specific objectives of mapping Wheat value chain actors and estimating the intensity and determinants of marketed surplus of wheat by small holders in the study area., The primary data for this study were collected from 150 households, 85 traders; 5 cooperatives, 18 processors and 20 consumers based on three stage random sampling method. Value chains tools were used to map wheat value chain. Value chain analyses revealed that the major actors in wheat value chain were input suppliers; farmers; traders; brokers; processors; retailers; and consumers. Each of these actors adds value in the process of changing product title. Farmers of the area have long experience of good quality wheat production for seed or consumption purposes. Farmers of the area have comparative advantage in terms of location and agro ecology. The results of econometric analysis indicate that Wheat marketed surplus is positively and significantly affected by access to credit, value adding activities, livestock holding and land allocated to wheat. Therefore, these factors must be promoted in order to increase the amount of marketed surplus of wheat. Increasing the production and productivity of wheat per unit area of land or increasing land allocated for wheat is better alternative to increase marketed surplus of wheat. Supplying improved varieties on time, strengthening the use of modern technologies, controlling disease and pest practices should be promoted to increase production. Marketed surplus is significantly and negatively affected by distance to nearest market, farming experiences, family size and off farm income. Therefore, strengthening efficient and area specific extension systems, improving road infrastructure, supporting DAs by giving continuous capacity building trainings and separating DAs extension work from other administrative activities increases wheat supply to the market. Along with increasing the traditional seed supply system, introducing improved seed production and marketing system can significantly contribute to the solution. The wheat seed producers can then be linked with wheat producers to create access to market for their business. Create value chain forum at district level where the different value chain actors come together and discuss the problems of wheat value chain and solve them is recommended.

Key words: value chain analyses, actors, wheat, Tobit model

1.INTRODUCTION

Agriculture has always been an important sector in Ethiopia. About 85% of the population is directly or indirectly engaged in agriculture. It contributes about 46.4% of the gross domestic product of the country; the sector is also the main source of foreign exchange earnings since, it accounts for about 90% of the total export income of the country; the export diversification prospect is mainly focused on agricultural products and this would also bolster the contribution of agriculture for the export sector (MOFED, 2012).

In Ethiopia, Cereal production and marketing are the means of livelihood for millions of smallholder households and it constitutes the single largest sub-sector in the economy(FAS, 2012).Wheat is one of the most important cereals cultivated in Ethiopia. It ranks fourth after Teff, Maize and Sorghum, in area coverage and third in total production.Wheat production has been exercised in all zones of Oromia region. However, Arsi, Bale, West Shewa, East Shewa and West Arsi are major wheat producing zones in the region with annual production of more than one million quintals (Bekele *et al.* 2000).

Arsi zone produces a number of different varieties of agricultural crops ranging from cereals to pulses, vegetables, fruit, oilseeds and spices. Crop production by area is predominantly cereals followed by pulses, vegetables, oilseeds and fruit crops. The zone is referred as surplus grain producing areas in the country, specifically by wheat production. Hetosa and Tiyo districts are among the districts of Arsi zone known by the production of best barley and wheat.

Value-added agriculture has attracted considerable attention in recent years as a means to increase and/or stabilize farm incomes. Value-added activities are born from the necessity to adapt to the wide- ranging changes affecting the agriculture and agri-food industry. These changes stem from many interacting factors: the quick expansion of agricultural trade and the resulting concentration in the agri-food industry, an increasingly segmented consumer base, shifting consumer preferences, changing demographics and income profiles, innovation in food and non-food uses of agricultural products and trade related issues, including border closures, in an increasingly integrated global market (AAFC, 2004).

Increased competition because of globalization has resulted in lower returns for actors in African agriculture, including farmers and agro-processors, as they have continued to lag behind their competitors in innovation and the ability to set their products apart. With globalization, product distinction and branding are becoming increasingly important ingredients for market differentiation and upgrading strategies. This is especially due to greater consumer awareness, with demand for superior and differentiated products (FAO, 2003).

Hetosa and Tiyo districts are among wheat producing districts which has benefited from researches on wheat and subsequent transfers of improved wheat varieties and agronomic practices. While success stories can be anticipated regarding wheat value chain ,no published study discussing the wheat value chain has been found (to the best of the authors knowledge). A few studies conducted so far in similar agro ecologies (but different districts) could identify factors affecting the adoption of improved what technologies (e.g. Bekele, *et al*, 2000; Tesfaye, *et al*, 2001; Hailu, 2008) but didn't go further to value chain analysis.

