



Livestock farm-enterprise models in the Kakheti region

Current arrangements and options for (re-)gaining size and competitiveness

The Agricultural Policy Research Center (APRC) at ISET Policy Institute

Study prepared for the MOLI project in Kakheti

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Introduction

MOLI stands for “Market Opportunities for Livelihood Improvement” in Kakheti. The project started in autumn 2012 and initially focused on milk and meat producers in the eastern part of the Kakheti region. It now operates in all eight municipalities of the region. In the second phase of the project, MOLI aims to reduce poverty in the Kakheti region while facilitating improved access to milk, beef and pork markets, and easing farmers’ access to inputs and services. Furthermore, MOLI focuses on cultivating a business enabling environment with the conviction that sustainability can only be achieved when the conditions for doing business are conducive, foresighted, and agreed upon by all stakeholders.

In its efforts to develop the livestock market system, so far MOLI has targeted small farmers with 5-10 cows and pigs. If those farms have no potential to survive or become larger, then new options have to be investigated. As resources are limited, a severe restructuring of the agricultural sector seems inevitable unless cooperation arrangements can buffer or soften such a drastic process. There is thus a need to prepare for a future that is still characterized by a number of smaller farmers, but who are well integrated in business arrangements with other market system players.

To better understand current farm enterprise models and their possibilities for addressing deficiencies in current livestock farming systems in Kakheti, MOLI has commissioned a study to document and analyze existing relationships between livestock farmers and enterprises in the region. The resulting models are characterized by cooperation between farmers and various types of entrepreneurs.

The goal of this study is to highlight successful models that have the potential to be replicated and contribute to the market-oriented production of cattle and pigs in the region. The analyzed and documented models should open perspectives for local entrepreneurs engaging in pre-industrial production, processing and trade of milk, beef and pork. The study presents options for overcoming the issues facing resource-limited, small-scale farming.

The study examined seven of the most common livestock farm-enterprise models in Kakheti. These seven models can be categorized into three main groups based on the actors involved in the cooperation:

- 1) Cooperation among farmers
 - Model 1: Farm cooperatives
 - Model 2: Renting schemes among farmers
- 2) Cooperation between buyers and farmers
 - Model 3: Subcontracting schemes
 - Model 4: Service agreements between SMEs and farmers
 - Model 5: Milk collection schemes
- 3) Cooperation between buyers, input suppliers and farmers
 - Model 6: Trilateral agreements
 - Model 7: Outgrowing schemes

The target audience of the study are business partners of farmers (buyers of meat and milk, input and service providers, including Information and Consultation Centers (ICCs) of the Ministry of Agriculture of Georgia, vocational schools, and livestock farmers that raise animals solely for income generation, but which operate on a pre-industrial level. The outcomes of this study will also serve as inputs for the various business forums that regularly take place in each municipality of the Kakheti region. Tackling the central issue of viable cooperation in regional livestock production contributes to the national policy dialogue, which MOI leads in close cooperation with Swiss Development Cooperation (SDC).

Methodology

The study had five main phases:

1. **Desk research.** The research team reviewed existing literature and information on prevailing successful livestock farming models in Georgia, with a focus on the Kakheti region. In addition, the standard gross margins for milk and meat production (provided by the MOI team) were validated.
2. **Refining the scope of research.** Based on the insights and outcomes of the desk research, the study team (in close collaboration with the MOI team) defined seven livestock farming cooperation models for further elaboration and analysis.
3. **Field survey.** In total, 34 interviews with different actors in the livestock market system (farmers, SMEs, input providers and service providers) were conducted in different municipalities of Kakheti. Three field trips for data collection took place in July-August 2016. The principal focus of the interviews was to collect information on cooperation arrangements between farmers; buyers and farmers; and buyers, input suppliers and farmers. The study team collected information on the main terms of cooperation agreements and identified the benefits and risks involved in these arrangements. To analyze the viability of businesses, the interviews were also used to collect detailed data on costs of production, sales and revenues.
4. **Data analysis.** The collected information was used to further elaborate the structure of the selected cooperation models, describe the nature (formal or informal) and main terms of agreements, and outline the main strengths and weaknesses of the models. The analyses looked at how different types of business models result in value sharing (risk, reward), skill development and technological upgrading, as well as investment decisions (e.g., contracting, which provides farmers with sufficient incentives to further expand their production).

To analyze the economic performance of the actors involved, the following financial indicators were employed in this study:

- Fixed Costs (in GEL). This includes labor, depreciation of buildings and equipment (5% for buildings and 20% for equipment is assumed).
- Variable Costs (in GEL). This includes costs such as transportation, electricity, milk payments, feeding and veterinary costs.
- Total Costs (in GEL). This is the sum of Fixed and Variable Costs.

- Revenue (in GEL).
 - Profit (in GEL). This is Revenue minus Total Costs.
 - Net Margin per unit (in GEL). This is defined as Profit/Quantity.
 - Net Profit Margin (in %). This is defined as Net Margin per unit/Unit Price.
 - Break-Even Point (in quantity). This is defined as Fixed Costs/Unit Price-Variable Cost per unit. The Break-Even Point shows how much an actor has to sell before he/she starts making profit. This is the point at which Revenues start to exceed costs (both Fixed and Variable Costs).
 - ROI (in %). This is defined as Profit/Total Cost. This indicator shows how attractive a particular activity is relative to other activities.
5. **Validation and dissemination of results.** The results of the study were validated in two workshops. The first took place in Tbilisi (at ISET) on 19 August 2016. At this workshop, the study team and MOLI representatives discussed the preliminary results of the study and outlined directions for further elaboration of the selected models. The second workshop took place in Telavi (at MOLI's office) on 2 September 2016. At this workshop, the ISET team presented all seven models and received detailed feedback on each. The economic assumptions and results were validated by MOLI representatives.

On 20 October 2016, the final results of the study were presented to the main stakeholders. The event took place in Kachreti and was attended by farmers, SMEs, input and service providers, representatives of the Information and Consultation Service centers of the Ministry of Agriculture of Georgia, MOLI representatives and the ISET team.

Model 1: “Farm cooperatives”

General description of the model

According to the Agricultural Cooperative Development Agency (ACDA) there are 127 registered cooperatives in the Kakheti region that account for 8.4% of all cooperatives registered in Georgia. Most of the Kakhetian cooperatives (28) are located in the Sagarejo municipality. Other municipalities with a lower number of cooperatives include Telavi (22), Akhmeta (19), Kvareli (19), Gurjaani (17), Lagodekhi (9), Dedoplistkaro (8) and Signagi (5). A total of 38 cooperatives are involved in livestock production. Each are quite diversified and pursue a wide range of activities, which include, but are not limited to, beekeeping, poultry, livestock, and feed production.

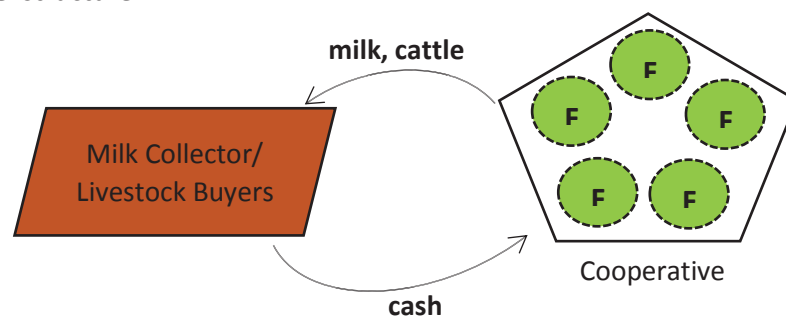
The cooperative movement among farmers became particularly active in Georgia from 2014. Both the government and international donors have encouraged farmers to upgrade their knowledge and expand production through cooperation. Since the adoption of the Law on Cooperatives in July 2013, more than 1,600 farmer-groups in Georgia have registered as cooperatives with the ACDA. Implementing this law was very important as it provides cooperatives certain privileges: they have easy access to agricultural equipment, and pay less tax. Farmers became interested in cooperation to enjoy these benefits. Nevertheless, it is too early to discuss the successes or shortcomings of cooperatives in Georgia. Both donors and government representatives admit that not all cooperatives can grow into strong, sustainable businesses.

The farm cooperatives model is based on interviews that were conducted with two cooperatives (both were relatively new) with the goal of observing how cooperation affects farmers’ decision making regarding production, sales and investments; to what extent economies of scale come into play; what the gains are in terms of organisation and logistics; and what synergies can be used among members with different professional backgrounds.

The model of farm cooperatives involves the following actors:

- Farmer-members of the cooperative,
- The cooperative (as a legal entity),
- SMEs (purchasing milk or livestock from the cooperative).

Figure 1.1. Model structure



According to the cooperative's charter, the main principles of cooperation stipulate that

- Involvement in the cooperative is voluntary,
- There is democratic management – regardless of the size of contribution, each member has one vote,
- Participants should make economic contributions to the cooperative.

Anybody aged 18 and above can become a cooperative member on the basis of an application submitted to the cooperative's board members.

The exclusion of a member from a cooperative might happen for the following reasons:

- The member's voluntary decision to leave the cooperative,
- Handing over the member's contribution to another member,
- The death of the member,
- Liquidation of the cooperative.

A member can leave a cooperative based on submitting an application to the board no later than 12 months prior. Cooperative members are not restricted from generating additional income from private activities in other fields that do not compete with the cooperative's activities.

All members make different contributions, but have equal rights in terms of votes (one member-one vote). Any profits are shared based on the size of contributions.

The boards of cooperatives are re-elected every three years.

Characteristics and economic performance of actors

The farm cooperatives model is built based on examination of two cooperatives established in 2014 and 2015. Both are involved in dairy cattle farming and fruit and vegetable growing. One cooperative comprises five registered members and the other has 12 members. One is headed by a 50 year-old women with higher education. Both cooperatives unite women and men who have different responsibilities (e.g. women milk the cows and men herd the animals), but all have the same status in the cooperative. In general, most cooperatives in Georgia currently consist of family members, close relatives and neighbors because they trust each other.

At the same time, cooperatives are ethnically diversified and include, for instance, Azerbaijani farmers who live on the farms and take care of cattle. In some cases, Azerbaijani farmers own land and rent it to the cooperative.

The major activity of one of the two cooperatives observed is selling cattle. Their cattle are kept together during pasture time, but in winter the cooperative members take animals into their individual farms. The number of cattle taken in by each member in winter depends on individual capacities. All the assets are collectively owned by the cooperative. The cooperative produces cheese for its members and occasionally sells it in the event of excess production. The cooperative does not sell milk and uses it to feed calves. It also generates additional income through sales of grapes, watermelons and pumpkins. Livestock and plant production are equally important for the cooperative.

