FOOD SCIENCE & TECHNOLOGY | RESEARCH ARTICLE

Structure conduct and performance of dairy market in Ada’a Berga district, Ethiopia

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Abstract: The aim of this article was to investigate SCP of milk and butter market in Ada’a Berga District using SCP model. Primary data collected from randomly selected 123 smallholder farmers, 48 traders and 30 consumers were used to calculate the gross margin, concentration ratio(CR), regulation of market entry and exit and market conduct. The CR results showed that top four milk traders controlled 78.8% and 89.54% of the total volume of milk sold in Ada’a Berga and Holeta, respectively, and 61.29% and 63.46% butter sold in Ada’a Berga and Holeta, respectively. The CR of milk and butter markets were strongly oligopolistic.

Education, market transparency and capital, political equality, corruption were barrier to entry milk and butter trade. The conduct analysis results showed that farmers use different markets outlets and price setting strategies to sell dairy products. The result of pricing setting was not competitive as 51.67% dairy price decisions were decided by buyers. In milk marketing, the maximum total gross marketing margin of producers share was 63.15% in channel III (producer, district retailer to consumers). The maximum producer’s share in butter market was in channel V (producer, district retailer to consumers). Therefore, strengthening institutions that convey reliable and timely market information; support dairy market, improving collective action of farmers, address the challenges of financial access to smallholder farmers and traders to decrease oligopolistic nature of the market. Moreover, give attention to market infrastructural, training and yield increasing.

ABOUT THE AUTHOR

Gemechu Ordofa was born on July 19/1987 in Wombera District. He completed his elementary and primary education at Senkora and high school and preparatory at Wombera. He then joined Haramaya University in 2007 and graduated in 2010 BSc. Degree in Agribusiness Management. He has been worked at Mandura district as a food security expert for three years. Then, he worked in Western Ethiopia Green livelihood project as extension worker at Gilge Beles for two years. Then, he joined Haramaya University for collaborative Master of Science in Agricultural and Applied Economics in 2016 graduated MSc degree in Agricultural and Applied Economics on June 2019. His research interests focus on the impact analysis, food security, value chain, market chain, natural resources and environmental valuation.

PUBLIC INTEREST STATEMENT

In Ethiopia, agriculture contributes approximately 36.2% of GDP and 72.7% of employment. The country represented as the most potential country in livestock resource in the Africa which is about 60.39 million cattle. However, dairy production and marketing has remained in its tradition stage, especially in rural areas of Ethiopia. Dairy is one of the livestock products that contributes to the livelihoods of farmers in terms of food, income and employment. Efficient dairy market can increase production and income, protects against profit loss due to market failures and poor market infra-structure. Enhancing efficient market will help farmers to improving their overall production and marketing status in the long run.
Several studies have been done on the structure, conduct and performance of different agricultural commodities. The structure, conduct and performance of the market for dairy products in Ethiopia, for example, has been investigated. However, the current consultative report (2011) of the Agriculture and Livestock Division of the Federal Ministry of Agriculture and Rural Development, Ministry of Agriculture and Rural Development (2010) and the Federal Ministry of Agriculture and Rural Development (2010) have not addressed the agricultural products in question. The economic growth of Ethiopia is directly connected with the performance of the agricultural sector, which is the major economic activity in the country. The structure, conduct and performance of the dairy market in Ethiopia is therefore important for economic growth and development.

2 Introduction

Keywords: Milk and butter market; structure, conduct and performance; consultation report.

Objectives: To analyze the structure, conduct and performance of the dairy products market in Ethiopia and to identify the factors influencing its performance.

Methods: The study was conducted using data collected through primary and secondary sources. The data was analyzed using descriptive and inferential statistical techniques.

Results: The dairy market in Ethiopia is characterized by high concentration, low competition and a lack of transparency. The structure and performance of the market are influenced by various factors including the presence of large-scale enterprises, the lack of effective competition, and the absence of a well-defined regulatory framework.

Discussion: The findings of this study provide insights into the performance of the dairy market in Ethiopia and highlight the need for policy interventions to improve its performance. The results suggest that policies aimed at promoting competition, increasing transparency and regulating the market are necessary for the sustainable development of the dairy sector.
groundnuts (Giroh et al., 2010), Structure and performance of beans marketing system (Odhiambo et al., 2006), Structure, conduct and performance of marketing milk market (Somano, 2008; Demissie et al., 2015). There are a number of studies that examining dairy marketing challenges, value, identify actors, market participation and volume supply. These studies related to dairy in Ethiopia are not focused on structure, conduct performance and many of them centered fluid milk and butter has received inadequate attention. Studying both milk and butter simultaneously can help better understanding dairy sector.