There is production, productivity and marketing problems of several wheat farmers in the country, which needs the specific focus of researchers to conduct wheat value chain analysis in these specific areas as it incorporates factors influencing production, productivity, and producer's shares of end consumer's prices in it. Furthermore, in Ethiopia no study followed value chain framework to describe the work process and actors involved in wheat value chain analysis so far. Cognizant of these facts, the objective of this study was to map wheat value chain actors and identify determinants of marketed surplus of wheat by small holders in the study area.

Mapping such actors and identifying their function indicates the gaps to improve wheat production, marketing and benefit policy makers and implementers in the area to fill the gaps. In addition to this, it also help to make appropriate marketing decisions by the producers, consumers, traders, investors, and others, specially help producers and traders to understand the production and marketing problems then by implementing them based on the recommendation that will increase to some extent production and marketing efficiency.

2. METHODOLOGY

2.1. Description of the Study Area: This study was undertaken in south Eastern Part of Ethiopia in two potential districts (namely Hetosa and Tiyo districts of Oromia regional state) in wheat production.

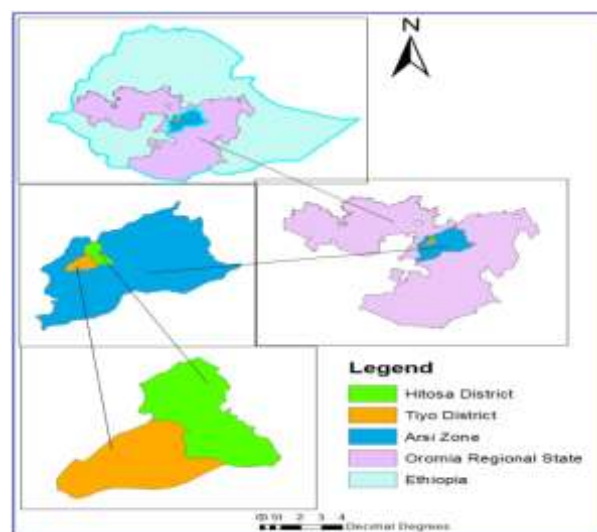


Figure 1: Geographical location of the study areas

2.2. Types, source and method of data collection

Qualitative and quantitative types of data were collected from primary and secondary data sources. The primary data of both types were collected from main value chain actors such as sample farmers, collectors, cooperatives, traders, processor and consumers by using semi-structured questionnaires and focus group discussion. Secondary data was taken from Central Statistical Agency (CSA), Bureau of Agriculture and Rural Development (BoARD), and Research center (Kulumsa) and other sources.

2.3. Sampling Procedure and Sample Size

Three-stage random sampling technique were implemented to select wheat producer kebeles and sample farmer households. In the first stage, with the consultation of districts agricultural experts and development agents, out of 23 and 21 kebeles of Hetosa and Tiyo districts, 6 and 8

wheat producer kebeles were purposively selected based on the level of wheat production. In the second stage from the identified or selected rural kebeles, 7 kebeles were selected randomly from the two study districts (three from Hetosa and four from Tiyo) (Table 1). In the third stage from the selected rural kebeles, given the available resource and time at the disposal of the researcher, using the household list of the sampled kebeles 150 (60 Hetosa districts and 90 in Tiyo districts) sample farmers were selected randomly based on proportional to the population size of the selected kebeles. The next step was determining total sample size of the survey, based on the established sample frame for the selected kebeles.

applying formula to calculate a sample size is selected, for populations that are large, Cochran (1963:75) developed the Equation 1 to yield a representative sample for proportions.

$$\begin{aligned}
 n_o &= \frac{Z^2 pq}{e^2} \\
 &= \frac{(1.96)^2 (0.11)(0.89)}{(0.05)^2} \\
 &\approx 150..(1) \qquad \dots\dots\dots(1)
 \end{aligned}$$

Where n_o is the sample size, Z^{23} is the abscissa of the normal curve that cuts off an area α at the tails ($1 - \alpha$ equals the desired confidence level, e.g., 95%) e is the desired level of precision, p is the estimated proportion of an attribute that is present in the population, and q is $1-p$.