The second cooperative observed sells milk to a local milk collector who collects on average 1.5-1.6 tons of milk per day from 80 farmers living in a 50 km radius. The collector then supplies the milk to small milk processors and is paid 0.65-0.70 GEL per liter (as of summer 2016). From the cooperative's standpoint, the milk collector represents a regular partner who buys milk from the cooperative.

Table 1.1 presents the main financial indicators of the actors involved in the model. More detail on the economic performance of the actors is presented in the Annex.

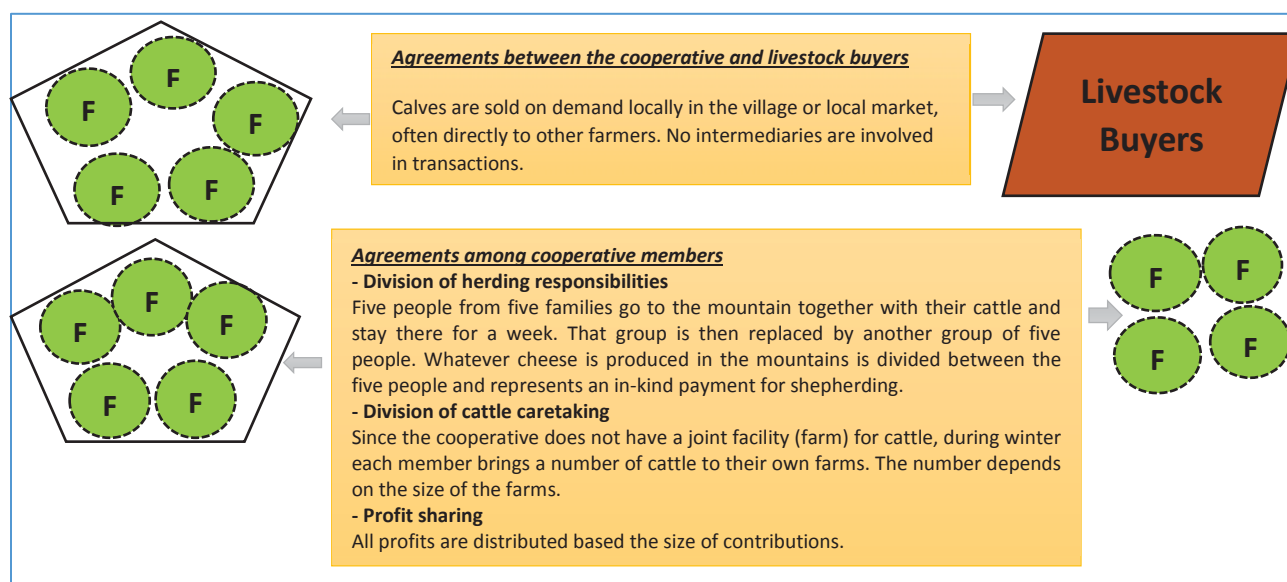
Table 1.1: Financial indicators of actors (annual figures)

#	Indicators	Cooperative (Selling cattle) (25 heads of cattle)	Cooperative (Selling milk) (44 heads of cattle)	Milk Collector (1.55 tons of milk per day)
1	Fixed Costs (in GEL) ¹	8,000	1,000	7,800
2	Variable Costs (in GEL) ²	7,500 (300 GEL/ animal)	13,200 (300 GEL/ animal)	344,900
3	Total Costs (in GEL)	15,500 (620 per cattle)	14,200 (322 per cattle)	352,700
4	Revenues (in GEL)	18,500	16,075	367,700
5	Profit (in GEL)	3,000	1,875	15,000
6	Net Margin per unit (in GEL)	120 (per animal)	0.234 (per liter)	0.027
7	Net Profit Margin (in %)	16.2%	46.9%	4.1%
8	Break-Even-Point (in quantity)	18 heads of cattle	5,500 liters of milk	193,900 liters of milk
9	ROI (in %)	19.4%	13.2%	4.3%

Characteristics of the cooperation model

Figures 1.2 and 1.3 present the main agreements of the model.

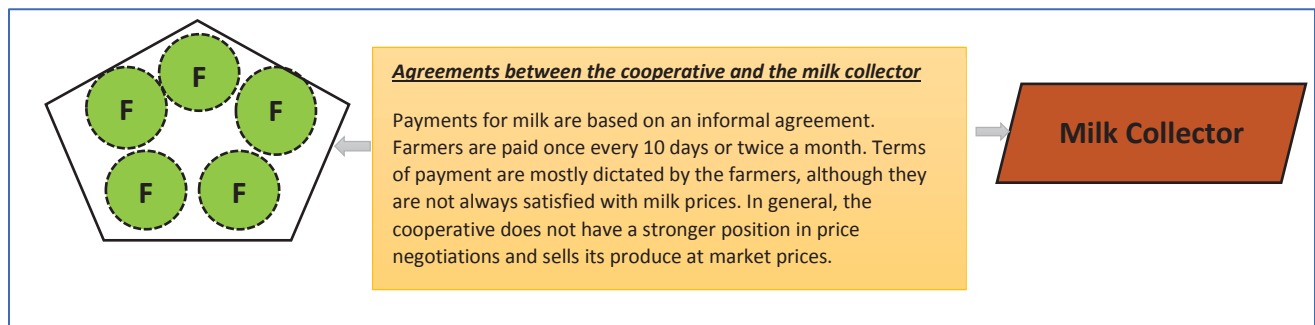
Figure 1.2. Agreements among cooperative members and between cooperatives and livestock buyers



¹ Includes depreciation of buildings and equipment, and land rent.

² Includes feeding and veterinary costs, input (milk) costs, and transportation cost.

Figure 1.3. Agreements between the cooperative and the milk collector



The cooperative sells calves at the local market and all sales are spot transactions occurring without any formal agreement with buyers. A charter regulates relationships among cooperative members in accordance with the main principles of cooperation.

Benefits of cooperation

- Cooperative members are united by family ties and trust each other.
- Better management of time and labor resources; cooperative members have divided responsibility for taking care of cattle. As a result, each member spends less time on this activity.
- Risk sharing among cooperative members. This means that the costs of a bad harvest are distributed among the cooperative members. Whereas an individual farmer would have to bear all the costs in the same situation.
- Exchange of information on prices, information technologies and policy changes. Cooperative members exchange information during regular meetings.
- Exemption from taxes for cooperatives. However, it should be noted that, in order to support agricultural production, the Government of Georgia does not levy high taxes on farmers and thus there is no significant gain associated with cooperation in this regard.
- The main benefit of formally registering a cooperative is to qualify for an EU ENPARD³ grant that allows the purchase of inputs (e.g., cattle).

Constraints

- Interdependence on each other.
- None of the cooperatives act as true cooperatives yet due to being relatively new.
- Lack of business orientation.

³ European Neighborhood Program for Agricultural and Rural Development.

Growth or diversification perspectives

The studied cooperatives are quite diversified as they are involved in both livestock and plant production. The cooperative that sells livestock can also start selling milk once it plants “alfalfa” to feed calves – the availability of alternative feed for calves would allow the sale of milk to a milk collector.

For the cooperative that sells milk, one strategy to capture higher value added would be to produce cheese. However, doing so would require access to cheese making equipment and following National Food Agency (NFA) requirements for food processing (e.g., Hazard analysis and critical control points (HACCP)).

Concluding remarks

Both cooperatives demonstrate very modest efficiency gains as a result of basic resource sharing and greater specialization in certain agricultural production and sales functions. More fundamentally, however, the formality of registering a cooperative with the ACDA does not seem to have much impact on the underlying technological production or marketing techniques used by cooperative members.

We did not observe any technological changes, product or process innovation resulting from cooperation. Moreover, the observed pattern of cooperation on joint summer-time pastures and herding arrangements merely continues a well-established Georgian tradition of informal farmer collaboration at the village level.

Likewise, farmers do not report any increase in their bargaining power vis-à-vis buyers and intermediaries resulting from cooperation. Lacking in size, they remain price takers and are not able to acquire long-term contracts with buyers. Instead, they continue selling their traditional products (unprocessed milk, calves, and fruit and vegetables) on the local market, which are subject to seasonal fluctuations in demand, product and input prices.

In at least one case, the main benefit of formally registering as a cooperative seems to have been qualifying for a grant from the EU ENPARD project that supports the development of farmer cooperatives. The grant was used to buy extra cattle, but, according to our interviews, the money was not well spent.

Ignoring the nearly 70 years of forced, Soviet-era collectivization, the cooperative movement is a relatively new phenomenon in Georgia. It may thus be too early to pass final judgment on the usefulness of this model, its sustainability beyond the initial incubation period afforded by ACDA attention and ENPARD funding, or the potential for replicability and scaling up.

Notwithstanding the limited success of the two cooperatives examined as part of this study, it is clear that the potential of the model critically depends on the quality of individual leadership: on the one hand, on vision and strategy, and on the other, on the ability to lead and manage cooperation. A critical question for farmer cooperation is whether it can help overcome the existing issue of fragmentation and generate badly needed economies of scale in production, post-harvest activities, product innovation, branding and marketing. The latter three – product innovation, branding and marketing – are

particularly important to ensure that any improvement in agricultural productivity is not self-limiting due to increased competition in small local markets for traditional, low value added products.

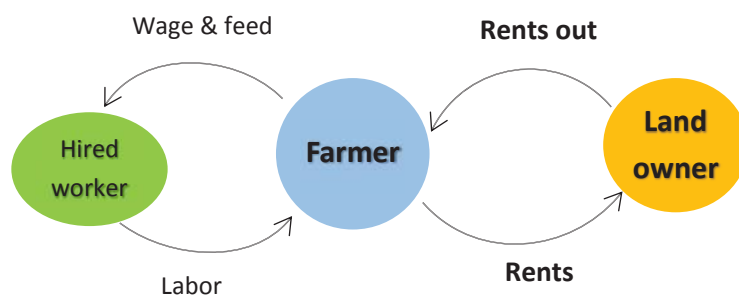
Model 2: “Renting schemes among farmers”

General description of the model

This is a very simple model applicable to small-scale dairy production in a typical Georgian village setting. It involves three main types of actors:

- Land owners who rent out land (pasture and arable).
- Farmers who own some agricultural land and cows, but who have to hire labor to take care of dairy farming activities.
- Relatively poor farmers/workers (often Azerbaijani) who are willing to sell labor in exchange for a modest cash allowance as well as feed and pasture for their cows.

Figure 2.1. Model structure



Characteristics and economic performance of actors

- **Land Owner.** A man aged around 70 with an education in engineering, owns 104 ha of land (32 ha are orchards).
- **Farmer.** A man aged around 60 with an education in engineering, employing two people and owning 12 ha of land used for cultivation. He also rents an additional 70 ha of land for pasture and owns 12 cows and 22 calves.
- **Hired worker.** A man aged around 45 with secondary education. Owns 11 cows and gets a salary of 300 GEL per month.