The Ada’a Berga district contributes the highest volume of dairy to Oromia region as well as for the country. Dairy products are not market arranged and farmers do not benefit from production. The price of dairy products are too cheap in rural in respect to the producer and too costly to buyer in urban with respect to consumers. The structure, conduct and performance knowledge is vital for smooth production, marketing and character problems associated with market failure. But, there is no study conducted in Ada’a Berga district that examined structure, conduct and performance of dairy market. Therefore, this study was to produce evidence on the structure conduct and performance of milk and butter market in Ada’a Berga, District.

3. Theoretical framework
The market structure, conduct and performance (SCP) framework was derived from the neoclassical analysis of the market. The theoretical framework market structures, conduct and performance was first developed by Mason (1939) and utilized by Bain (1951). The logic behind structure conduct and performance (SCP) paradigm argues that an industry successfully producing benefits for producer and consumers depended critically on the structure (power of market) and conduct (competitive behaviour) of firms in the market. As per Edwards et al. (2006), there are two contending theories in the SCP paradigm. These are the old structure-performance and efficient-structure hypothesis. The structure-performance speculation hypothesizes that market concentration has an inverse relationship with the degree of competition because market concentration encourages firms in the market to collude. The thought of the SCP paradigm will be boosted if there is a positive connection between market concentrations, measured in terms of concentration ratio and performance measured in terms of profits regardless of the firm’s efficiency, which is usually measured by market share (Edwards et al., 2006).

The SCP model is based upon neoclassical theory has long been central to the study of industrial economics. In SCP applicable relatively under stable features the economy in a market. However, the developing countries like Africa characterized by lack of better policy, donated economy, large food assistance, poor monitoring and evaluation of market, lack of technology and infrastructure, food insecurity, inconsistent supply and governments interference in market (Kizito, 2011). Likely, developed countries better implementation of market liberalization policy, better infrastructure for marketing, constant supply and demand and strong institutional setup for producer as well as traders as compared to developing countries the SCP is better applicable in those developed countries. The market structure conduct and performance have been used agriculture sector in developing country to capture the behaviour of all market players which has direct bearing on conduct and performance of the market (Banson et al., 2016).

The terms of market structure is the arrangement of factors that are generally steady after some time and affect the behaviour of sellers or buyers. The manner, by which markets follow impeccable rivalry conditions, relies upon number and size appropriation of buyer (supply concentration), number and distribution of buyers (demand concentration), product differentiation and market entry obstacle. Absent entry barriers in a given market, no one can gain above normal profit and the entry of firms the industry moves long run equilibrium eliminate and monopoly profit. This because entry barriers must be present in an industry for above normal profits to persist, structure determines potential performance (McWilliams & Smart, 1993). Hence, firms would have the most market power and market outcomes would be worst for consumers when
competition amongst firms was almost non-existent and when market power is non-existent the market outcomes are best for consumers because of perfectly competition.

Market conduct hinged upon market structure and refers to the way in which buyers and sellers behave, both amongst themselves and amongst each other such as price-taking, product differentiation, tacit collusion, and exploitation of market power (Bosena et al., 2011). Market performance is refers to the overall outcome or the equilibrium assessed in the form of allocative efficiency (Aguirre et al., 2008; Haruna et al., 2012). Also, market performance in the view of Bain (1968), it is an economic outcome that expressed in terms of its pricing efficiency and flexibility to adapt to changing the situation. The performance of a firm can be reflected by a number of indicators such as productive efficiency, allocative efficiency and profitability (Negasi, 2015; Edwards et al., 2006). Neuberger (1997) stated that market performance is also measured by comparing the results of firms along the industry in relation to price, quantity, product quality, resource allocation, and production efficiency.

According to Lelissa and Kuhil (2018), market performance is related to market structural conditions and firms’ conduct with regard to pricing and product policies and profitability. For example, if the structure of a market is competitive there are many firms in a market, and firms are free to enter, firms in the industry are more likely to compete with each other and long run equilibrium is Price is equal to marginal cost equal to long run average cost. Conversely, if the structure of oligopolistic or monopolistic in nature the number of firms in the industry is few, and there are barriers to entry into the market, then prices greater than marginal cost and collusion are more likely to occur. May be the strategic behavior of firms, established to discourage the producers and entry of new firms and firms can raised the cost of actual or potential rivals. Therefore, the economic results of market structure and market conduct represent market performance and the combined results of market structure and market conduct.

4. Methodology

4.1. Study area

This study was conducted in Ada’a Berga district, which is located at 64-km north west of Addis Ababa at 9°12’ to 9°37’ north and 38°17’ to 38°36’ East (see Figure 1). This district is characterized by a crop-livestock mixed farming system. Local cattle are the predominant breeds and dairy production significantly contributes to smallholder farmers as a means of income, nutrition and employment.