Table 1: Distributions of sample households across districts and sampled kebeles

| Districts | Kebeles | Number of households | Proportion | Sample house holds |
|-----------|--------------|----------------------|------------|--------------------|
| Hetosa | Bonayaeda'o | 860 | 0.2 | 25 |
| | Borulenca | 413 | 0.1 | 23 |
| | Seroankato | 818 | 0.1 | 12 |
| | Subtotal | 2091 | 0.6 | 60 |
| Tiyo | Dosha | 669 | 0.1 | 21 |
| | Gora silingo | 750 | 0.2 | 23 |
| | Hate | 779 | 0.2 | 24 |
| | Oda | 672 | 0.1 | 22 |
| | Subtotal | 2870 | 0.6 | 90 |
| Total | | 4961 | 1 | 150 |

Source: Own computation from OoARD and kebele administration data, 2014

According to Office of Trade and Industry of the respective district, there are 45 and 55 wholesalers in the Hetosa and Tiyo districts respectively, accordingly 20 and 25 wholesalers were selected randomly from Hetosa and Tiyo district respectively. Totally 45 wholesaler were included. In addition, there were many retailers and collectors at village and town, among those 12 retailers and 8 collectors were randomly selected from each district, constituting a total of 40 retailers and collectors would be included. Totally 85 traders from Iteya, Asella, Adama and Addis Abeba markets were sampled accordingly. Furthermore, 10 consumers were interviewed from each district by selecting randomly, 15 miller and three flour factory were included.

³The value for Z is found in statistical tables which contain the area under the normal curve.

2.4.Methods of Data Analysis

Two types of data analyses, namely descriptive statistics and econometric analysis were used for analyzing the data collected from wheat value chain actors. Four steps of value chain analysis were applied for this study.

Model specification

To investigate determinants of wheat marketed surplus (a continuous-valued choice about how much quantity sold) Tobit model was used. Because of the restrictions put on the values taken by the regress and, this model can be called limited dependent variable regression model. The data have a censored sample as dependent variable, 12% of household didn't supply wheat even if they produce wheat from the total of 150 samples, the data are censored, and Tobit estimation is relevant. If zero values of dependent variables were the result of rational choice of farmers, a Tobit model would be more appropriate (Abrar, 2004). Thus, maximum likelihood Tobit estimation (Tobin, 1958) was used in the analysis of factors affecting sales volume. One can concern with the model; recall that in a Tobit with left-censoring at zero.

The Tobit model was applied for analyzing factors influencing the marketed surplus of wheat as shown below. Tobit model is an extension of probit model and it is one of the approaches dealing with the problem of censored data (Johnston and Dandiro, 1997). It is superior over the probit dichotomous regression models in that the probit only attempts to explain the probability of marketing by the farm households rather than the amount of marketed surplus. In such cases, Tobit model, which has both discrete and continuous part, is appropriate because it handles both the probability of marketing and amount of marketed surplus at the same time. Following Amemiya (1985), Maddala (1992), and Johnston and Dandiro (1997), the Tobit model for the continuous variable amount of wheat marketed surplus index, can be defined as:

$$y_i^* = \mathbf{x}_i \boldsymbol{\beta}_1 + \varepsilon_i, \dots\dots\dots (2)$$

$$y_i = \begin{cases} y^* = \beta X_i + U_i & \text{if } y_i^* > 0 \\ 0 & \text{if } y_i^* \leq 0 \end{cases}$$
$$U_i \approx IN(0, \sigma^2) \dots\dots\dots (3)$$

Where: Y_i^* = is latent variable and the solution to utility maximization problem of marketed surplus subject to a set of constraints per household and conditional on being above certain limit, Y_i =marketed surplus index for i^{th} farmer X_i =vector of factors affecting amount of wheat marketed surplus B_i =vector of unknown parameters.