Tables in the Annex provide more details on the personal characteristics and assets of the interviewed actors.

Table 2.1 presents the main financial indicators of the actors involved in the model.⁴

Table 2.1. Financial indicators (annual figures)

⁴ The financial indicators of the land owner are not presented, because the money that he earns as rent is an insignificant part of his total revenue (the majority of his revenues come from his orchard business).

		Farmer (From dairy business, owns 12 cows)	Hired Worker (Owns 11 cows)
1	Fixed Costs (in GEL) ⁵	7,200	0
2	Variable Costs (in GEL) ⁶	1,700	0
3	Total Costs (in GEL)	8,900	0
4	Revenues (in GEL)	12,000 (selling milk)	8,500 (selling milk + salary)
5	Profit (in GEL)	3,000	8,500
6	Net Margin per unit (in GEL)	0.27	1.34
7	Net Profit Margin (in %)	42.0	178.35
8	Break-Even-Point (in quantity)	14,700	NA
9	ROI (in %)	33.0	NA

Fixed and variable costs for the hired worker are not considered in the calculations because the farmer is providing feed and shelter for his animals.

Characteristics of the cooperation model

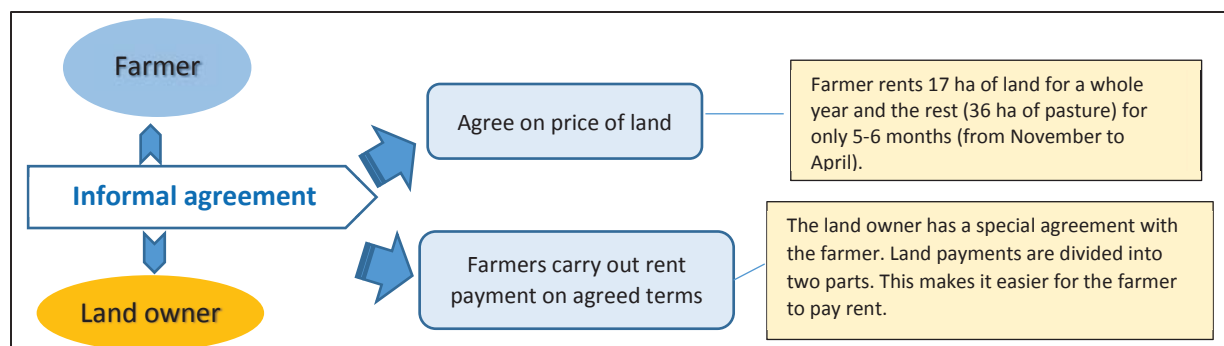
Agreements

Figures 2.2 and 2.3 describe the agreements between the different actors of the model.

The arrangement between land owners and farmers is informal and totally based on trust. They have verbal agreements, including on the price of land to be paid by farmers.

In the case study that this model is based on, the farmer rents 53 ha of land from one land owner. Of this, 17 ha are rented for pasture for the entire year, while the remaining 36 ha are rented for only five to six months (from November to April). The latter is arable land and land owner uses it himself for maize production (from May to October). The yearly price of renting 1 ha of pasture is 100 GEL. The rental price for 1 ha of arable land is 55-60 GEL (for the 5 months). Payments happen in two tranches: the first part is paid in November and the second in February. There is no special agreement regarding how the farmer should take care of the rented land and in what condition the land should be in after five months of renting.

Figure 2.2: Agreements between farmers and land owners

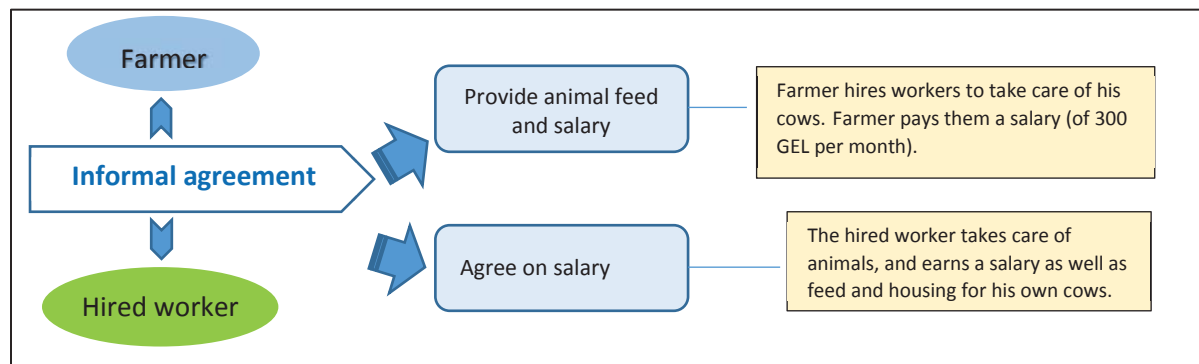


⁵ Fixed cost includes the cost of building and equipment, labor cost and rent payment.

⁶ Variable cost includes the cost of feeding animals.

In this particular case, this model also includes the component of a hired worker. The farmer hires another farmer (as a hired worker) to take care of his cattle. There are synergies accumulated in this agreement as the hired worker has his own cows, who benefit from the shelter and feed provided by the farmer. In this case, two actors (the farmer and hired worker) are benefiting from the renting agreement. In general, these types of arrangements are widely present in the Kakheti region.

Figure 2.3: Agreements between farmers and hired workers



Significance and importance of the agreement

The relationships between all actors are strictly informal and based on trust. The trust is conditioned by the fact that all three live in nearby villages and know “where to find each other” in the event of non-payment. All “contractual” payments are continuously updated in line with the going market prices for milk, pasture and feed.

Growth or diversification perspectives

There are constraints in the renting model that hinder its further development. On the one hand, demand side constraints (insufficient demand for milk on the local market) limit the opportunities for expansion. As there is low demand for milk there is no motivation for the farmer to rent more land.

On the other hand, there are supply side constraints in the model. Access to qualified veterinary services is a major bottleneck. There is no veterinary clinic in the village or the nearby villages. The current maximum productivity level of most dairy farms is about 5 liters of milk per day per cow (achieved in the spring when prices are close to the annual minimum of 0.50 GEL a liter), which translates into a maximum monthly revenue of 900-1,200 GEL. At this level of revenue, the farmer cannot afford paying the going wage of 500-600 GEL for Georgian workers and instead has to hire two Azerbaijani shepherds through a complicated deal involving a smaller cash payment (of 300 GEL per month) and barter for access to feed, pasture and a barn.

Different renting agreements exist in Kakheti. In our case, the farmer renting out his land (the land owner) and the one employed (the hired worker) are two different persons. However, there are some successful examples in Kakheti (not in livestock production) where the land owner and the user are the same person. This is the case in Schuchmann’s vinery. Farmers who cultivate their own land would likely use the land in a more sustainable way (e.g., no overuse).

Concluding remarks

This model appears to be very common in Kakheti, and is therefore replicable in the current agricultural setting. It gives rise to modest efficiency gains in production through specialization (in crop or dairy farming), and two types of synergies: (i) between crop production and cattle breeding (realized through seasonal pasture rental arrangements); and (ii) between owners of land (who are short on labor), and landless farmers (often of Azerbaijani descent) who can offer their labor in exchange for pasture and feed from their own cattle.

However, as this model is grounded in unequal access to land, outdated technology and unsustainable agricultural practices, it is not sustainable in the long run. The absence of awareness and knowledge about proper agricultural practices and the lack of land rental arrangements between crop producers and cattle breeders often leads to overgrazing and land degradation. The highly inefficient dairy production part of the model is only sustainable to the extent that (extremely) cheap labor, as offered by landless Azerbaijani farmers, remains available. This arrangement would collapse with even a small increase in wages (unless other household members step in as dairy workers), a reduction in the price of milk, or with the introduction of proper food safety regulations.

The rental arrangements observed in this model do not lead to scaling up and, therefore, fail to address any of the *external* constraints faced by Georgian smallholders. Key among such constraints are access to harvesting equipment (the waiting time for the relevant machinery provided by the state-owned Mekanizatori exceeds any reasonable norms for small and remote plots), qualified veterinary services and artificial insemination.

However, it is clear that the main constraints in this model are not *external* but rather are the professional attitude, knowledge and skills of the Georgian farmers. Each participant in this model could have achieved better results by making very small adjustments in technology and by improving the timing of harvesting decisions, soil treatment, storage and post-harvest activities. Instead of making investments in their core agricultural activity (dairy farming), we observed a tendency among farmers to constantly venture into new activities (such as broiler farming), and to do so with very little preparation, no learning and without even a minimal investment in infrastructure. For example, the facilities we observed do not provide even a minimum level of protection for the animals, affecting their health and leading to extremely low productivity levels.

Finally, similar to the farmer cooperation model, this model also faces binding constraints on the demand side. Low-productivity dairy farms are supplying milk to small producers of traditional cheeses that are sold in local village markets. Ultimately, the small capacity of these markets limits the opportunity for expanding both milk and cheese production. Due to perishability, even a small increase in milk and cheese supply could cause their prices to collapse. The only way to break out of this vicious circle is to either sell milk to processors supplying the national market (which is not really an option given the meagre and unstable quantities produced by the small family farms in this model) or shift to the production of higher quality *branded* cheeses and other dairy products that could be directly marketed in Tbilisi (to hotels, restaurants or retail chains).

Model 3: “Subcontracting schemes”

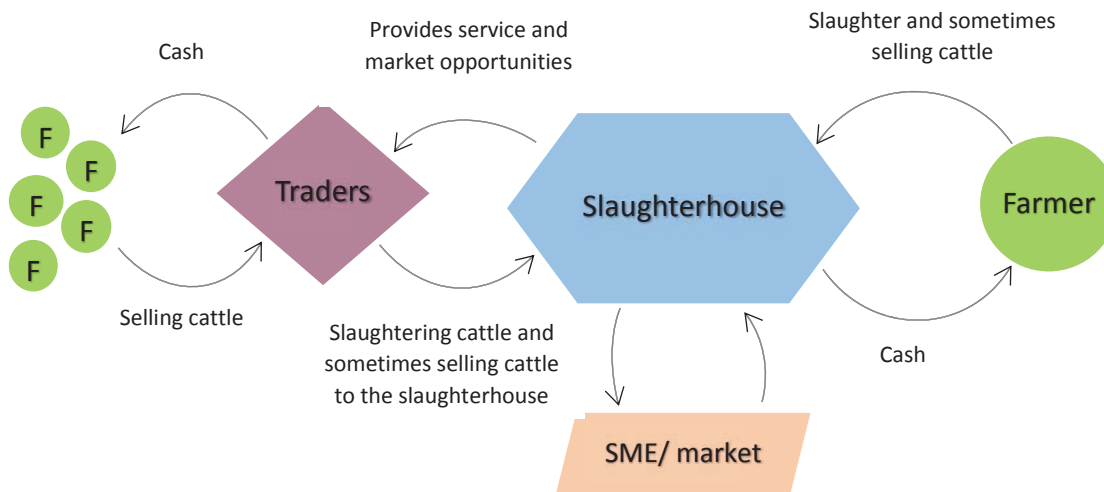
General description of the model

This model is about commercial beef cattle production. The model involves three different actors:

- The slaughterhouse,
- Farmers,
- Traders.

