

*Full Length Research Paper*

# **Market orientation and institutional arrangements in smallholder context: The case of cross border livestock market chain in North West Ethiopia**

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**A weak functional linkage of smallholder farmers to the markets is the crucial challenge in the transformation of subsistence farming system to market oriented farming in Ethiopia. Transforming the livestock production system to enhance the livelihood of farmers requires a shift from “selling what they produced” concept to “producing what the market needs”. The essence of this transformation process requires the incorporation of market signals to the production and market decisions. Fattening is considered as one of the important sectors to realize the process of transformation in the country. It is strategically vital to analyze the fattening and marketing system in the areas. The basic objective of this study was to evaluate the market chain in fattening enterprise from the production to the export market and to identify the challenges of the live animal export market. Rapid Market Appraisal (RMA) and different key informant and focus group discussions were undertaken for the analysis of the market system from the production to the output markets. Both formal and informal survey tools were used for the collection of data. Multi-stage sampling (mixed purposive and random) was employed for the collection of primary data. One hundred and twenty farmers involved in cattle fattening were included for the formal survey. Descriptive statistics and Ordinary Least Squares (OLS) were used for data analysis obtained from formal survey.**

**Key words:** Cross-border, institutions, market orientation, policy, transformation.

## **INTRODUCTION**

In most policy discussions and research forums, the integration of rural households to the market is agreed to transform the existing subsistence agricultural system in the country to a system which can help to feed the country's population (Berhanu and Moti, 2012). The argument emphasizes the role of the public to deliver the necessary production and market information for the decision making process (Moti et al., 2009). In addition to this availability, accessibility and affordability of technologies are the concerns in many policy dialogues and are vital for the producer to decide on what to produce as a response to the market demand (Habtamu, 2012).

Even though the economy of Ethiopia is dominated by the agricultural sector, it remained less efficient in terms

of production and productivity (MoFED, 2000). It is argued that the traditional means and practices of farming on the one hand and socio-economic factors on the other hand contribute to this low production and productivity (Mengistu, 2000). Ethiopia has about 49 million heads of cattle and ranked first in livestock population in Africa (CSA, 2009). Despite this fact, the contribution of the livestock sub-sector to the household and country's GDP is about 16% of the total GDP (CSA, 2009) and about 30% of the agricultural GDP (EEA, 2005).

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The economic contribution of livestock is more important than the figure in the national economy when their contributions of work, fuel and manure are considered (Tapku and Demir, 2005). Market orientation and production decisions as a response to the demand in the domestic and export of livestock and livestock products is considered strategically important as the way out from the deep-rooted poverty in the country. The subsistence and weakly linked production system to the market is as response for the market signals to contribute to the change in the livelihood of farmers (Berhanu and Moti, 2012; Habtamu, 2012).

Problems in production and productivity and inefficient and unstructured market are always public concerns and are challenges to the rural economy (EEA, 2005). Hence, market orientation is believed to be the vehicle to transform the country's agricultural sector. Fattening of animals is considered vital in value addition in the beef industry for the domestic and export market. With this regard, fattening is expected to enhance the value of live animals, to improve the market participation of households and to the economy at large.

This study was initiated to assess the cross-border livestock trade and to evaluate the live animal cross-border markets. The specific objectives of this study were:

- To describe the cattle production and marketing system.
- To evaluate the policy and institutional issues related to the performance of the cattle marketing chain.

## METHODOLOGY

Data for this study were collected both through the formal and informal survey procedures. Rapid Market Appraisal (RMA) was conducted along the marketing chain, from production to export. Key informant discussions in different points along the market channel were done for the collection of primary data. In addition, there were discussions with public officers in different institutions and cooperative administrations on the market chain.