Figure 1. Map of study area.
4.2. Sampling procedures of farmers and traders

4.2.1. Sampling procedures of farmers
A multistage sampling procedure was used to sample dairy farmers from Ada'a Berga district. A total of 123 dairy producers from four kebeles (Ittaya, Ejre, Biyhowogiide and Sireberga) of Ada'a Berga of districts were selected and interviewed on dairy production, marketing aspects, socio-demographic and institutional characteristics (Table 1). The Yamane (1967) formula was used for population known and the district population (smallholder farmers) were almost homogenous as follows:

\[
n = \frac{N}{1 + N(e)^2} = \frac{7780}{1 + 7780(0.09^2)} \approx 123
\]

(1)

Where, \( n \) = sample size,

\( N \) = Population size and

\( e \) = level of precision assumed 9%

4.2.2. Traders sample
Sample traders were taken at different stages based on the volume of dairy products (milk litres and Butter kilograms). As shown in (Table 2) a total of 48 markets (covering rural, sub-urban and central markets) were sampled to analyse structure, conduct and performance. The questionnaire was prepared and pretested. The continent of questionnaire includes demographic characteristics of traders, purchasing activities and selling practice of traders.

4.3. Analytical techniques
The structure, conduct and performance of market have been analysed by various approaches. Kebede (2016), analysed the structure, conduct and performance of the market in Sululta woreda, Ethiopia in order to understand the structure, conduct and performance of milk market using concentration ratio and gross margin. Enibe et al. (2008) described the structure, conduct and performance of banana market in Anambra State of Nigeria using descriptive statistics, Gini coefficient, price spread, behaviour of middlemen, conduct of marketing functions and gross marketing margins.

Giroh et al. (2010) also examined the efficiency of the structure, conduct and performance of groundnuts markets in northern and central Malawi using Herfindahl-Hirschman Index (HHI), marketing margins, marketing efficiency index (MEI), price spread, Cobb Douglas production Function, and spatial market integration (using bivariate correlation coefficients of price difference). Odhiambo et al. (2006) analysed the structure and performance of beans marketing system.
Table 2. Sample distribution of traders

| Trader               | Ada’aBerga | Holeta | Addis Ababa |
|----------------------|------------|--------|-------------|
|                      | Milk | Butter | Milk | Butter | Milk | Butter | Total |
| Wholesaler           | 5    | 3      | 3    | 3      | 4    | 3      | 21    |
| Rural collector      | 4    | 2      | 3    | 2      | 0    | 0      | 11    |
| District retailer    | 3    | 2      | 0    | 0      | 0    | 0      | 5     |
| Central retailer     | 0    | 0      | 2    | 2      | 0    | 2      | 6     |
| Milk processing company | 0   | 0      | 0    | 0      | 2    | 0      | 2     |
| Cooperative          | 2    | 0      | 1    | 0      | 0    | 0      | 3     |
| Consumer             | 6    | 4      | 5    | 5      | 5    | 5      | 30    |
| Total                | 20   | 11     | 14   | 13     | 11   | 10     | 78    |

Source: Own survey result, 2018
in Nairobi using descriptive statistics, concentration ratios and co-integration model. Bain (1968) used marketing margins and cost components to evaluate the impact of structure and conduct characteristics on market performance.

**Market structure:** It refers to the number of firms, firm size, concentration ratio, product differentiation and power distribution (Hanekom et al., 2010; Scott, 1995). In this study, market structure was determined based on market concentration exercised by traders and barriers to market entry for potential traders. Concentration is defined as the number and size of distribution of buyers in the market. The greater the degree of concentration, the greater is the possibility of non-competitive behaviour in the market. For an efficient market, there should be a sufficient number of firm's buyers and sellers in the market. The concentration ratio is expressed in terms of CRX, which stands for the percentage of the market sector controlled by the biggest X firms. Four firms (CR4) concentration ratio is the most typical concentration ratio for judging the market structure (Kohls & Uhl, 1985). A CR4 of over 50% is generally considered as strong oligopoly; CR4 between 33% and 50% is generally considered a weak oligopoly and a CR4 of less than 33% not concentrated market. The concentration ratio was calculated by the following formula.

\[
S_i = \frac{V_i}{c_i}
\]

Where: 
\(S_i = \) Market share of \(i^{th}\) firms
\(V_i = \) Amount of product handled by \(i^{th}\) firms
\(C = \sum S_i\)

**Market conduct:** It refers to the patterns of behaviour that market participants adapt to affect or adjust to the market in which they sell or buy (Abay, 2010). These include price setting, quality of products, market strategy research and legal tactics. Market conduct can be also analysed by the existence of formal and informal marketing groups; availability of price information, feasibility alternative market outlets buying and selling practices.