This model involves small and large farmers who repeatedly sell cattle. Once beef cattle reach an adequate size (or dairy cows no longer provide an acceptable amount of milk), they are sold to traders for slaughter. Traders go from village to village to buy cattle. Sometimes, when farmers need to sell cattle they call traders a couple of days in advance. The slaughterhouse has an oral agreement with traders/butchers who collect animals in different villages and bring them to the slaughterhouse. The slaughterhouse provides a slaughtering service, and often helps find new market opportunities for traders. The meat is sold in local or regional markets.

Figure 3.1. Model structure



Characteristics and economic performance of actors

The slaughterhouse. Managed by a middle-aged man with an agro-engineering background. Has eight years' experience in the registered slaughtering business, owns 20 ha of land for cultivation, and employs 12 people.

Trader. A middle-aged man with higher education. Owns 3 ha of land and six cows, has four cars and uses them to transport meat; buys at least one cow and 11 calves a day.

Farmer. A man aged around 40 with vocational education, renting 120 ha of land for cultivation, who owns 60 cows (and 54 buffalos), and employs three people.

Tables in the Annex provide more details on the personal characteristics and assets of the interviewed actors.

Table 3.1: Financial indicators of actors (annual figures)

		Slaughterhouse		Trader	Farmer
		From Service (Slaughtering 1,000 calves and 870 cows per month)	From Selling meat (450 tons of meat)		
1	Fixed Costs (in GEL) ⁷	87,200	87,200	4,600	28,500
2	Variable Costs (in GEL) ⁸	50,400	322,500	2,034,000	20,300
3	Total Costs (in GEL)	137,600	409,700	2,038,600	48,800
4	Revenues (in GEL)	253,000	1,299,000	2,070,000	82,000
5	Profit (in GEL)	115,000	890,000	32,000	33,000
6	Net Margin per unit (in GEL)	5.1	39.6	7.3	27.6
7	Net Profit Margin (in %)	51.3	4.9	1.0	3.9
8	Break-Even-Point (in quantity)	11,200 (Cattle)	111 (Cattle)	20 (Cattle)	40 (Cattle)
9	ROI (in %)	83.6	217	1.5	67.9

Table 3.1 presents the main financial indicators of the actors involved in the model. In the case of the slaughterhouse, we divided its activities into two parts: one is only providing services (including slaughtering, cleaning and cutting) and the other is selling meat in different market places in Tbilisi and in “Carrefour” supermarkets. Selling meat can be considered as an additional opportunity for other slaughterhouses as well. More details on the economic performance of the actors are presented in the Annex.

Characteristics of the cooperation model

Figures 3.2 and 3.3 describe the agreements between the different actors of the model.

Figure 3.2: Agreements between slaughterhouses and traders

⁷ Fixed cost includes the cost of buildings, equipment and labor.

⁸ Variable cost includes the costs of feed, veterinary services, electricity and water.

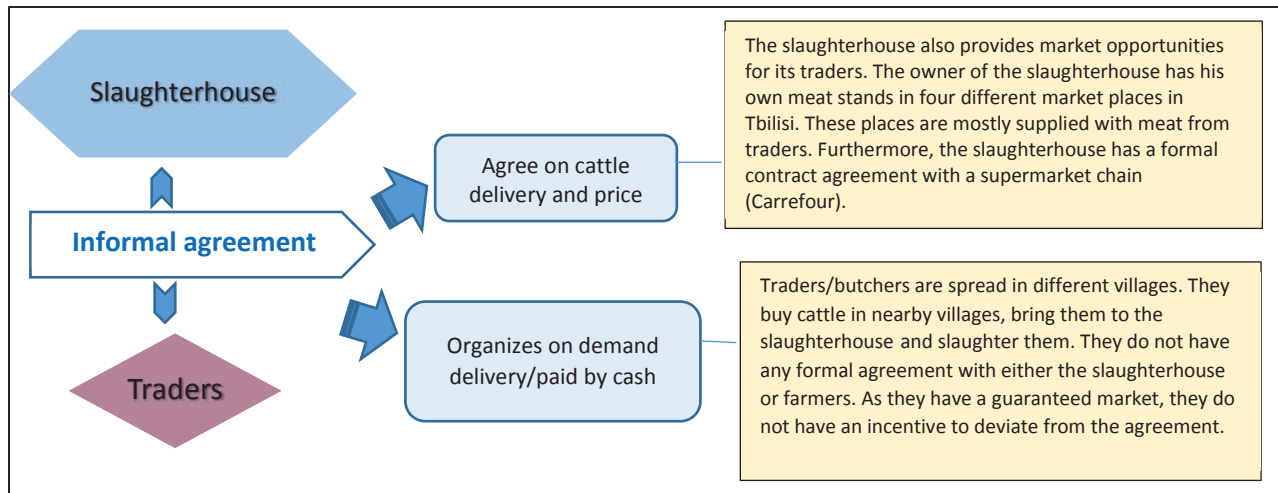
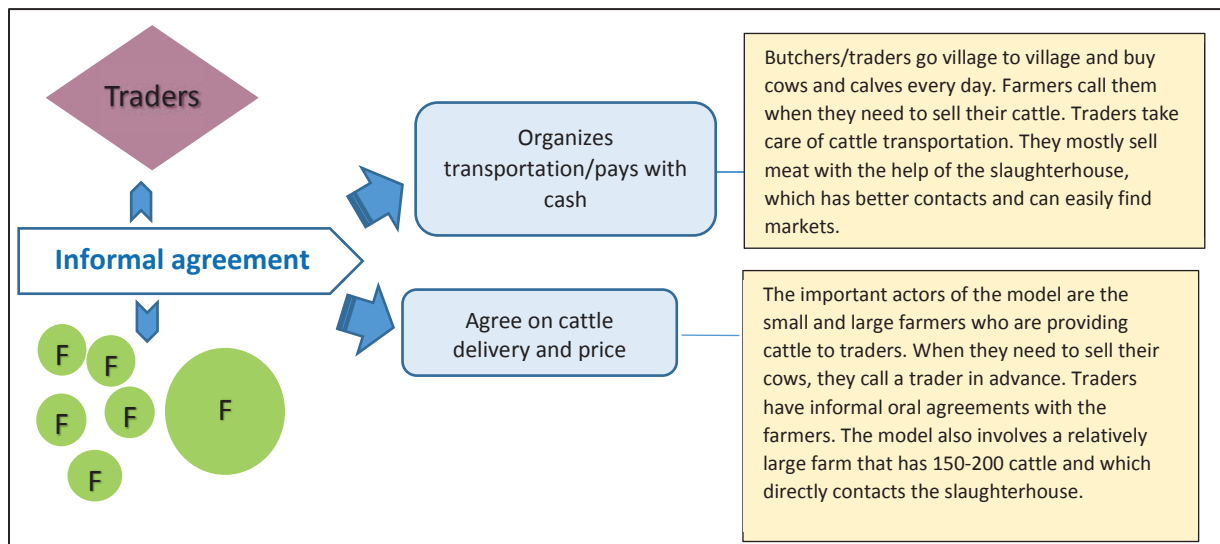


Figure 3.3: Agreements between traders and farmers



Significance and importance of the agreement

There are **informal agreements** (verbal arrangements) made between both the slaughterhouse and traders/butchers and traders/butchers and farmers. These arrangements are beneficial for all actors in the model. The actors argue that they do not need formal agreements.

The slaughterhouse is the **key actor** in the model. It provides services that start from slaughtering, cleaning, and cutting meat. Moreover, it provides the formal stamp that is needed to sell meat in the market. The most significant aspect of the model is the provision of market opportunities by the slaughterhouse. This explains why 60 butchers have been cooperating with the slaughterhouse for more than eight years without any formal agreement. Of the total number of butchers involved, 18-25 are permanent suppliers of cattle. They mostly deliver meat to “Carrefour” but also supply bazaars in Tbilisi.

The manager of the slaughterhouse usually tests butchers/traders on their abilities to deal with their responsibilities (this is mostly about the regularity of the supply of healthy animals). Other butchers (about 40) sell their meat in local markets in Kakheti. All butchers have been cooperating with the slaughterhouse for years and trust in this arrangement.

The only **formal agreement** is between the slaughterhouse and the “Carrefour” supermarket. The duration of the contract is for one year. This cooperation started in 2015. The transaction terms are that the slaughterhouse delivers more than 1 ton of meat every week and “Carrefour” is obliged to pay the slaughterhouse on the 24th of each month. The quality of meat is guaranteed and checked by a vet in the slaughterhouse. “Carrefour” assures quality control with its own vets as well. The only thing that the butchers are not happy with is the meat price set by “Carrefour”. That price is usually considerably lower than the market price. However, the slaughterhouse does not want to lose this market opportunity without first finding better alternatives. The terms of the contract are very strict and in the event of any violation either party can take the other to court. Neither of the parties has yet violated the agreement.

The slaughterhouse often provides free services (slaughtering and cleaning of cattle) for local people in neighboring villages. This behavior gains people’s trust and loyalty, ensuring they will not use the services of any other slaughterhouse. It is also a matter of reputation for the slaughterhouse; if sick cattle are slaughtered outside of the slaughterhouse this might negatively affect the reputation of the village (and thus the slaughterhouse).

Risks

The major risks involved in this model are the following:

- To achieve EU standards, the quality of the meat should be adequately checked by the slaughterhouse. As the slaughterhouse has an agreement with Carrefour, it should assure good quality of meat in the chain. Quality risks are eliminated by the slaughterhouse using a hired veterinarian from the National Food Agency. This vet checks every cow slaughtered in the slaughterhouse and then issues a stamp that proves that the cow was healthy.
- Another risk is related to a supply-side shortage. It could happen that traders cannot provide a sufficient amount of cattle. As the slaughterhouse has agreements with Carrefour, different bazaars, shops and restaurants, it needs to satisfy their daily demands. In such cases, the slaughterhouse has a backup plan to ensure it does not break these agreements. The slaughterhouse has 100 of its own cows that they can slaughter in order to continue the promised supply. This is a kind of insurance to avoid supply risks coming from farmers and butchers.
- Marketing risk is a significant risk factor. A lot of farmers and traders complain that they have problems selling their products. The slaughterhouse provides market opportunities to traders and eliminates this risk.

