



Evolution and challenges of dairy supply chains: Evidence from supermarkets, industries and consumers in Ethiopia

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ABSTRACT

In developing countries the demand for products of animal origin is expected to grow rapidly in the coming years. Using data collected from 200 urban households this study examines the evolution of the dairy market in Ethiopia. In particular, this study suggests that although the Ethiopian dairy market remains extremely thin and volatile, the commercialization of processed dairy products through supermarkets is expanding and is expected to keep doing so in the foreseeable future. Increasing urbanization and corresponding changes in consumer preferences, behaviour and purchasing power are the identified causes for the rise of supermarket-processor dairy chains. This study shows also that emerging dairy chains provide new market opportunities to Ethiopian farmers, but the existence of retail-industrial monopolies and monopsonies jeopardize farmers' economic benefits to a great extent. The study concludes with some implications for policy and further research.

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Introduction

Population growth, urbanization and income growth are occasioning a massive increase in the demand for food products of animal origin in developing countries (Delgado et al., 1999). In particular, dairy consumption is estimated to grow by an average of 3.8% per year in the sub-Saharan region (Delgado et al., 1999).¹

Although Ethiopia has favourable agro-ecological conditions for milk production, especially in the highland regions, per capita milk production is estimated at only 41.6 l per year by Taffesse et al. (2006), and 20 l per year by FAO (FAOSTAT, 2006). Even if these estimates differ considerably, they are clearly below the figures reported for neighbouring Kenya (90–100 l per year; FAOSTAT, 2005). A common justification to the poor performance of the Ethiopian dairy sector is related to the fasting practices of national consumers (Ahmed et al., 2003). Approximately 40% of the Ethiopian population are Orthodox Christians (Ahmed et al., 2003). The calendar of the Orthodox church involves four prolonged fasting periods per year, preceding major Christian festivities, and two fasting days every week (Wednesday and Friday), for a total of 180–250 days of fasting per year. During fasting days

Orthodox Christians abstain from consuming products of animal origin, including milk and dairy products.

Since milk is highly perishable and produced on a daily basis, fasting-induced fluctuations in consumer demand pose significant problems to the commercialization of dairy products within Ethiopia. Dairy trade in Ethiopia is constrained also by incipient urbanization and widespread poverty, which result in thin national markets and a production system dominated by a myriad of small-holder farmers producing milk mainly for home consumption (Ahmed et al., 2003).² Staal et al. (2006) reports that 78% of the milk produced in Ethiopia is consumed within producing households. While Ahmed et al. (2003) indicates that most milk surplus produced in Ethiopia is sold or bartered through arm-length trade across producers and their neighbours, relatives and friends.

Nonetheless, in the last decade new market opportunities have emerged at the margin of such a traditional and enclosed dairy sector. To a large extent these opportunities are driven by the rise of dairy supply chains, linking rural production sites to increasingly profitable markets in Addis Ababa. Emerging dairy chains can be disentangled into downstream operators, such as processors and retailers, and upstream operators such as farmers. The role of downstream operators is to systematically address, if not anticipate, evolutions in consumer preference; whereas the role of

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¹ The projected growth rate of dairy consumption for sub-Saharan Africa is the second largest in the world after India (4.1%).

² In Ethiopia more than 80% of the population live in poverty in rural areas (World Bank, 2007, pp. 320–334).

upstream agents is to keep up with the increasingly stringent specifications of processors and retailers (Weaver and Kim, 2001).

Numerous studies (D'Haese and Van Huylenbroeck, 2005; Neven et al., 2006; among others) show that supermarkets have recently emerged in many parts of Africa triggering profound changes in food supply chains. According to the World Bank (2007, p. 126), supermarkets emerge in large cities, and then spread to smaller towns. First they target the upper-income consumers, then the middle class and later also the urban poor. Berdegué et al. (2005), Dries et al. (2004) and Weatherspoon and Reardon (2003), show that supermarkets induce major changes in food processing, promoting the supply of products with extended shelf life and higher hygienic standards.

As documented by Dries et al. (2004), Berdegué et al. (2005), Reardon et al. (2005), D'Haese and Van Huylenbroeck (2005), Trail (2006), Humphrey (2007) and Reardon et al. (2007), the rise of supermarkets is associated with the industrialization of food processing practices and is triggered by urbanisation and income growth. The rise of supermarket-processor chains represent a great opportunity to link African smallholder farmers to emerging markets (Staal et al., 2001). However, the rise of supermarket-processor chains pose also relevant challenges to African farmers (World Bank, 2007, p. 156). The expansion of food retail outlets and progress in processing technology tend to concentrate market power in the hands of industrial-retail oligopolies and oligopsonies (see Kaplinsky and Morris 2001; Weatherspoon and Reardon, 2003; Eagleton, 2006).