**Market Performance:** It refers to the impact of structure and conduct when it measured in terms of prices, costs, and output. In general, performance can be evaluated in many ways: (1) allows technological progress, (2) ability to adapt technology (3) innovates and utilization resources efficiently, and (4) transmits prices that reflect costs (Amha, 1994; Pomery & Trinidad, 1995). Several studies employed marketing margins to analysis market performance of different commodities in developing countries (Jema, 2008). Hence, marketing margins were employed for this study. According to Ghorbani (2008), marketing margin is important indices in the evaluation of market performance. Marketing margin refers to the difference between the price paid to the first seller (farm-gate price) and the price paid by the final buyer (retail price) (Abankwah et al., 2010). The method of analysis of marketing margin was as follows.

\[
TGMM = \frac{Endbuyerprice - Firstsellerprice}{Endbuyerprice} \times 100
\]
Table 3. The concentration ratio of milk and butter buyers in Ada’aBerga and Holeta district

| Number of trader | Total volume Purchased | % share | Number of trader | Total volume Purchased | % share | number of trader | quantity Purchased in Kg | % share | Number of trader | quantity Purchased in kg | % share |
|------------------|------------------------|---------|------------------|------------------------|---------|------------------|--------------------------|---------|------------------|--------------------------|---------|
| 1                | 1,560                  | 0.11    | 1                | 4200                   | 0.43    | 1                | 2100                     | 8.76    | 1                | 4500                     | 27.86   |
| 1                | 2,160                  | 0.15    | 1                | 30,000                 | 3.08    | 1                | 2160                     | 9.02    | 1                | 970                      | 6       |
| 1                | 420,000                | 29.66   | 1                | 8500                   | 0.87    | 1                | 1800                     | 7.51    | 1                | 390                      | 2.42    |
| 1                | 9,000                  | 0.635   | 1                | 120,000                | 12.35   | 1                | 2760                     | 11.52   | 1                | 1450                     | 8.98    |
| 1                | 10,800                 | 0.762   | 1                | 390,375                | 40.19   | 1                | 4800                     | 20.2    | 1                | 538                      | 3.33    |
| 1                | 14,400                 | 1.017   | 1                | 48,900                 | 5.03    | 1                | 4670                     | 19.45   | 1                | 800                      | 4.95    |
| 1                | 30,000                 | 2.119   | 1                | 2000                   | 0.02    | 1                | 2400                     | 10.12   | 1                | 2000                     | 12.38   |
| 1                | 420,000                | 29.66   | 1                | 260,197                | 26.7    | 1                | 400                      | 1.67    | 1                | 400                      | 2.47    |
| 1                | 80,400                 | 5.678   | 1                | 900                    | 0.092   | 1                | 375                      | 1.56    | 1                | 600                      | 3.72    |
| 2                | 84,000                 | 5.93    | 1                | 500                    | 0.051   | 1                | 250                      | 1       | 1                | 100                      | 0.62    |
| 2                | 96,000                 | 6.78    | 1                | 750                    | 0.077   | 1                | 700                      | 2.9     | 1                | 900                      | 5.57    |
| 1                | 180,000                | 12.71   | 1                | 1000                   | 0.1     | 1                | 300                      | 1.25    | 1                | 1200                     | 7.43    |
| 1                | 1,500                  | 0.10    | 1                | 103,000                | 10.03   | 1                | 1250                     | 5.2     | 1                | 2300                     | 14.24   |
| 1                | 6,000                  | 0.424   | 1                | 1600                   | 0.165   | 1                |                          |         | 1                |                          |         |
| 1                | 60,000                 | 4.24    | 1                | 1900                   | 0.196   | 1                |                          |         | 1                |                          |         |
|                  | 1,415,820              |         |                  | 971,172                |         | 12               | 23,965                   |         | 12               | 16,148                   |         |

CR4 = 78.8%  
CR4 = 89.54%  
CR4 = 61.29%  
CR4 = 63.46 %

Source: Own computation from Survey result (2018)
It is useful to introduce here the idea of “producer participation or farmers portion” or producer’s gross margin” (GMMP) which is the proportion of the price paid by the consumer that belongs to the producer. Producer that acts as a middle man also receives an additional marketing margin.

\[
GMMP = \frac{\text{Pricepaidbytheconsumer} - \text{Marketinggrossmargin}}{\text{Pricepaidbytheconsumer}} \times 100
\]

In marketing chain with only one trader between producer and consumer, the net marketing margin (NMM) is the percentage over the final price earned by the intermediaries as his/her net income once his marketing costs are deducted.

\[
NMM = \frac{\text{GrossMargin} - \text{Marketingcost}}{\text{Pricepaidbytheconsumer}} \times 100
\]

5. Results and discussion

5.1. Dairy market structure

The dairy market structure in the study area is described using concentration ratio and regulation of entry and exit in milk and butter market (License, education, experience, financial capital, policy framework, political equality, corruption and market transparency).

a.Concentration Ratio(CR): The market concentration ratio was calculated and expressed in terms of CRx as the percentage of marketed dairy (milk in litre and Butter in kilogram) controlled by the largest X firms, taking the total annual volume of milk and Butter purchased by sampled traders in 2018. However, analysis only considered the rural and sub-urban markets because the volume of dairy products (milk and butter) purchased by central traders in Addis Ababa were huge in volume and lack separated data for dairy products from Ada‘a Berga district.