Growth or diversification perspectives

Demand for meat is increasing in Georgia. According to interviews, there is even the possibility to export meat to Dubai (there are buyers from Dubai who want to import 6 tons of meat a week, but they will

start with 1 ton). To meet this, the slaughterhouse will soon be delivering meat to Tbilisi Airport. Another form of upcoming cooperation is planned with “Fresco” supermarket. To satisfy new demand, 60 butchers will be sufficient. They will be able to deliver much more cattle to the slaughterhouse than they do currently.

The slaughterhouse can slaughter 80 cattle a day. They cannot slaughter more because they do not have enough refrigerators. Only 50 cattle can fit in the existing refrigerators (the remaining 30 cattle is usually sold just after slaughtering). They are going to buy new refrigerators and other necessary machinery to expand their business.

Concluding remarks

This is a complex model that has a large slaughterhouse at its center. The slaughterhouse provides extensive aggregation and value adding services (food safety control, butchering, meat cutting, refrigeration, connections to large buyers, transport and even retail). The slaughterhouse is connected to a large network of intermediary buyers of cattle and, through them, to hundreds of small and medium-size cattle breeding farmers in the Kakheti region.

The sheer size and market dominance of the slaughterhouse operation (80 cattle/day, limited by the installed refrigeration capacity) gives it the power – in principle, but increasingly in practice – to set standards and force them upon its suppliers. The standards we have in mind concern the basic norms of ‘civilized’ business conduct (e.g. reliability), sound farming practices (animal health, quality of feed, hygiene, etc.) and compliance with modern food safety regulations.

Not only is this model sustainable and scalable, but it also represents the future of the Georgian cattle breeding industry as the country proceeds to adopt European food safety standards. These standards will be very costly to implement and enforce in a fragmented environment that includes many small butchereries lacking the relevant skills and infrastructure.

Small local butchereries might continue to exist in Georgia, but they will not be able to expand their market share beyond small local village markets. Meat consumption will continue to grow in Georgia as the country’s income per capita approaches Eastern European levels. However, local demand will inevitably shift towards higher quality and safer meat products sold through the modern retail sector. Large retail networks (such as Nikora, Carrefour, Foodmart, etc.) already dominate Tbilisi; moreover, due to increasing competition in the retail sector, they are rapidly expanding their reach to the countryside. This trend – the transition from unregulated open air markets to modern retail – is only likely to accelerate in the future, as Georgia proceeds to enforce food safety regulations throughout the country.

The same is true for the potential impact of Georgia’s growing meat processing industry, hotel and restaurant chains. All of these will have to rely on large scale aggregators (slaughterhouses and wholesalers of cattle) to ensure a steady supply of high quality and safe meat. And it will be through the impact of these buyers and aggregators that modern business and farming practices will trickle down to Georgia’s cattle breeding farmers, creating demand for and benefiting from the increased presence of

high quality service providers (veterinary clinics, providers of artificial insemination, feed, etc.), who are the main targets of MOLI interventions.

Leaving this futuristic vision aside, it should be noted that, at present, the slaughterhouse's impact on the small-scale cattle breeding industry remains limited. All linkages and 'contracts' in the model are strictly informal. Although these contracts are based on mutual interest, and therefore have lasted for many years, these can be broken at any moment, weakening the incentives of upstream suppliers to make costly investments in infrastructure and skills.

From the point of view of small Kakheti-based cattle breeders, the presence of large aggregators (and slaughterhouses), that are able to link them to large buyers and the national retail market, expands the overall market opportunities available to them. Facing larger aggregate demand, farmers can scale up production and invest in their skills and infrastructure. That said, the beneficial impact of the model is limited by weak competition and monopolistic bottlenecks in the meat value chain. The market dominance of large buyers (such as retail chains) and aggregators (such as modern slaughterhouses) implies that a relatively small share of the additional value created in the chain stays with the small farmers, leaving them with less money to consume, save and invest.

Model 4: “Service agreements between SMEs and farmers”

General description of the model

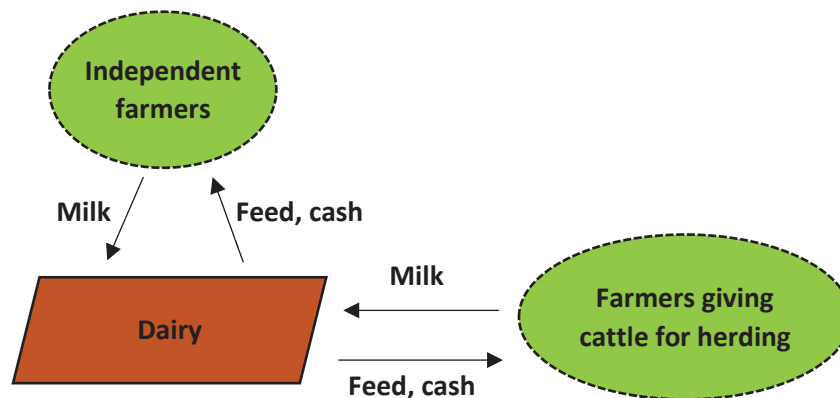
There are various schemes of herding cattle in Kakheti. Often, a farmer (cattle owner) employs a person to herd their cattle; in other words, the farmer buys a “service” from a herdsman. Cattle owners (temporally) give away their animals for different reasons, such as the lack of pasture, lack of time to look after cattle etc. Reimbursement depends on the season. In summer, the farmer pays a herdsman in cash or in terms of processed products (milk, cheese and butter). Whereas in winter, the herdsman is given a calf for taking care of the animals. In some cases, a dairy has land and farm buildings and herds the “borrowed” cattle on its farm.

This model involves the following actors:

- A dairy or farmer (herding cows),
- Farmers (temporally giving cows for herding).

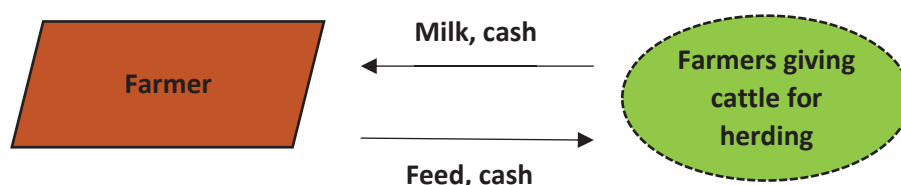
The dairy organizes cattle on its farm, it hires labor to take care of the cattle and provides feed and services (e.g., veterinary and insemination services). The milk produced on that farm is bought and processed by the dairy. The costs of feed and services provided by the dairy are subtracted from milk payments. By keeping cattle at their farm (herding cattle) the dairy ensures a stable supply of milk. In addition from the cattle located at the farm, the dairy receives milk from independent farmers operating outside the farm.

Figure 4.1. Model structure 1 (Dairy herding cattle)



Like the dairy, independent farmers/herdsmen can also take care of cattle, but the terms of the herding agreements are different. If a cow is not milking, the owner pays the herdsman 20 GEL per cow each month, whereas, in the case of a milking cow, the milk yield from 20 days is received by the herdsman and the yield of 10 days goes to the cow’s owner.

Figure 4.2. Model structure 2 (Farmer herding cattle)



Characteristics and economic performance of actors

The dairy. Managed by a man aged around 60 with higher education. Produces sulguni cheese, nadughi and butter and sells to several shops in Tbilisi. The products are mostly sold to middlemen at markets such as “Navtlughi”, “Gldani” and “Vagzali Bazaar”. Despite the attempt to arrange agreements with the Goodwill and Sante chains, the dairy could not succeed in building partnerships with them.

The farmer “borrows” cows from four people. The difference between the dairy and the farmer herding cattle is the scale of activity. Of course, farmers who herd cows operate on a smaller scale than the dairy, and the number of herded cattle and the number of hired labor are less when an individual farmer provides herding services to cattle owners. The farmer occasionally sells cows, once or twice a year, while the major source of income for the farmer comes from selling milk to the local milk collector.

Table 4.1 presents the main financial indicators of the actors involved in the model. More details of the economic performance of actors are presented in the Annex.

Table 4.1: Financial indicators of actors (annual figures)

#	Indicators	Dairy (70 heads herded)	Dairy (without herding)	Farmer herding cattle (20 rented heads)
1	Fixed Costs (in GEL) ⁹	47,600	47,600	100
2	Variable Costs (in GEL) ¹⁰	218,300	220,500	7,500
3	Total Costs (in GEL)	265,900	274,100	7,600
4	Revenues (in GEL)	314,000	314,000	10,800
5	Profit (in GEL)	48,100	39,900	3,200
6	Net Margin per unit (in GEL)	1.00	0.87	0.37
7	Net Profit Margin (in %)	15.3%	12.7%	61.6%
8	Break-Even-Point (in quantity)	22,900 kg of processed products ¹¹	25,100 kg of processed products	8,500 liters of milk
9	ROI (in %)	18.1%	14.5%	41.3%

The revenue figures in the case of the dairy with 70 heads herded and in the case of the dairy without herding are the same (314,000 GEL), but herding brings more profit due to the lower transportation cost for milk. In addition, savings come from minimizing milk losses because less (uncooled) milk gets spoiled.

⁹ Includes labor and depreciation costs.

¹⁰ Includes costs of electricity, feeding and veterinary services, input (milk), and transportation.

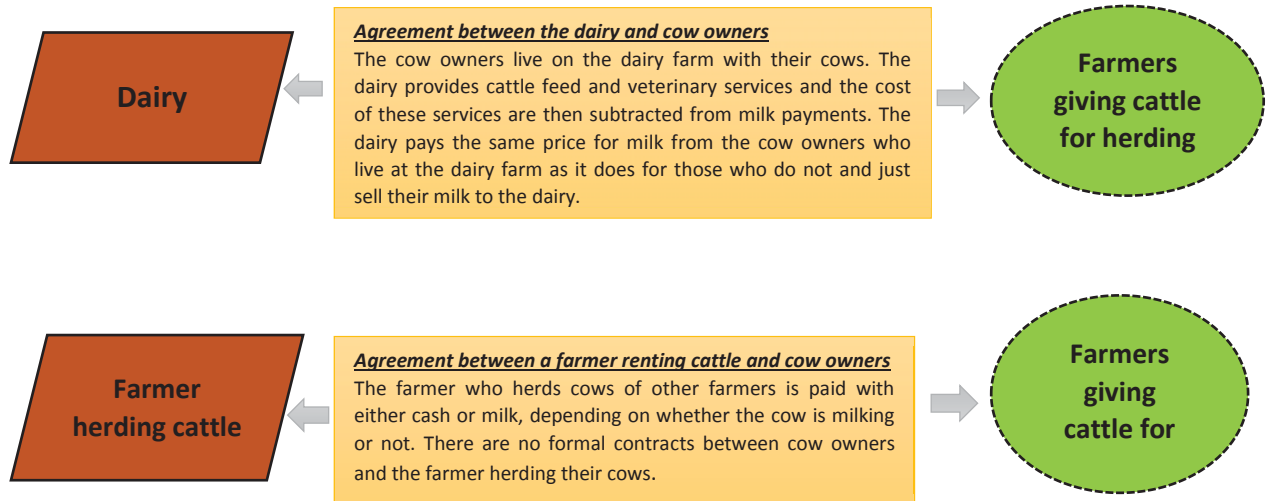
¹¹ Cheese, butter and nadughi.