Dependent variables:

Quantity of wheat marketed: It is a continuous variable which represents dependent variable; it is the actual marketed amount of wheat by farm household to the market

Table 2: Definition, measurement and hypothesis of variables

| Variable | Measurement | Expected effect |
|--|--|-----------------|
| Sex of household head | 1=Male,0=female | + |
| Literacy status of household head | 1=primary,2=secondary 3=tertiary | + |
| Wheat farming experience | In years | + |
| Family size | In number | - |
| Distance to the nearest market | In Kilometers | - |
| Land allocated for wheat production | In hectares | + |
| Access to non/off farm income | 1,if involved in nonfarm activities, 0 otherwise | - |
| Access to credit | 1,if access to credit , other wise | + |
| Distance to urban centers | In Kilometers | - |
| Livestock holding | In numbers | - |
| Type of seed used | One ,if used local ,0 otherwise | + |
| Value adding activities | One,if perfomed,0 otherwise | + |
| Perception on current-year wheat price | One, if perception is good, 0 otherwise. | - |
| Perception on lagged wheat price | One ,if perception is good 0, otherwise | + |
| District | 1,if district is Hetosa,0 ,otherwise | + |

3. RESULTS AND DISCUSSION

3.1. Wheat market participation

In this study, different stakeholders were involved in bringing wheat from the point of production (farm gate) till it reached the final destination (consumers). The description of variables of market participants and non-participants involved in different activities (wholesale, retail, assembly etc), in the study areas were described below (Table3).

Table 3: Description of variables by market participation status of wheat producers

| Variable | Mean/proportion | | | t-/ χ^2 - value |
|----------------------------------|-------------------|--------------|------------------|----------------------|
| | All samples | Participants | Non-participants | |
| Age of household head | 44.9 | 44.72 | 46.2 | 0.40 |
| Family size | 6.85 | 6.65 | 8.33 | 2.07** |
| Sex of house hold (male) | 83.33 | 88 | 12 | 0.00 |
| Wheat farming experience | 24.28 | 24.62 | 21.72 | -0.83 |
| Distance to nearest Mkt | 0.73 | 0.74 | 0.70 | -1.28 |
| Total land owned | 2.23 | 2.24 | 2.05 | -0.25 |
| Land rented in | 0.66 | 0.72 | 0.18 | -2.48** |
| Cultivated land | 2.56 | 2.70 | 1.65 | -3.51 |
| Land allocated for wheat | 1.53 | 1.61 | 0.88 | -3.40*** |
| Access to off farm income(yes) | 40.67 | 42.42 | 7.78 | 1.40 |
| Literacy status | Illiterate | 32 | 95.83 | 4.17 |
| | Primary | 41.33 | 74.19 | 25.81 |
| | Secondary | 25.33 | 100 | 0 |
| | College and above | 1.33 | 100 | 0 |
| Access to credit(yes) | 36 | 32.58 | 767.42 | 5.60** |
| Livestock holding | 6.4 | 7.11 | 1.21 | -5.58*** |
| Distance to urban centers | 3.05 | 3.00 | 3.44 | 1.03 |
| Type of wheat variety used | Improved | 80.6 | 89.26 | 10.74 |
| | Local | 15.4 | 78 | 22 |
| | Both | 4 | 100 | 0 |
| Perception on lagged wheat price | Low | 12.7 | 68.42 | 31.58 |
| | Medium | 86.7 | 90.77 | 9.23 |
| | High | 0.67 | 100 | 0 |
| Producer price | 730.96 | 736.00 | 660.5 | -2.73 |
| Access to training(yes) | 86 | 92.42 | 7.8 | 51.40*** |
| Wheat production | 72.67 | 75.67 | 30.70 | -0.83 |
| Wheat consumption | 14.24 | 14.10 | 16.20 | 0.76 |

Note: ***, ** and *, are statistically significant at 1%, 5% and 10% significance level

Source: Own computation from survey result, 2014.

The average family size of the total sample respondents was found to be 6.65 and 8.83 person for wheat market participants and non-participants, respectively. Family size showed variation at 5% significance level. The survey result revealed that about 54% of the sample households rented in land during 2013/14 cropping seasons. The rented land size of sample households varies from 0.25 hectare to 5 hectare with an average of 0.72 and 0.18 hectare for wheat market participants and non-participants respectively. There is significant difference between wheat market participants and non-participants on renting in land at 10% significant level. Land allocated for wheat production in the year 2013/14 was 1.65 and 0.88 hectare for wheat market participants and non-participants respectively. There is significant difference at 1% significance level on land allocated for wheat between wheat market participants and non-participants.