Concentration ratio of milk and butter handled by the largest four traders in litre and kilogram (Table 3), calculated by taking the annually purchased volume of milk and butter by traders at main milk market places (Ada‘a Berga and Holeta). The results showed that the concentration ratio of milk was 78.8 and 89.54% in Ada‘a Berga and Holeta, respectively. The concentration ratio of butter was 61.29 and 63.46 % in Ada‘a Berga and for Holeta markets respectively. Therefore, this result indicated that the estimated market concentration ratio in the two periodic markets was strongly inefficient and oligopolistic. Studies also show that, there is strong oligopoly with CR4 value of 87.16 % in Sululta district of Ethiopia (Kebede, 2016).

5.2. Regulation of entry and exit in dairy market

5.2.1. License

Theoretically, a license is required to enter into the dairy market. The district trade and industry, cooperative promotion and development, dairy union, customs authority and agriculture office provide licence service and regulate market. Because of no strict regulation about 40% of the traders in the study area were unlicensed. Since, the trade and industry office has no taken strong measure against the unlicensed traders; about 78% of the formal traders were seriously challenged. Therefore, it was easy to enter in to dairy market without license in the study area. However, it does not mean that all traders enter in to the dairy market by understanding of social capital and experience since it takes some years to build their own micro network to be competitive.

5.2.2. Education

Education plays an important role in working efficiency, administration and decision making in dairy trading. The study result shows 12.5% of the respondents were illiterate (Table 4). However, about 35.4% and 27.1% attended primary school and secondary school, respectively. About 25% traders were certificate holders and above. Therefore, literacy level of trader is found to be barriers
| Variables          | Ada’a Berga | Holeta | Addis Ababa | Total |
|--------------------|-------------|--------|-------------|-------|
|                    | N | %     | N | %     | N | %     | N | %     |
| Education of trader|   |        |   |        |   |        |   |        |
| Illiterate         | 3 | 6.3   | 2 | 4.2   | 1 | 2.1   | 6 | 12.5  |
| Primary            | 8 | 16.6  | 6 | 12.5  | 3 | 6.3   | 17| 35.4  |
| Secondary          | 6 | 12.5  | 3 | 6.3   | 4 | 8.3   | 13| 27.1  |
| Certificate        | 4 | 8.3   | 5 | 10.4  | 3 | 6.25  | 12| 25    |
| Total              | 21|       | 16|       | 11|       | 48| 100   |
to entry in the dairy market. Studies also identified that the literacy level of traders was one of the barrier to enter in to grain trading in Tigray, Ethiopia (Mezgebo & Dereje, 2010).

5.2.3. Experience
Many experts suggest that one should have enough and sufficient knowledge as well as experience before starting a business, to keep the business running as stated in (Tegegne et al., 2018). Participating long years in dairy trading can increase skills, trust or social capital. The result shows that the mean experience of dairy trader was 5.1 years ranges from 1 to 20 years. Majority (60%) of the traders had experience 1 to 5 years. The traders’ experience is not a barrier to enter in to dairy trading since majority (60%) of the traders’ experience is found in first generation (1 to 5 years) as compared to higher range of experience. This result is similar to the findings of Ayele et al. (2017), in which experience was not a barrier to enter in to beef trading.

5.2.4. Financial capital
Capital is reported to be one of the major entry barriers to dairy trading. About 80% of the traders identified financial capital as one of the entry barrier to dairy market. The result also revealed that dairy trading requires large amount of financial capital ranging from 33,000 to 325,000 Ethiopian Birr. The same finding is observed in Ethiopia grain market (Gabre Madhin, 2001). Also, finding in Madagascar grain market shows capital limit to enter in profitable niche market (Barrett, 1997). Therefore, financial capital was a serious constraint in entering into the dairy trade in Ada’a Berga district for those who cannot afford to enter the market.

5.2.5. Market transparency
Reliable information on variable market conditions enables for correct decision-making, planning and policy decision (Magesa et al., 2014). The study result indicates that majority (66.67%) of farmers had access to market information including information on price (49.28%), market place (26%), buyers’ (18.84%) and dairy related information (5.8%). The efficiency of marketing system is capacity of information decentralized and processing (Hayek, 1945). Adequate information is necessary for efficiency of the marketing system and summarizes that market allocation (Akerlof et al., 2001; Stiglitz, 2002). The study result shows about 69.5% of the disseminated information related dairy was proved by the users to be accurate. As a result, marketing information is identified as one of the entry barriers to a dairy market in Ada’a Berga District. The finding line to (Idahe and Zemedu, 2017), found that marketing information limit the entry and profitability sheno butter market.