Characteristics of the cooperation model

As the dairies reported, there are no formal contracts in the model. The relationships are based on trust. There were instances when partners did not fulfill their obligations (e.g. disappeared with money and not providing milk), but these are relatively small issues that are not worth spending money and time on resolving.

The dairy records all transactions and keeps track of all informal arrangements with farmers.

Figure 4.3. Agreements



It should be mentioned that the costs of improper treatment of cattle and/or losses are supposed to be shared between the dairy and the farmers.

Growth or diversification perspectives

The availability of land (both arable and pasture) for herding cattle is an important aspect that makes this model work and grow.

Some dairies may also decide to invest in breed improvement. According to the interviews, some dairies would be willing to buy improved breeds of cattle if the government were to subsidize the purchase. If the dairies were able to increase their milk supply in this way, they would no longer need to borrow cattle. This would restrict the opportunities for those small farmers who temporarily provide animals for herding.

Concluding remarks

While all of the analyzed relationships are based on informal “service agreements”, these are very different as far their efficacy and potential for replicability are concerned.

The simple model whereby farmers outsource the herding of their cows (or other animals) to herders who look after them during the summer represents a well-established Georgian tradition. Grounded in the informal division of labor and specialization, this model leads to modest efficiency gains, and is likely to be sustained. However, it does not lead to any changes in technology, product or process innovation; nor does not expand the market for Kakhetian livestock and dairy farmers and, for that reason, it is bound to have limited scaling up potential.

The variant of this model whereby farmers outsource the feeding and milking of their cows during the winter to a medium-size dairy producer – and thereby essentially stop taking care of their animals – may be seen as an intermediate step on the path that would lead small semi-subsistence farmers out of agriculture. Lacking in means (infrastructure, financial and human resources), small farmers may use this option as a temporary survival strategy, allowing them to allocate more time to non-farm activities. The source of (modest) efficiency gains in this model are specialization, lower transportation costs and economies of scale in dairy farming.

Finally, a somewhat more promising arrangement involves larger dairies using economies of scale in feed production and storage, as well as in the provision of veterinary and artificial insemination services, to create and maintain a network of milk suppliers. This model has the potential to generate significant efficiency gains by integrating smallholders into modern dairy supply chains and causing a ripple effect of technological upgrades, including improvement in business conduct (reliability, timely delivery, consistency and communication) and professional farming standards (raw milk quality, animal hygiene and health, and adherence to modern food safety regulations).

In more than one way, this latter model is similar to the subcontracting model used by large slaughterhouses to connect small-scale cattle breeders to the modern retail sector. In both models, large buyers wield sufficient (local or regional) market power to create a stable network of suppliers, stimulate improvement in performance, and raise their production standards. Being inherently interested in stabilizing and increasing their supply base, large buyers/processors have strong incentives to maintain cordial relations with their suppliers and provide assistance with feed, financing, veterinary care and other essential services. This sustainable, win-win aspect of the model makes it a good candidate for replication and scaling up in Georgia’s case.

Model 5: “Milk collection schemes”

General description of the model

This model is about milk collection schemes in the Kakheti region. The following actors are involved:

- SMEs (milk collectors or dairies),
- Intermediaries, collecting milk from small farmers (3-8 liters per day),
- Dairy cattle farmers.

Two different versions of this model were identified in this study:

- **Version A: A specialized milk collector arranges milk collection.** Relatively large milk collectors hire drivers and collect milk (3-5 tons a day) from about 100 medium-sized farms (each producing 20-120 liters a day). Payments are made on a weekly or bi-weekly basis. Advanced payments are very common. In addition, the milk collectors often help farmers organize feed for the winter. Milk collectors ask feed providers to supply farmers without payment, they will then deduct the feed costs from milk payments and pay the feed providers later. This type of coordination is needed because feed producers trust milk collectors more than farmers.
- **Version B: An intermediary arranges milk supply.** Dairies engage intermediaries (IM) for collecting milk from farmers. Such IMs have groups of 25-35 small farms (each producing 3-8 liters of milk per day) and collect about 200-250 liters of milk a day in summer and 100 liters of milk a day in winter. Dairies pay the IMs 0.05 GEL per liter of milk collected. In most cases, transportation costs are covered by the dairies.

Figures 5.1 and 5.2 describe the two varieties of milk collection schemes.

Figure 5.1: Model structure, Version A

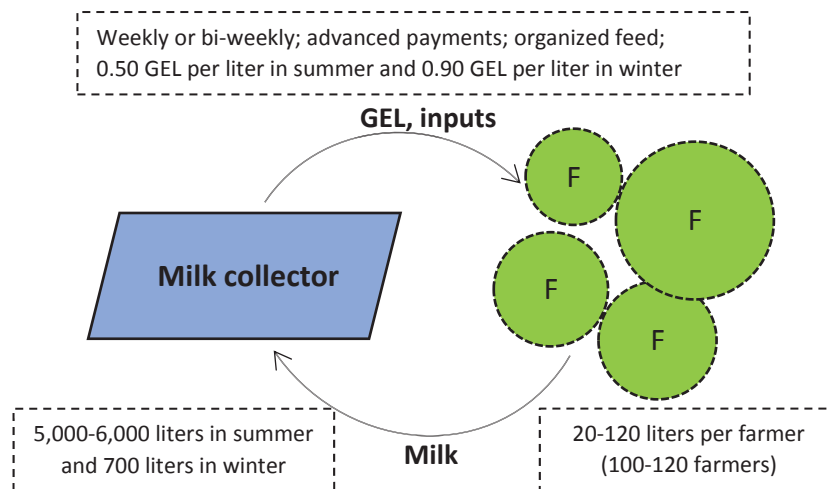
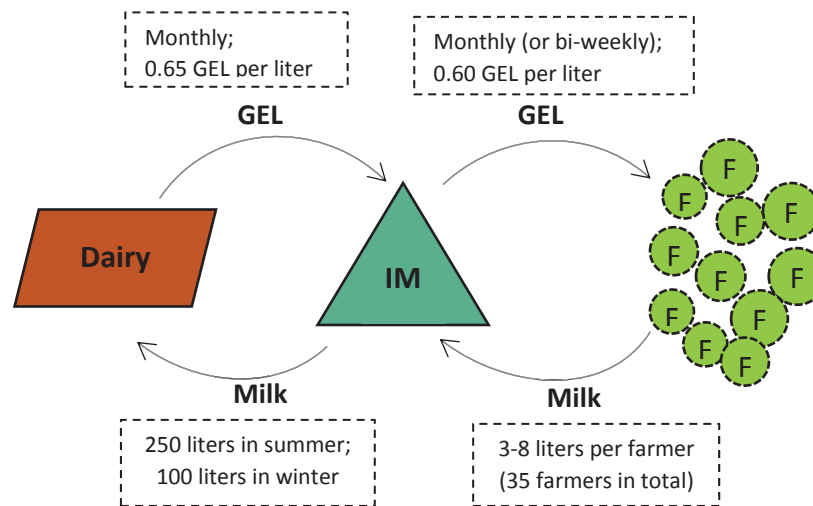


Figure 5.2: Model structure, Version B



Characteristics and economic performance of actors

Dairies

- A dairy managed by a man aged around 35, with higher education. Has three years in a registered dairy and has assets with a value of 170,000 GEL. Employs three people, produces around 30,000 kg of cheese per year, and earns about 0.90 GEL on every kg of cheese produced.
- A dairy managed by a man aged around 30, with secondary education. Has assets with a value of 200,000 GEL and employs eight people, produces around 85,000 kg of dairy products (75,000 kg of cheese and 10,000 kg of other products) per year, and earns 0.30 GEL on every kg of dairy product produced.
- A dairy managed by a man aged around 30, with higher education. Has assets with a value of 90,000 GEL and employs five people. Produces around 8,000 kg of special cheese (with an average sale price of 20 GEL) per year, and earns 4 GEL on every kg of cheese produced.

Milk collectors

- The specialized milk collector. A man aged around 60, with higher education and fifteen years of experience in a registered milk collection enterprise. Has assets with a value of 100,000 GEL and employs six people. Collects around 1,000,000 liters of milk per year, and earns 0.04 GEL on every liter of milk collected.
- The Intermediary (IM). A man aged around 50, with secondary education. Owns a car, collects around 65,000 liters of milk per year, and earns 0.03 GEL on every liter of milk collected.

Farmers

- A dairy cattle farmer – a man aged around 25, with higher education. Owns 50 cows (30 milking; non-local breeds), employs four people, sells around 90,000 liters of milk per year, and earns 0.33 GEL on every liter of milk supplied.
- A dairy cattle farmer – a man aged around 30, with higher education. Owns 50 cows (20 milking), employs four people, sells around 35,000 liters of milk per year, and earns 0.30 GEL on every liter of milk supplied.

Tables in the Annex provide more detail on the personal characteristics and assets of the actors interviewed.

Table 5.1 shows the average expenses of collecting milk via three different possibilities: (i) a large milk collector collects via hired drivers; (ii) a dairy collects via IMs; and (iii) a dairy collects door-to-door via hired drivers.

Table 5.1: Costs of collecting 1,000 liters of milk via different schemes

		Expenses for collecting 1,000 liters of milk	Comments
(i)	Large milk collector collects via hired drivers	25 GEL	Large milk collectors collect about 1,000,000 liters of milk per year.
(ii)	Dairy collects via IMs	50 GEL	IMs collect around 65,000 liters of milk per year.
(iii)	Dairy collects door-to-door via hired drivers	40-160 GEL	Dairies collect 80,000-900,000 liters of milk per year. Expenses depend on the size and cost structure of the dairies.

Table 5.2 presents the main financial indicators of the actors involved in the model. The details of the calculations are presented in the Annex.