About 32%, 40.6%, 25.4% and 1.35% of the sample household heads were illiterate, primary, secondary and, college and above have school background, respectively. However, among illiterate 95.83% were wheat market participants, among the respondents who followed primary school 74.19% of the sample households were wheat market participants. Among the

respondents who followed secondary school, college and above, all of them (100%) were wheat market participants. However, no one was non-participants. The chi-square test indicates that there is a significant difference between wheat market participants and non-participants at 1% significance level in their education.

The livestock holding of sample households ranged from 0 to 27.32 TLU for sample wheat producers, implying the existence of large variation among the households in livestock ownership. The average livestock holding for wheat market participants and non-participants were 7.11 and 1.21 TLU, respectively. The analysis of independent t-test revealed that there is significant difference in livestock holding at 1% significance level between wheat market participant and non-participants.

Among the respondents who said last year price was low, 68.42% were wheat market participants, other respondent said medium, among those 90.77% were wheat market participants. Few of the respondents said its high, among those; all of them were wheat market participants. The analysis of chi-square test revealed that there was significant difference on perception of lagged wheat price at 1% significance level between wheat market participant and non-participants.

Among the respondents who said we got training on wheat production and marketing 92.42% and 7.8% were wheat market participants and non-participants respectively. There is significant difference between wheat market participants and non-participants on training of wheat production and marketing at 1 % significance level.

3.2. Wheat Value Chain Value chain mapping enables to visualize the flow of the product from conception to end consumer through various actors. It also helps to identify the different actors involved in the wheat value chain, and to understand their roles and linkages (McCormick and Schmitz, 2002). Consequently, the current value chain map of wheat in Hetosa and Tiyo district is depicted in Figure 4 below