5.2.6. Policy framework
Ethiopia followed free market economy and enhanced participation of private sector in the economy and guarantee smooth competition in the actual market (Hailegabriel, 2009). The legal framework policy of Ethiopia in the trade competition base on the objective of secures a fair competitive trade through the prevention and elimination of anti-competitive, unfair trade practices and safeguarding the interests of consumers World Bank (World Bank WB, 2020). The existence of a free and equal trading system helps transform economies, reshaping the division of wealth and power (Hynes, 2014). However, the legal framework for competition may not fully enforced in practice due innervation of state and some of the monopolistic companies.

In the study area in the opposite of compressive legal framework for trade completion a regulatory institution that enforce existing rule is poorly observed. The result survey showed that 40% the trader were involved in dairy trading informal without fulfil legal framework for market completion and both milk and butter trading controlled by few firms.

5.2.7. Political equality
Political equality and stability are core features, to achieve the principle of fairness in trade. Political factor has an impact on location choice and entry mode selection of outward forging direct investment (Du et al., 2014). From 2014 to 2018 there was political instability in Ethiopia due
 unequal opportunity for the different employment, social, incomes, standard of living, and share in political power. There are widespread practices of discrimination, subordination, and exclusion on the basis of ethnicity and political preferences (World Bank WB, 2020). The focus group discussion result shows that the existing political instability in Ethiopia highly affected milk and butter trade. There was continuous public protest in the area which affected the milk traders to the extent that the collected milk was spoiled in their store because the road was usually closed. This affected the supply of milk to be inconsistent.

**5.2.8. Corruption**

In the recent years, economist used corruption as one basic variable to study economy, trade, policy and strategies in developing countries. In Ethiopian, corruption and nepotism meant that members of the ruling party have enjoyed unfair privileges with regard to access to credit, land lease contracts and jobs. The rules governing markets and investment have been unreliable and subject to arbitrary and significant state intervention. Establishing a business in Ethiopia is extremely burdensome, requiring 11 procedures and 32 days, and amounting to costs of $52.7% of the average income per capita (World Bank WB, 2019). According to focus group discussion in the study area corruption in relation delaying license and tax payment system observed.

**5.3. Conduct of dairy market**

The characteristics and decisions of the farmers are influenced by different factors such as costs of searching for a partner with whom to exchange, screening potential and value addition Brouwer (1988). In this study, the relationship between dairy producer and buyer in adapting market situation such as price setting strategies, and decision whom to sell is used to analyse the market conduct. The result shows that pricing strategy was not competitive as 51.67% dairy price decisions were decided by buyers. About 35% of dairy trading undertaken competitively or dealing between supply and demand at the market. The remaining of 13.33% of farmers was not known who made decision on the price of dairy. The purchase price was mostly set by buyers reflecting an imperfect market with information asymmetry. The result lined to Tadesse (2011) who reported about 42% price of fruits and vegetables price in Ethiopia decided by traders. The decision of dairy nearly half (49.41%) of the farmer decide about their buyers by assessing market price while 34.1% closeness of distance. Since the cash payment for the dairy products was not possible on a daily basis, farmers made informal agreement with traders to get payments in 2 weeks.
### Table 6. Milk marketing margin for different channels (birr/litter)

| Milk market actors | Milk Marketing channels |    |    |    |    |    |    |
|--------------------|-------------------------|----|----|----|----|----|----|
|                    | I    | II   | III  | IV  | V   | VI  | VII |
| Producers          |      |      |      |      |      |      |      |
| Cost of production | 5.89 | 5.89 | 5.89 | 5.89 | 5.89 | 5.89 | 5.89 |
| Marketing cost     | 2.23 | 2.83 | 2.73 | 2.55 | 2.97 | 2.55 | 3.00 |
| Selling price      | 13.5 | 11.4 | 12   | 11.75| 12.2 | 11.75| 11.4 |
| NMMP%              | 39.85| 10.3 | 17.79| 16.1 | 15.9 | 12.73| 8.96 |
| GMMP (%)           | 100  | 43.85| 63.15| 47  | 46.9 | 43.53| 40.7 |
| Rural collectors   |      |      |      |      |      |      |      |
| Purchase price     |      |      |      |      |      |      | 11.40|
| Marketing cost     |      |      |      |      |      |      | 2.83 |
| Selling price      |      |      |      |      |      |      | 15.00|
| NMMRc%             |      |      |      |      |      |      | 2.75 |
| GMMRc (%)          |      |      |      |      |      |      | 12.85|
| Wholesaler         |      |      |      |      |      |      |      |
| Purchase price     |      |      |      |      |      | 12   |      |
| Marketing cost     |      |      |      |      |      | 2.73 |      |
| Selling price      |      |      |      |      |      | 19   |      |
| NMMWh (%)          |      |      |      |      |      | 7.52 |      |
| GMMMWh (%)         |      |      |      |      |      | 21.66|      |
| District retailer  |      |      |      |      |      |      |      |
| Purchase price     |      |      |      |      |      |      |      |
| Marketing cost     |      |      |      |      |      |      |      |
| Selling price      |      |      |      |      |      |      |      |
| NMMDr (%)          |      |      |      |      |      |      |      |
| GMMDr (%)          |      |      |      |      |      |      |      |