Table 5.2: Financial indicators of actors (annual figures)

		Dairy (30,000 kg of cheese)	Dairy (75,000 kg of cheese)	Dairy (8,000 kg of cheese)	Milk collector (1,000,000 liters of milk)	IM (65,000 liters of milk)	Farmer (30 milk cows)	Farmer (20 milk cows)
1	Fixed Costs (in GEL)	60,000	50,000	40,000	30,000	1,500	14,000	10,000
2	Variable Costs (in GEL)	190,000	530,000	90,000	640,00	39,000	20,000	5,000
3	Total Costs (in GEL)	250,000	580,000	130,000	670,000	40,500	34,000	15,000
4	Revenues (in GEL)	285,000	605,000	165,000	710,000	42,500	65,000	25,000
5	Profit (in GEL)	35,000	25,000	35,000	40,000	2,000	31,000	10,000
6	Net Margin per unit (in GEL)	1.3	0.3	4.0	0.04	0.03	0.33	0.31
7	Net Profit Margin (in %)	13	4	20	5	3	43	40
8	Break-Even-Point (in quantity)	18,000 (kg of cheese)	170,000 (kg of cheese)	5,000 (kg of cheese)	205,000 (liters of milk)	12,000 (liters of milk)	27,000 (liters of milk)	14,000 (liters of milk)
9	ROI (in %)	14	4	25	6	4	85	73

The financial indicators for dairies show two main possibilities for business development. One is benefiting from economies of scale by producing up to 75,000 kg of cheese per year. The profit from a cheese factory is about 30,000 GEL per year. Another possibility is to produce high value varieties of cheese (with a sale price of up to 20-25 GEL per kg) and market them via special shops and restaurants.

In this regard, relatively low scale production (around 8,000 kg of cheese per year) is enough to achieve reasonable profits (35,000 GEL per year).

Value added by milk collectors (a large specialized milk collector and a small intermediary) is 0.03-0.04 GEL per liter of collected milk. Economies of scale is the only possibility for achieving reasonable profits in this case. Table 5.2 shows that specialized milk collectors that have contracts with large milk processors (e.g. Sante) and collect around 1,000,000 liters of milk have profits of 40,000 GEL /year. At the same time, the small intermediary (which collects around 65,000 liters per year) has very small profits of 2,000 GEL /year.

Characteristics of the cooperation model

Figures 5.3 and 5.4 describe the agreements between different actors of the model.

Figure 5.3: Agreements between milk collectors and farmers

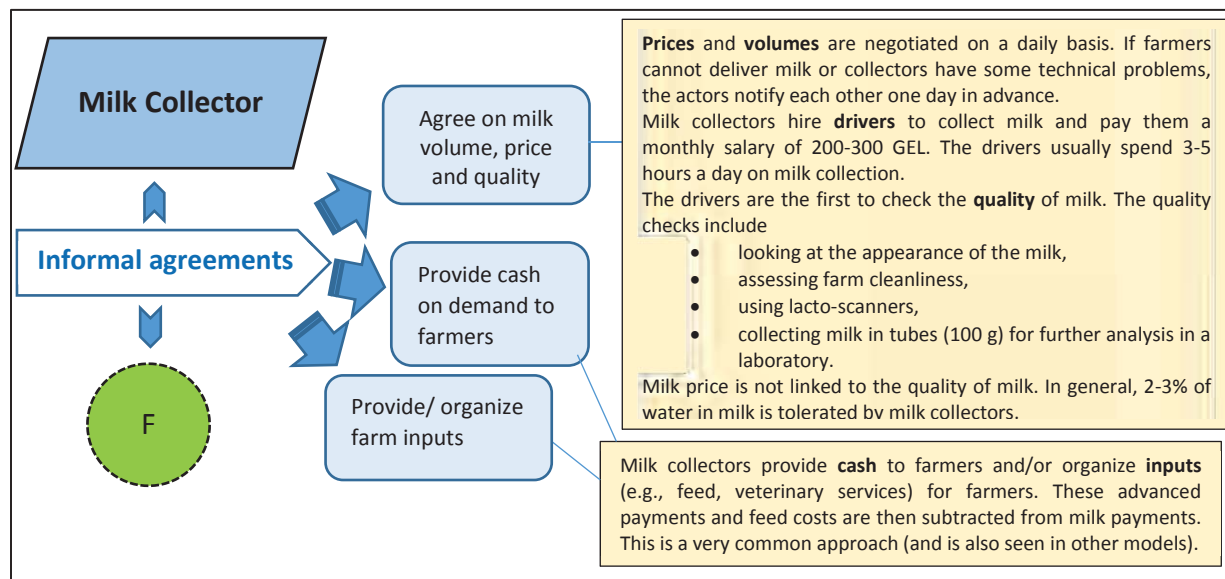
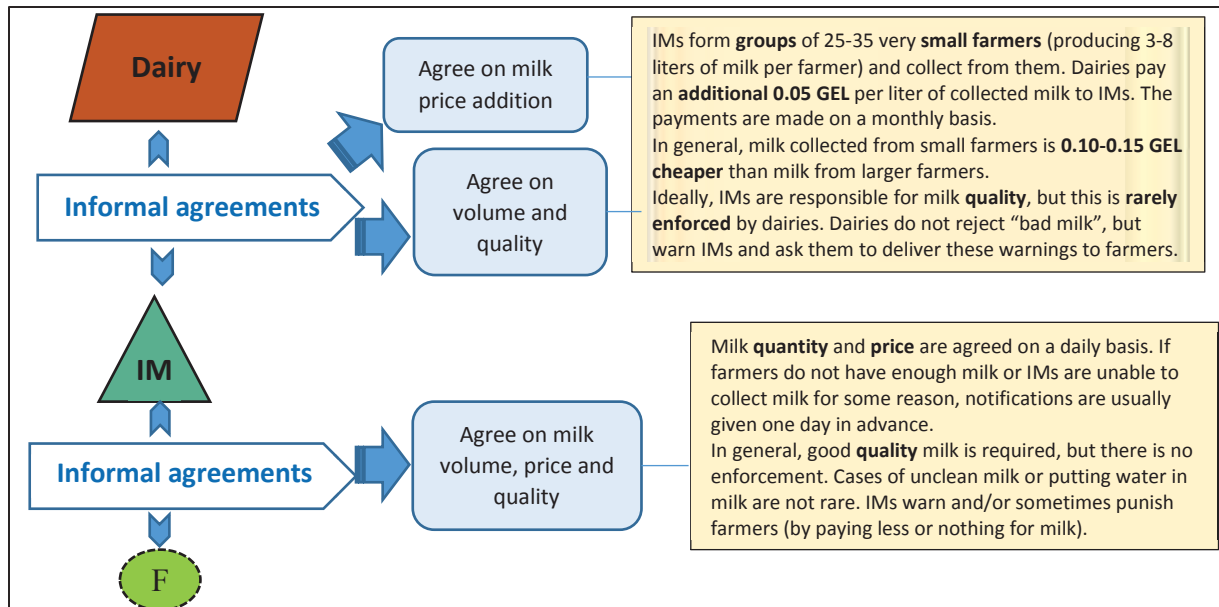


Figure 5.4: Agreements between dairies and IMs and IMs and farmers



Significance and importance of the agreements

There are mostly **informal agreements** (verbal arrangements) between milk collectors and farmers, dairies and IMs, and IMs and farmers. It seems that these **informal agreements are respected by all sides**. According to the interviews, not having a formal contract is normal in the region. Most actors rely on self-enforcement instead of using courts or a third party. As the agreements generally involve small amounts of money, it is not worth going to court. Therefore, **informal (verbal) arrangements and enforcements are less costly** for all participants.

The main benefits and risks of intermediary milk collection (Version B of the model) are as follows:

- **Milk price.** This is lower because only small quantities of milk are collected from farmers (3-8 liters per farmer per day).
- **Collection costs.** Milk collection via IMs are associated with lower expenses than door-to-door milk collections by dairies. On the other hand, if an SME specializes in milk collection, the collection cost per liter is the lowest (see Table 5.1).
- **Milk quality.** The risk related to milk quality is high in the intermediary milk collection scheme (mainly because a large number of very small farmers are involved). IMs take some responsibility for quality, but in cases of relatively modest problems with quality (e.g., 3-5 % of water in the milk) the dairies do not reject the milk. They argue that it is about good collaboration and instead of rejecting milk, the dairies warn their business partners (IMs) who then relay the message to their farmers.

Additional agreements in the model

Some formal contracts exist between dairies and supermarkets (e.g., Smart and Goodwill) and between the larger milk collectors and large milk processors (e.g., Sante):

(i) Between dairies and supermarkets: dairies who have contracts with Smart, Goodwill and other supermarkets argue that the dairy market in Georgia is very unstable and they cannot rely on such contracts. Contracts are usually concluded for 55 days + 1 week. *“But afterwards, around three weeks are needed to get the money from supermarkets”*, said a cheese producer from Kakheti. This fact makes dairies reluctant to conclude formal contracts with farmers.

(ii) Between big milk processors (e.g., Sante) and milk collectors: larger milk collectors have well-developed storage facilities and supply relatively large amounts of milk (2-5 tons a day) to the processors. The formal contracts between milk collectors and milk processors mainly deal with the quality of milk supplied (regarding acidity, content of fat, etc.). The contracts are renewed on a yearly basis. If a milk processor is not happy with the quality of the milk, it rejects the delivered milk. *“This happens perhaps 5-10 times a year; ...the quality of collected milk is still a problem, but the situation has improved in recent years”*, said a milk collector from Kakheti.

Growth or diversification perspectives

- **Dairies.** Most dairies plan to specialize in cheese production (expanding production by collecting more milk and/or having their own cows). Respondents argue that an unstable market environment is the main constraint for expansion. Access to finance is often discussed as an additional constraint to business development.

Pig farming is often an additional activity for dairies. Respondents stated that having free **whey** for feeding piglets is the main incentive for supplementing their businesses with pig farming. The yearly profit from 25 sows is 35,000-40,000 GEL and is comparable with the yearly profit from producing 30 tons of cheese.

- **Intermediaries.** The income of IMs depend on the volume of milk supplied. In order to increase their revenues, IMs could provide embedded services (e.g., improved feed and veterinary services) to their farmers and thus increase the quantity of milk supplied.
- **Farmers.** Small- and medium-size dairy cattle farmers might significantly increase their productivity by improving feeding practices and veterinary services. Farmers who are already engaged in modern farming – relying on improved breeds, artificial insemination, modern feeding practices and automatic milking systems – should improve their cost structure and establish links to larger milk processor companies.

Concluding remarks

The two milk collection models discussed in this section are very different, not only in scale, but also in the associated efficiency gains and their impact on the Georgian dairy industry.