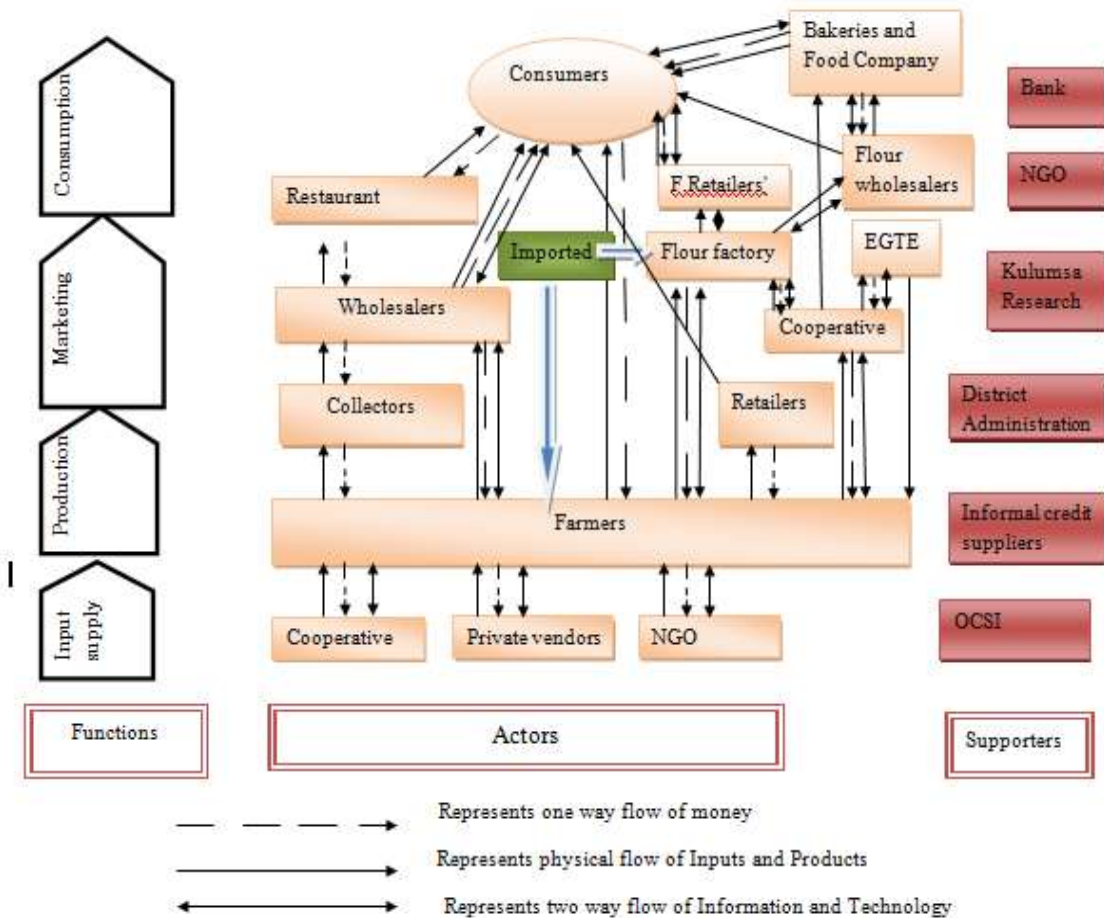


Figure 2: wheat value chain map

3.3. Determinants of Marketed Surplus of Wheat

Among the variables included in the analysis seven variables influenced the amount of marketed surplus significantly. The result of Tobit model is discussed below.

Livestock holding: Number of livestock owned found to be positively related with the marketed surplus of wheat, and significant at 1% significance level. The analysis revealed that an increase of 1 unit of livestock (TLU) increased the quantity of wheat supplied by 0.12 quintals among the whole sample. As the number of livestock increased by one tropical unit, a probability of marketed surplus of wheat increased among non-sellers farmers by 0.001%. The result was contrary to Rehima (2005), where total livestock unit influence quantity of pepper supply negatively. The reason might be as livestock ownership is an indicator of wealth in the study area; those who have large number of livestock would sale livestock and its products bought agricultural input on time and apply. Thus it increases the production of wheat that would enable to increases marketed surplus wheat.

Value adding activities: Value adding activities are also another factor, which positively affects marketed surplus at 5% significance level. As the farmers perform value adding activities to the wheat produce the marketed surplus of wheat increases by 10.44 quintals of wheat. As farmers perform value adding activities increased a probability of wheat quantity supplied and marketed increased, among non-sellers farmers by 0.5%. These are due to the fact that, as farmer

performing value adding activities, the productivities of wheat increases, which in turn increases the marketed surplus of wheat.

Family size: Family size affected negatively the supply of wheat at 1% significance level. It is different from hypotheses. An increase in one family member indicated that a decrease 1 quintals of marketed surplus of wheat. As family size increases, by one number a probability of wheat quantity supplied decreased among non-participants of wheat market by 0.015%. This means that large amount of wheat is required for consumption when number of family member increases; This is in line with the study by Astewel (2009), as family number increases supply of rice to the market decreases and also with Ashenafi Amera (2010), as family number increases supply of grain to the market decreases.

Cultivated land for wheat: As hypothesized the result from Tobit model for cultivated land for wheat production variable was positively related with marketed surplus of wheat and significant at 1% significance level. As cultivated land for wheat increase by one hectare, marketed surplus of wheat increases by 21.07 quintals of wheat. As cultivated land increased by one hectors, a probability of marketed surplus of wheat increased among non-sellers farmers by 0.03%. The implication is that since, wheat is the major cash crop for the majority (54%) of farmers; markets seemed the most important factor motivating farmers to produce and supply.

Non-farm income: Contrary to hypotheses, it influences volume of marketed wheat significantly and negatively at 1% significance level. From the result as farmer get income from non-farm activities, marketed surplus of wheat decreases by 6.23 quintals. As income from non-farm activities increases a probability of wheat quantity supplied decreased among non-sellers farmers by 0.082%. This is because most of non/off farm activities that are farmers participating in are pity cash trading and produce mixed crop. Farmers participating in pity cash trading were business oriented farmers and they produce wheat completely for consumption. This could be due to the fact that, farmers who have additional income would have the chance to buy other food for consumption at any time by additional income and save their wheat produce up to price increases and may see as wealth in the store for one to two years.