Based on the information from the RMA, three districts (Chilga, Dembia and Gonder Zuria) with presence of widespread fattening exercises and their significant contribution to the livestock supply in the market were considered for the formal procedure. Two peasant associations were purposively (those with widespread fattening activities) again selected from each district. From each kebele, 20 farmers who have been practicing fattening were selected and included in the formal survey. Eight questionnaires from the total 120 were rejected from the final analysis due to missed data problem and the rest 112 were used for the analysis accordingly.

For the informal survey, matrix ranking procedures (pair-wise ranking) were used to identify priority problems in the marketing system. Narrations and triangulations were used to have a clear picture of the operation of the

livestock export trade. Different and frequently undertaken focus group discussions with the actors along the market chain helped to well explore the operation of the market.

Both descriptive and inferential statistics were used for data analysis. For the supply analysis, the dependent variable (value of supply of cattle of the household measured in *Birr*) is continuous variable; hence, Ordinary Least Squares (OLS) was implemented. Multicollinearity problem was tested through Variance Inflation Factor (VIF) and contingency coefficient for continuous and discrete variables, respectively (Gujarati, 2004). A large VIF (VIF approaching 10) could dictate a strong linear relationship between the explanatory variables while smaller value (VIF approaches to 1) indicates the model is free of multicollinearity. A correlation coefficient approaching to one dictates the presence of strong multicollinearity in contingency coefficients. To avoid the problem of heteroscedasticity, robust standard error was used in the study.

## RESULTS

### Production system

#### *Herd size per household*

The livestock holding of households ranges from 0 to 25.82 in Tropical Livestock Unit (TLU) with mean of 7.08. Farmers in the sample had an average of 2.69 oxen for plowing purposes (zero is the minimum and 12 is the maximum). Traditionally, fattening of animals concentrates on male animals, and female animals which were either infertile or had finished their reproductive cycle and the target markets were butchers and otherwise, targeted to religious and cultural festivals. The time of stay of the cattle for fattening (duration of fattening) ranges from a month to 12 months (mean=3.72). It is generally higher than the recommended package by the research institution (three months) (MOA, 1997).

#### *Land holding per household*

The average land holding of households in the sample was 1.44 ha (there are landless households and 4.25 ha is the maximum land holding of households), while on the other hand, the average cultivated land by the same households was 3.32 ha (from zero to 32 ha of land). Land renting and share cropping were found important for the farming community in the areas. The dominating means of livelihood of farmers in the area was agriculture. In the mean time, farmers could sometimes participate in off and non-farm activities to support the family. About 64% of the households were full time farmers. About 30%, 4% and 1% of households involve in petty cash trading in the nearby markets, handicraft and

hired as laborer, respectively to support the gain from agriculture.

The growing demand for fattened oxen in the domestic and export market creates an opportunity for the producer to fatten on a “large” scale. The supply for the potential oxen for fattening was largely from the mid and high altitude areas of North-West Ethiopia. Farmers argued that fattening the low land cattle in mid and high altitude was costly. On average basis, farmers supply fattened oxen two times in the production year (minimum of 1 and maximum of 4 times). In the same way, the number of cattle fattened in the production season ranged from 2 to 65 (average of 16 oxen).

### Econometric model

Different demographic, socio-economic, institutional and related variables which are theoretically justified to affect the supply of fattened oxen to the market were considered in the model (Berhanu and Moti, 2010; Asfaw and Jabar, 2008). These variables were analyzed in the model (OLS) to know their contribution to the value of supply of fattened oxen in the market. The goodness of fit (Adj.  $R^2=76.7$ ) revealed that the independent variables used in the model have fairly explained the dependent variable. Three variables (of the total of 16 variables included in the model) were found significant.

Household size significantly and positively affected (Table 1) the supply of fattened oxen. This was measured in terms of the value of the supply to the market. As the size of the household increased with one person, the value supplied to the market also increased with about 5000 birr. It can be explained that as the household size increased, the family needed to involve in off-season activities (like fattening in this case) to supplement the income from crop production.