(Continued)
| Milk market actors | I | II | III | IV | V | VI | VII |
|--------------------|---|----|-----|----|---|----|-----|
| Dairy cooperative   |   |    |     | 11.75 |    | 11.75 |   |
| Purchase price      |   |    |     | 2.55 |    | 2.55 |   |
| Marketing cost      |   |    |     | 25 |    | 19 |   |
| Selling price       |   |    |     | 24.73 |    | 18.07 |   |
| NMMDc (%)           |   |    |     | 38.15 |    | 26.85 |   |
| GMMDC (%)           |   |    |     |    |    |    |    |
| Processor           |   |    |     | 3 |    | 3.00 |   |
| Purchase price      |   |    |     | 23.5 |    | 24.5 |   |
| Marketing cost      |   |    |     | 3.7 |    | 5.35 |   |
| Selling price       |   |    |     |    |    |    |    |
| NMMP (%)            |   |    |     | 16.66 |    | 16.1 |   |
| GMMPr (%)           |   |    |     |    |    |    |    |
| Central retailer    |   |    |     | 19 |    | 23.5 |   |
| Purchase price      |   |    |     | 2.73 |    | 2.9 |   |
| Marketing cost      |   |    |     | 26 |    | 27 |   |
| Selling price       |   |    |     | 7.23 |    | 2.22 |   |
| NMMDr (%)           |   |    |     | 26.92 |    | 12.5 |   |
| GMMDr (%)           |   |    |     | 36.15 |    | 59.3 |   |
| TGMM (%)            | 0 | 56.15 | 36.84 | 53 | 56.7 | 59.3 |    |

Where: GMMP = Gross Marketing Margin for producers, GMMRc = Gross Marketing Margin for collectors, GMMWh = Gross Marketing Margin for wholesalers, GMMP = Gross marketing margin of processor, GMMDr = Gross Marketing Margin for district retailers, GMMCr = Gross Marketing Margin for central retailers, NMMDc = Net market margin of dairy cooperative, NMMP = Net market margin of processor, NMMDr = Net market margin of rural collector NMMDr = Net market margin of district retailer NMMWh = Net market margin of wholesaler NMMRc = Net market margin of rural collector NMMP = Net market margin of producer and TGMM = Total Gross Marketing Margin

Source: Own computation survey result, 2018
Table 7. Butter market channels

| Channel | Channel members | Channel members | Channel members | Channel members |
|---------|-----------------|-----------------|-----------------|-----------------|
| Channel I | Producer | Consumer (16.8%) | | |
| Channel II | Producer | Rural collector | Wholesaler | District retailer | Consumer (5.11%) |
| Channel III | Producer | Wholesaler | Central retailer | Consumer (31.6%) |
| Channel IV | Producer | Rural collector | | District retailer | Consumer (23%) |
| Channel V | Producer | District retailer | | Consumer (23.48%) | |

Source: own survey result, 2018

5.4. Performance of dairy market

5.4.1. Milk market performance

The study identified seven channels for milk market from the point of its production to final destination in the Ada'a Berga district (Table 5).

The performance of dairy market was evaluated using the level of marketing margins. Marketing margin was calculated by taking the average sales prices of different participants in the dairy market channels. Table 6, reveals that total gross marketing margin (TGMM) was highest in a channel VII (59.3%), followed by VI (56.47%). Channel III shows the lowest marketing margin (36.84%). The gross profit/litre of farmers suggested a loss of 5.93 Ethiopian Birr per litre. On other hand, producers usually get lower prices while final consumers pay high prices for the dairy products. This implies that producers have less power in managing the market chain. The results also revealed that the maximum and minimum gross marketing margin of producers share in milk marketing channels were found in Channel III (63.15%) and channel VII (40.7%), respectively. The maximum share was because of few interventions by intermediaries having potential to reduce the share of milk producers.

5.5. Market performance for Butter

The study identified five core market channels for butter production from the point of its production to final destination in the Ada'a Berga district (Table 7).

The highest and the lowest total gross marketing margin (TGMM) are found to be 53% (channel II) and 46% (Channel V). Results show that the total marketing margin increases as the product moves away from the production centre. This implies that producers have less power in managing the chain. The survey result also shows the maximum producer’s share (GMMp) highest (54%) in channel producer to district retailer and lowest (47%) in channel producer to rural collectors. As depicted in (Table 8), producers NMM was highest (40%) when they directly sell to the consumer and lowest (10.99%) when they direct sell to the rural collector in channel producer to rural collector.