Table 4: Tobit model outputs of determinants of wheat marketed surplus

| Variables | Coefficients | | Marginal effects | |
|--------------------------------|--------------|-----------------|---|--|
| | Coefficient | Standard errors | Change among the whole $\frac{\partial E(Y_i)}{\partial x_i}$ | Change in the probability $\frac{\partial F(Z)}{\partial x_i} = f(z) \frac{\beta}{\sigma}$ |
| Value adding activities | 10.42** | 3.61 | 10.44 | 0.005 |
| Livestock holding | 0.12*** | 0.01 | 0.12 | 0.00001 |
| District | 3.93 | 2.83 | 4.24 | 0.0005 |
| Sex of household head | 2.51 | 2.73 | 2.80 | 0.0.0002 |
| Education status of house hold | | 2.64 | | |
| Primary | 0.81 | | 2.1 | 0.0002 |
| Secondary | 5.26* | 3.10 | | |
| Tertiary | -0.08 | 8.60 | | |
| Wheat Farming experiences | -0.03 | 0.09 | -0.02 | -3.69e-06 |
| Family size | -1.05*** | 0.34 | -1.00 | -0.00015 |
| Distancetonearest market | -1.96 | 2.22 | -1.84 | -0.00025 |
| Distance to urban centers | 0.13 | 0.12 | 0.15 | 0.000025 |
| Land allocated to wheat | 21.00*** | 1.67 | 21.07 | 0.003 |
| Off farm income | -5.90*** | 2.12 | -6.23 | -0.00082 |
| Access to credit | 8.67*** | 2.14 | 8.81 | 0.0021 |
| Type of seed used | 5.96*** | 2.10 | 5.93 | 0.0008 |
| Perception to lag wheat price | 5.70 | 3.09 | 6.05 | 0.0008 |
| Constant | -17.30 | 10.26 | | |
| Log likelihood | -523.11 | | | |
| LR chi2(16) | 323.82 | | | |
| Pseudo R2 | 0.27 | | | |
| Left censored observations | 18 | | | |
| Uncensored observations | 132 | | | |

Note: ***, **, and * are statistically significant at 1%, 5% and 10%significance Level

Source: Own computation from survey result, 2014.

Access to credit: The variable access to credit had positive and significant influence on marketed surplus of wheat at 1 % significance level. If farmers get credit, in production year, the amount of marketed surplus of wheat increases by 8.81 quintals of wheat. As farmers get credit in the production year a probability of marketed surplus of wheat increased, among non-sellers farmers

by 0.21%. In the study area, access to credit is determined by availability of cash on hand. As indicated in the descriptive part, the agricultural Office that distributes improved seed and fertilizer almost all on cash bases. In this case, only those farmers who possess cash on hand can benefit from formal credit. On the other hand, farmers who have no cash on hand will be devoid of the opportunity. This implies that access to credit improves the financial capacity of farmers to buy modern inputs, thereby increasing production which is reflected in the marketed supply of wheat. From this result it can be stated that those farmers who have access to formal credit, are more probable to supply wheat than those who have no access to formal credit.

Type of seed used: This variable affects marketed surplus of wheat as hypothesized, it affects positively and significantly at 1% significance level. As the farmer uses improved wheat variety, the marketed surplus of wheat increases by 5.93 quintals. As farmers uses improved variety of wheat, a probability of marketed surplus of wheat increased among non-sellers farmers by 0.08%. If a producer uses improved wheat variety, this will increases production and productivity thus, increases the marketed surplus of wheat.

4. CONCLUSION AND RECOMMENDATIONS

In conclusion wheat value chain analyses were analyzed by using value chain analyses tools. The finding indicate that the primary actors in a wheat value chain in both districts are input suppliers; farmers; traders; brokers; processors; retailers; and consumers. Each of these actors adds value in the process of changing product title. OoARD, primary cooperatives, micro finance, NGOS and Kulumsa Research center are main supporting actors who play a central role in the stipulation of such services. Governance of a value chain is made up of national, regional and local government, the judicial system and major providers of public utilities.

Among the variables included in the analysis seven variables such as value adding activities, livestock holding of household, access to credit, family size , access to non-farm income ,type of see used, and cultivated land for wheat influence the amount of wheat marketed surplus significantly. Therefore, these variables require special attention if marketed surplus is to be increased

The findings have important policy implication because to know the movement and flow of the product indicates all things. Organize and capacitate producers to enhance their negotiation power and skill

Create value chain forum at district level where the different value chain actors come together and discuss the problems of wheat value chain and solve them.

Creating linkage among producers and processors is not sufficient to benefit the poor group. Hence, further linking producers via cooperatives to processors, wholesalers (in Addis Ababa market), which newly commenced in market Addis Ababa is remedies to improve farmers' value and profit distributions, since it is through reducing extra intermediaries interferences.