The experience of the household in fattening was also found to highly significantly (sig level?) and positively affected the value of supply to the market. As the years of experience of the farmer in fattening activity increased with one year, the supply of the household to the live animal trade from fattening enhanced with about 3380 birr in the production year.

The price of fattened animal played a vital role in affecting the supply of animals to the market. Here, the price of fattened oxen significantly affected the value of supply of fattened oxen to the market. As the market price of the oxen increased with one birr, the value of supply from the household will enhanced with 230 birr.

### The export market overview

Fattening in the area has been practiced in many households using industrial by-products, crop residues and in some cases grains. Most producers have been using bi-products of agro-processing industries (edible oil, brewery and cotton processing firms). There is an

expansion of farm land towards the pasture and bush lands with the increase in the farming population in the area. Limited feed access with the decreased pasture land added with high price of hay boost the cost of production.

According to focus group discussion, producers were in need to borrow for fattening activities. Money borrowed from private money lenders had an interest of more than 100% and was not economical as compared to the profit earned from the investment. Small scale producers were insignificant users of banks since they lack collateral to borrow. However, there was a recent attempt to establish fatteners' cooperatives to finance the production and marketing of live animals. In addition to the role of multi-purpose cooperatives, fattening and marketing cooperatives had also been established.

Farmers residing geographically near the final outlet, Metema, had been seen with better market information, know well about the operation of the market and face less risk than those who live far from the geographical boundary. It had been seen that these producers had good relation with the assemblers and larger exporters which improved the market access and reduced the influence by assemblers and exporters in the market chain. Producers and cattle traders had got different levels of access to market information about supply, demand and price conditions in the domestic alternate markets and export market. According to the discussion with producers, most of the farmers obtained market information from their neighbors and relatives; some of them received information from middlemen and traders. Assemblers obtained market information mainly through other traders (exporters) in the channel of distribution. In the mean time, due to the various sources of market information, the available information was not always systematic, reliable and most of them faced risks.

Producers in the study area had 1 to 60 heads of cattle for fattening with an average of 12 oxen per household and with an average of 2 times production per year. Most live animals for the export trade were produced in small quantities and in dispersed manner. In addition to the capacity of those producers, this created an opportunity for the assemblers to participate in the system. Most of the producers sold few fattened animals to assemblers in the nearby primary markets. Marketing was done through “eye ball” negotiations and agreements. *Few or no producers had been seen acting in the livestock export market since the start of live animal export trade to Sudan (clarify your sentence).* It was not economical to be involved in the export market with few cattle and it needed large amount of initial capital to be involved in the export market, which was impractical under farmers' condition. There was a great problem for small scale producers to get initial investment requirement, foreign currency for the bank permit, transportation and other marketing costs.

The quick market survey and discussion with traders

**Table 1.** OLS result given in full form.

Variable	Coefficient	Std. err	T	P
Age of the household head	-847.34	598.59	-1.42	0.16
Sex	558.69	34614.52	0.02	0.98
Household size	5096.30	2995.62	1.71	0.09*
Literacy of the household head	5029.29	9620.18	0.52	0.60
Total agricultural labor	-1947.93	5594.15	-0.35	0.73
Livestock owned	616.31	1062.68	0.58	0.56
Total asset	-0.02	0.02	-1.00	0.29
Land holding	-1726.56	6424.77	-0.27	0.79
Land allocated for hay	11464.42	20877.79	0.55	0.58
Experience in fattening	3382.49	1380.09	2.45	0.01***
Feed cost	-3.95	14.51	-0.27	0.79
Oxen cost	0.91	8.74	0.10	0.92
Price per oxen	230.46	57.97	3.99	0.00***
Time to reach the extension workers	-3321.00	1888.50	-1.76	0.08
Time to reach the town	5190	4941.86	1.05	0.29
Time to reach the oxen purchase area	-2386.45	4564.21	-0.52	0.60
Constant	-39642.16	52385.63	-0.76	0.45
Adj. R <sup>2</sup>	76.7			