6. Conclusion and recommendations

Analysis of market structure shows that the volume of dairy traded in the area was concentrated in the hands of a few traders who controlled the bigger share of the market. The estimated market concentration for milk and butter showed market structure strongly oligopolistic dominated by few traders. The entry barriers analysis show that education level of trader, political equality,
| Butter market actor |  | I | II | III | IV | V |
|---------------------|---|---|----|-----|----|---|
| **Producers**       |   |   |     |     |    |   |
| Cost of production  | 86.77 | 86.77 | 86.77 | 86.77 | 86.77 | 86.77 |
| Marketing cost      | 21.10 | 29.62 | 25.37 | 31.35 | 25.82 |
| Selling price       | 180 | 140 | 145 | 140 | 165 |
| NMMP(%)             | 40 | 11.39 | 29.23 | 10.99 | 28.92 |
| GMMP (%)            | 100 | 47 | 48.33 | 48 | 54 |
| **Rural collectors**|   |   |     |     |    |   |
| Purchase price      | --- | --- | 140 | --- | 140 | --- |
| Marketing cost      | --- | 29.62 | --- | 29.62 | --- | --- |
| Selling price       | --- | 220 | --- | 220 | --- | --- |
| NMMRc(%)            | --- | 17 | --- | 17 | --- | --- |
| GMMRc (%)           | --- | 27 | --- | 27 | --- | --- |
| **Wholesaler**      |   |   |     |     |    |   |
| Purchase price      | --- | --- | 220 | 145 | --- | --- |
| Marketing cost      | --- | 31.35 | 31.35 | --- | --- | --- |
| Selling price       | --- | 265 | 260 | --- | --- | --- |
| NMMWh(%)            | --- | 4.73 | 27.88 | --- | --- | --- |
| GMMWh (%)           | --- | 15.25 | 38 | --- | --- | --- |
| **District retailer**|   |   |     |     |    |   |
| Purchase price      | --- | 265 | --- | 220 | 165 | --- |
| Marketing cost      | --- | 25.37 | --- | 25.37 | 25.37 | --- |
| Selling price       | --- | 295 | --- | 290 | 295 | --- |
| NMMDr(%)            | --- | 1.57 | --- | 15.38 | 35.5 | --- |
| GMMDr (%)           | --- | 10.17 | --- | 24.14 | 44 | --- |
| **Central retailer**|   |   |     |     |    |   |
| Purchase price      | --- | --- | 260 | --- | --- | --- |
| Marketing cost      | --- | --- | 25.82 | --- | --- | --- |
| Selling price       | --- | --- | 300 | --- | --- | --- |
| NMMCr(%)            | --- | --- | 4.63 | --- | --- | --- |
Table 8. (Continued)

| Butter market actor | Butter marketing channels |
|----------------------|---------------------------|
|                      | I  | II | III | IV | V  |
| GMMC (%)             |    |    | 13.33 |    |    |
| TGMM (%)             | 0  | 53 | 51.77 | 52 | 46 |

Where: GMP = Gross Marketing Margin for producers, GMMC = Gross Marketing Margin for collectors, GMMW = Gross Marketing Margin for wholesalers, GMMD = Gross Marketing Margin for district retailers, GMMC = Gross Marketing Margin for central retailers, NMMC = Net market margin of rural collector, NMMD = Net market margin of district retailer, NMMW = Net market margin of wholesaler, NMMC = Net market margin of rural collector, NMMPr = Net market margin of processor, NMMC = Net market margin of rural collector, NMMDr = Net market margin of district retailer, NMMWh = Net market margin of wholesaler, NMMP = Net market margin of producer and TGMM = Total Gross Marketing Margin.

Source: Own computation survey result, 2018
corruption, market transparency and capital were directly preventing traders from entering into the milk and butter trade. Farmers have less access to accurate and relevant market information that adversely affects their power in negotiating selling price for their dairy products. The milk and butter market conduct deviates from competitive market characteristics. The milk market result showed the highest and the lowest total gross marketing margin (TGMM) were found to be 53% from collectors through retailers to consumers and 46% from producers through rural collectors, wholesaler, processor, central retailers to consumer. The butter market result showed the highest and the lowest total gross marketing margin (TGMM) were found to be 53% (channel II) and 46% (Channel V). The finding suggests that, strengthening institutions that convey reliable and timely market information; support dairy market, improve collective action of farmers, address the challenges of financial access to smallholder farmers and traders. Furthermore, give attention to market infrastructure and yield increasing technologies, in the study area to improve production and marketing of dairy. Hence, this would enhance the possibility of efficient production and competitive type of milk and butter market in the area.

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