5. REFERENCES

- AAFC (Canada, Agriculture and Agri-Food Canada), 2004. Value-added Agriculture in Canada. Report of the Standing Senate Committee on Agriculture and Forestry 2004, Canada, Agriculture and Agri-Food Canada.
- Bekele, H.K., Varkuijl, W. Mwangi and D. G. Tanner, 2000. Adaptation of improved wheat technologies in Adaba and Dodola woredas of the Bale highlands, Ethiopia. Mexico D.F: International Maize and Wheat Improvement Centre (CIMMYT) and Ethiopian Agricultural Research Organization (EARO).
- Cochran, W. G. 1963. *Sampling Techniques*, 2nd Ed., New York: John Wiley and Sons, Inc. New York.
- CSA (Central Statistical Agency of Ethiopia), 2012. Agricultural sample survey report on area and production of crops (private peasant holdings, meher season). Volume I. CSA, Addis Ababa, Ethiopia. 128 pp.
- CSA (Central Statistical Agency of Ethiopia), 2013. Agricultural sample survey: Report on area and production of crops, Addis Ababa, Ethiopia, p 126.
- EGTE (Ethiopian Grain Trade Enterprise), (n.d.). Retrieved May 23, 2012, from <http://egtemis.com/index.asp>.
- FAO (Food and Agriculture Organization), 2003. Report, D. food and Agriculture.
- FAO (Food and Agriculture Organization), 2007. Approaches to linking producers to markets. Agricultural management, marketing and finance occasional paper 13. Rome, Italy, 2007, Food and Agriculture Organization of the United Nations.
- GTZ (German Agency for Technical Cooperation), 2007. Value chain analysis and "Making Markets Work for the Poor" (M4P) – poverty reduction through value chain promotion. Eschborn: GTZ.
- HDoARD (Hetosa District Office of Agriculture and Rural Development), 2014. Annual report of the district, Arsi, Ethiopia.
- Guush B, Zelekawork P, Kibrom T, Seneshaw T. 2011. Food grain consumption and calorie intake patterns in Ethiopia. Available at <http://img.static.reliefweb.int/sites/reliefweb.int/files/resources>, accessed on May 1, 2014.
- Hailu, B. 2008. Adoption of Improved Tef and Wheat Production Technologies in Crop- Livestock Mixed System in Northern and Western Zones of Ethiopia. A Dissertation Presented to The University of Pretoria, South Africa.
- Kaplinsky, R. and M. Morris, 2000. A handbook for value chain research, IDRC. Ottawa, Canada.
- Kaplinsky, R. and Morris, M., 2001. A Handbook for Value Chain Research. Ottawa, Canada, International Development Research Center.
-

McCormick, D. and H. Schmitz, 2002. Manual for value chain research on home workers in the Garment Industry, IDS, Brighton.

MoFED (Ministry of Finance and Economic Development), 2012. Building on Progress: A Plan for Accelerated and Sustained Development to End Poverty (PASDEP), Addis Ababa, Ethiopia.

Schulthess, U., B. Feil and S.C. Jutzi. 1997. Yield independent variation in grain nitrogen and phosphorus concentration among Ethiopian wheat. *Agronomy Journal*.89 (3):497 -506.

TDoARD, (Tiyo District Office of Agriculture and Rural Development), 2014. Annual report of the Tiyo district, Arsi, Ethiopia

Tesfaye, Z., Girma, T., Douglas, T., Hugo, V., Aklilu, A., and Wilfred. 2001. Adoption of Improved Bread Wheat Varieties and Inorganic Fertilizer by Small- Scale Farmers in Yelmana Densa and Farta Districts of Northwestern Ethiopia. Mexico, D.F.: International Maize and Wheat Improvement Center (CIMMYT) and Ethiopian Agricultural Research Organization (EARO).

ACKNOWLEDGMENT

This is part of my M.Sc study and I would like to extend my deepest thanks to Niche Agribuzz project for funding tuition fee and my research. It is a great pleasure to extend my appreciation to my employer, Ambo University, for giving me chance to pursue my post graduate study. Many thanks are extended to the local administrations and communities in the study areas for their enthusiasm in sharing knowledge and experiences with regards to Wheat value chain.