\*\*\* and \* means significant at 1 and 10% probability levels.

and producers revealed that the so called “advance payment” was not working. This method was believed to be functional in the areas for transaction purposes. Exporters had compulsion to deliver the amount prescribed by the national bank in foreign currency (US\$) in advance, before they truck the cattle for export. In the terminal market (where exporters sell to the importers), however, the transaction took place through Ethiopian birr (the Sudanese use the Ethiopian birr to purchase the cattle in the market near the border). This was an indication that there was another market, which was a monetary market, for the exchange of dollar, Ethiopian birr and Sudanese currency which suppressed the gain of exporters and importers. There were money dealers (How many) who were practicing the exchange of money around the border.

### Challenges in the market

Actors in the export market criticized the quarantine system for its inappropriate place, bureaucracy and personal bias. There was no enough water and feed resource, and shelter for live animals and exporters in the place where the quarantine unit is established. This condition created many risks (additional cost, fluctuations in market prices, disease and theft problems) for producers. In addition, the stay of exporters due to bureaucracy made unable to control the illegal movement. According to the system of advance payment, every cattle was paid for in advance of its arrival and there was no need for the exporters to stay in the area if the quarantine service has been given in time. However,

most of the cattle stay at Metema Yohannis for at least two weeks.

Trade license for trading of cattle between neighboring districts had been given by the district office of trade and industry for the last two/three years after the start of the cattle export trade in the areas. Those local traders had been given the trade license with the assumption that they will deliver cattle to the district markets for local consumption, considering the fact that there were two butchers in Gende Wuha and three butchers in Metema Yohannis supplying an ox per week.

Large scale farming with farm machineries was common in the study areas. Some farms had been using oxen power for plowing activities. Understanding this fact, district office of Agriculture and Rural Development had given permission for farmers to truck draft power from neighboring areas. Those cattle had been tracked to the areas by the permission of the District Agriculture and Rural Development, especially to the area called Dansha, which was known for sesame and cotton production. A farmer could be given permission to track up to 50 cattle for draft. It was expected that farmers who tracked oxen to their farms should return them after the farming season. However, there was no controlling mechanism practiced by the office in checking whether farmers return oxen or not.

## DISCUSSION

### The production system

In a mixed crop-livestock production system, livestock are

considered vital for livelihood. The draft power requirement of the household for crop production activities can come from the livestock (Asfaw and Jabbar, 2008). It can also be used as an insurance scheme for climate change in which crop production may fail in the season and sometimes as a saving mechanism (Habtamu, 2012; Berhanu and Moti, 2010). It was in most cases considered as a reflection of wealth and standards in the rural economy (Moti et al., 2009) and they associated the wealth of a household with the ownership of livestock (especially with cattle, horse, mule and sometimes donkey).

Land is the basic unit of production in the farming society and farmers in the study areas consider land as a guarantee for life. Since agricultural investment requires land, it is sometimes considered as the expressing term for the possibility of being rich and the wealth of the household. Crop residue was the major component of feed in a mixed livestock-crop production system (Asfaw and Jabbar, 2007; Habtamu, 2012) and all of the households reported that they have used crop residues as the basic feed for fattening (only crop residues). Crop residues are poor in nutrient content especially in protein. Without protein source, the crop residues cannot be fattened). The duration of fattening in the case of this study ranged from 1 to 12 months. Farmers sometimes fatten animals in which the export market might not prefer (for example, very old oxen) (Habtamu, 2012). This might arise from the fact that most of the farmers lack experience in the market system. In addition, the seasonality in the demand for fattened cattle in the domestic and export market may oblige them to feed them for the extended period of time (Berhanu et al., 2004).