It follows that the rise of supermarket-led supply chains is a consolidated global trend associated with both opportunities and concerns. But, are supermarket-processor chains emerging also in Ethiopia? And if yes, what are the key factors driving growth in consumer demand for supermarket outlets and processed food products? To answer these questions we present a detailed analysis of the patterns and determinants of change in the dairy market of Addis Ababa. The analysis is organized as follows. First, we present the data available to this study. Second, we examine the rise of supermarket-processor dairy chains in Ethiopia. Third, we investigate the characteristics of dairy consumers in Addis Ababa and the reasons they give for buying or not buying processed dairy products in supermarkets. Fourth, we identify, estimate and discuss the determinants of supermarket-led dairy industry development. And finally we present conclusions and implications.

Data

This study builds on national, regional, and international secondary data, as well as on primary information collected from consumers in Addis Ababa. Sources of secondary data include (inter)national literature and development agencies, the Chamber of Commerce of Addis Ababa, the Ethiopian Central Statistical Agency and the Ethiopian Ministry of Trade and Industry. The data obtained from these sources is mainly used to examine the rise of dairy processors and supermarkets in Ethiopia.

Sources of primary data include 200 households from the urban area of Addis Ababa. Household data collection took place between March and May 2006 with the help of two enumerators. Households were interviewed using the following methodology. On the basis of a structured questionnaire one enumerator interviewed the household members (in Amharic), while the other enumerator translated (into English), noted down and cross-checked the answers throughout the interview. Respondents were selected as follows. Among the 28 *woredas* (districts or sub-cities) of Addis Ababa we selected the one with the lowest, one with middle-low (randomly selected out of 13 potential candidates), one with middle-high (randomly selected out of 13 potential candidates), and the one with the highest income (see Table 1). The selection of the four

woredas was based on the households' expenditure survey published in 2000 by the Central Statistical Authority (CSA). For each selected *woreda* we identified two representative neighbourhoods.³ Interviews took place at every other house until 25 interviews per neighbourhood were accomplished (see Table 1).

When a household refused to cooperate it was replaced by another. In order to minimize the number of non-cooperating households, interviews were conducted during lunch and dinner time, as well as on appointment. Overall, the response rate was high (89%) except in the richest *woreda* where the enumerators were not allowed by compound guards to conduct interviews with 50% of the respondents. During the interviews, household heads were asked about their preferences, shopping frequency, and expenditures on different dairy products and retail outlets, as well as about the socio-economic characteristics of the household.

Clearly, the sample obtained is not representative for the whole country. Addis Ababa is the biggest and most developed national market, and offers the broadest choice range of dairy products and retail outlets in Ethiopia. However, we can assume that changes taking place in Addis Ababa are likely to be a good indication of the changes taking place in smaller urban areas, the difference mostly being in scale and time lags. As they keep growing, Ethiopian urban markets outside Addis Ababa are also expected to witness the rise of supermarkets and to be integrated into dairy value chains.

Like most household data, especially from developing countries, the primary data for this study is characterised by pros and cons that need to be taken into account. The main advantages and disadvantages of our sample are related to the stratification method adopted in selecting the households. This method emphasizes household variability to reduce biasness. While regression analysis is expected to benefit (in terms of goodness of fit) from the large variability across observations, descriptive analyses become more problematic as they may not reflect the typical consumer of Addis Ababa, but rather the average consumer for the four selected *woredas*. To overcome this problem, descriptive statistics are calculated using sampling weights, where appropriate. The weights that are used are reported in Table 1.

The rise of supermarkets

In Ethiopia, over the past decade, supermarkets have emerged as an important agent of change in the urban food retailing system.⁴ This phenomenon is the reflection of a global trend. While in Germany, the US, UK, and France the share of supermarkets in domestic food retailing has reached 70–80%, in less developed countries supermarkets are less dominant but growing fast (Reardon, 2005). In India, although the share of supermarkets in food retail is only 5%, supermarkets are growing by 18–20% a year (The Economist, 2006). India is considered to be among the top three most attractive countries in the world for foreign direct investment in retail. China had no supermarkets in 1989, and the food retail sector was almost completely controlled by the government. In 1990 the supermarket sector began to develop, and by 2003 had climbed to a 13% share in national food retail and 30% share of urban food retail, with 71 billion dollars of sales. The sector shows the fastest growth in the world, at 30–40% per year (Hu et al., 2004). In Latin America, between 1990 and 2002, the share of supermarkets in domestic food retailing rose from roughly 15% to 55% (Reardon and Berdegué, 2002).

³ Each *woreda* comprises different neighbourhoods. For each *woreda* we selected the two most representative neighbourhoods on the basis of the location, and the average size and condition of the houses.

⁴ In this paper we use the definition of supermarkets given by Neven et al. (2006) – “self-service stores handling predominant food, drugs and household fast-moving goods (FMCG) with at least 150 m² of floor space”.

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