### **Market supply and its determinants**

Price fluctuation of agricultural commodities is among the most important challenges that affect farmers, even worse to the extent that they fall in chronic poverty traps (Berhanu and Moti, 2010; Todaro and Smith, 2012). The inefficient market system and weak linkage with the market led to low bargaining power of producers in the market (Berhanu and Moti, 2010). When the price of fattened animals decreased, the interest of the farmers to involve in high scale operation and secure high value of fattened animal supply was lower. Timely and reliable market information should have been given due emphasis in this case to enhance the market linkage of smallholder farmers and improve their response to changes in the market.

### **The export market and challenges**

Producers have supplied from 1 to 60 fattened cattle to the export market and mainly in a dispersed manner. Producers were weakly linked to the market and

assemblers, and traders had a vital role to collect fattened animals and supply to the next market chain (Berhanu et al., 2004). In the meantime, their better market information and experience in the trade and better financial position that they had benefit them and make farmers price takers (Habtamu, 2012). There was no standard applied for live animal in the areas that make the advance payment method impractical and “eye-ball negotiation” was practiced in the final market after the exporter has finished all the export procedure.

Institutional arrangements and organizations in the value chain are vital for the well-functioning of the production and market system (Habtamu, 2012). The lengthy and bureaucratic procedure in the export market gave farmers two options. On the one hand, they joined the illegal cross-border livestock trade and on the other, they concentrated on domestic markets.

### **Conclusion**

Market orientation of the farm households was agreed to be the wheel to transform the subsistence orientation of the country's agriculture. The domestic and export livestock trade had to be efficient to pay for small scale producers of the country. This study was initiated to assess the performance of cross-border livestock trade starting from the production along the chain to the export.

The basic materials for the study were collected through both the formal and informal survey. Key informant and group discussions were undertaken at different times along the market chain. 120 producers were randomly selected (of which 112 were used for the analysis) from 6 peasant associations (three districts and two peasant associations from each district were selected through purposive sampling) and included for the formal survey. Three of the total variables were found to significantly affect the value of supply by the household to the market from the fattening enterprise. Family size, experience in fattening and price of fattened oxen were found to significantly and positively influence the value of supply in the market.

The malfunctioning of the advance payment method of the export market is considered a challenge in the export market. Most of the institutions have got their own bureaucratic procedures and limit their capacity to improve the well-functioning of the cross-border trade. Poor linkage between public institutions and contradicting policies were also found to play an important role for the inefficiency in the market system. Extended market channel and frequent transactions in the market, bureaucratic procedures and institutional inefficiencies contribute to the country to earn an amount less than its potential. In considering the facts discussed, the public should systematically solve the problems in the market.

### **RECOMMENDATIONS AND POLICY IMPLICATIONS**

- It is recommended that shortening the process will have

a significant effect on the expansion of the value and volume of live animals export. The lengthy and bureaucratic livestock export process leads to additional cost and producers in one way or the other will pay this cost.

- Experience in fattening is found vital for enhancing the value of supply of the household in the market. Price of the output is also found important to increase the value of supply. Training and experience sharing visits are quite pertinent for producers to get involved in fattening.

- Shortening the extended market channel will help to increase the margin of the farmers and the public should focus on enhancing the bargaining power of smallholder farmers.

- The institutions in the system are known for their bureaucratic approaches, and lose of linkage between them which limits their service to exporters. It is recommended that a reform has to be in place to create functional linkages between the institutions in the market chain which can create working medium for private sectors. In addition, there needs a reform of the market control system and makes it functional.

- Lack of timely and adequate marketing information by producers, assemblers and exporters in the market system made them lose their bargaining power in the market. The public is expected to disseminate reliable, timely and valid market information to the actors in the market. Efficient delivery of market information and establishment of delivery system will enhance the role of the private sectors in the market.

- Small-scale producers face problems in financing the production system and input purchases especially of feed. Those producers have got no access to banks and the credit delivered by micro-financial institutions is too small to finance the production (for fattening in this case). In this case, establishing fattening cooperatives is recommended to overcome financial and input delivery problems.

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