Operating on a very small scale, most Georgian cheese processors see very low profit margins, and therefore do not have the resources to hire drivers or intermediary milk collectors. Seeking to minimize their costs, and not requiring large quantities, they tend to make milk collection a part of their daily routine.

Milk collection intermediaries (or hired drivers) play a role by serving dairies that operate on a larger scale or that enjoy higher margins because they are engaged in product differentiation and branding. Intermediaries perform a useful role by connecting such producers to semi-subsistence family farms who do not satisfy the quality and quantity requirements posed by larger aggregators.

The main limitation inherent in this model concerns the highly unstable nature of the underlying commercial relationship. Not being able to guarantee above-market prices or long-term contracts, small intermediaries are operating in a “sellers’ market” in which they generate very little profit (around 2,000 GEL/year), and have little say on milk quality or food safety requirements. The result is business as usual in Georgian dairy farming – the focus is on survival rather than on upgrading technology and modernization.

However, business as usual will not be an option for commercial dairy farming once the country adopts and enforces EU food safety standards. As a result, small-scale intermediation is likely to be phased out, giving way to consolidation and various forms of vertical integration in the value chain. In particular, cheese producers will be incentivized to engage in long-term direct supply contracts with large and medium size farmers, or to develop/acquire their own farms.

Specialized milk collection businesses, on the other hand, may reach sufficient size to perform an extremely useful aggregation function in a fragmented market. Generating significant profits (about 40,000 GEL/year per 1,000,000 liters of milk), well-endowed with testing and refrigeration equipment, such operators are able to connect medium-size suppliers with large, modern processors (such as Sante) and retail networks (e.g. Carrefour and Goodwill). On the one hand, they help expand market possibilities for Georgian dairy farmers (by substituting for imported yogurts, fresh milk and other products). On the other hand, by setting quality and volume thresholds – and by providing extension and embedded services such as improved feed, artificial insemination and veterinary care – such aggregators have the potential to induce consolidation, technological upgrading and increased yields throughout the value chain.

The adoption of EU-style food safety regulations will force all market participants to shift to formalized contractual arrangements, which are currently of great rarity in Georgia. Today, relationships in the sector are predominantly ad hoc and very unstable. Most farmers are even afraid to sign formal contracts, seeking to avoid (or evade) taxation. Not incidentally, processors and aggregators complain about frequent breaches of both formal and informal contracts. Taking into account the ongoing process of regulatory harmonization with the EU, we foresee a shift to formal, long-term agreements, providing guarantees of stable supply to processors and of stable (and potentially higher) prices to Georgian farmers.

Model 6: “Trilateral agreements”

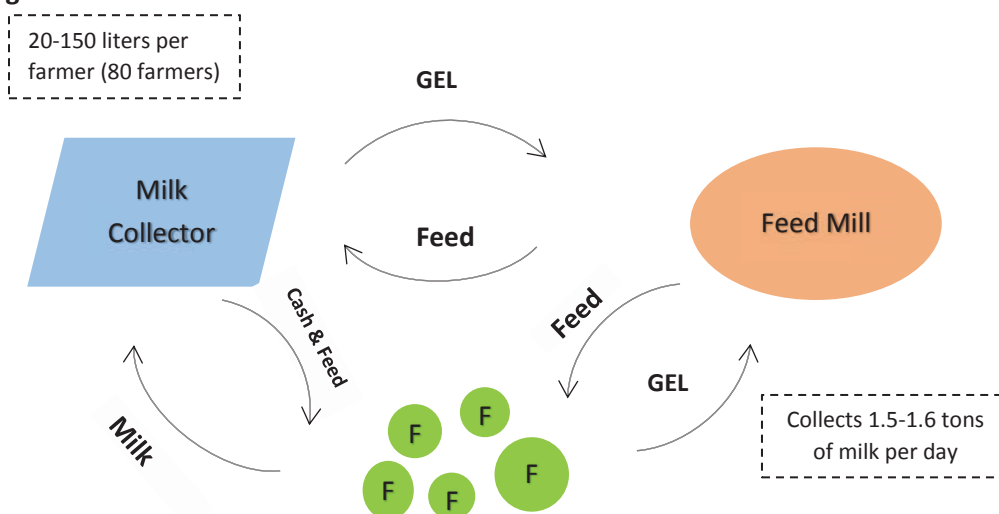
General description of the model

This model involves the following actors:

- Milk collector,
- Feed mill,
- Farmers.

The main actor is the milk collector who collects milk from small farmers in different villages. This actor also serves as a link between the mill and farmers. Farmers generally live far from cities and it is inconvenient and costly for them to travel to nearby cities for purchasing inputs (e.g., feed and medicine). The milk collector buys feed from the miller and delivers it to farmers. In addition, the collector helps farmers with veterinary services and teaches them how to improve the quality of their milk.

Figure 6.1: Model Structure



Characteristics and economic performance of actors

Milk collector

- A man aged around 50, with higher education (zoo engineering). Collects 1.5-1.6 tons of milk per day, has no hired employees and collects milk from about 80 farmers (from a radius of around 50 km).

Feed mill

- A man aged around 30, with secondary education. He started his business 10 years ago. He owns a mill and 5 ha of land and supplies different shops in the region.

Farmer

- A man aged around 30, with secondary education, rents 105 ha of land together with three other farmers and owns 30 cattle.

Tables in the Annex provide more details on the personal characteristics and assets of the interviewed actors.

Table 6.1 presents the main financial indicators for the actors involved in the model.

Table 6.1: Financial indicators of actors (annual figures)

		Milk collector (565,750 liters of milk)	Feed mill (2,400 bags of feed)	Farmer (30 cows)	
				Feeding with hay (no concentrated feed)	Feeding with hay (with addition of concentrated feed)
1	Fixed Costs (in GEL)	7,800	14,000	2,000	2,000
2	Variable Costs (in GEL)	344,900	57,600	3,400	10,900
3	Total Costs (in GEL)	352,700	71,600	5,400	12,900
4	Revenues (in GEL)	368,000	90,300	23,300	35,600
5	Profit (in GEL)	15,000	18,700	16,400	22,700
6	Net Margin per unit (in GEL)	0.03	7.8	0.53	0.73
7	Net Profit Margin (in %)	4.1	26	81.4	112.8
8	Break-Even-Point (in quantity)	193,900 (milk)	2,300 (bags)	4,100 (milk)	4,700 (milk)
9	ROI (in %)	4.3	26.1	337.6	176.2

Calculations are done for two types of farmers: those who feed their cows with only hay and those who use concentrated feed in addition to hay. We assume that with hay feeding cows produce 5 liters of milk a day and if concentrated feed is added cows produce 8 liters of milk (this assumption follows from interviews and validation workshops). As can be seen from Table 6.1, better financial performance is achieved when using concentrated feed. The profits of milk collectors depend on the quantity of milk. Therefore, it is beneficial for them to provide embedded services (feed, vaccination, etc.) to their farmers. More details on economic performance are presented in the Annex.

Characteristics of the cooperation model

Agreements

Figures 6.2 and 6.3 describe the agreements between different actors of the model.

Figure 6.2: Agreements between the milk collector and farmers

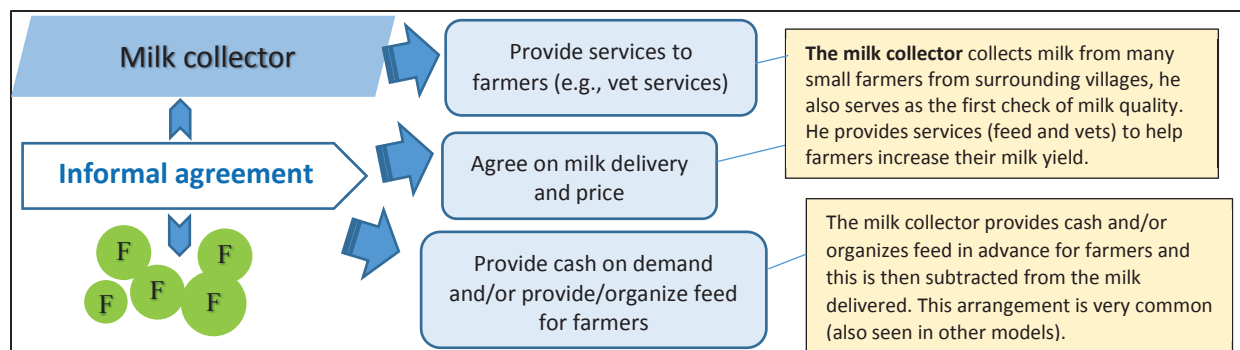
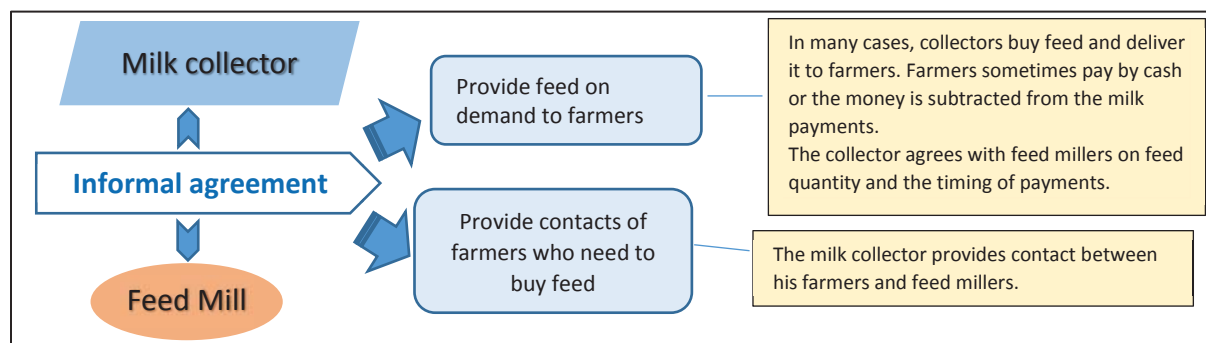


Figure 6.3: Agreements between the milk collector and feed mill



Prices of milk are agreed in advance. Milk prices are more or less the same across the region and the average price per liter is 0.75 GEL. The milk collector pays the market price of milk. Farmers are mostly dissatisfied with the offered price. However, the milk collector argues that farmers are paid according to the market price and that they would be unlikely to find somebody offering a higher price.

The quantity of milk is also agreed in advance. If farmers cannot deliver milk, they notify the milk collector in advance.

The milk collector pays some farmers once every 10 days, and others twice a month. The farmers are satisfied with this arrangement.

Significance and importance of the agreement

There are mostly **informal agreements** (verbal agreements) made between the actors of the model. These arrangements are beneficial for all actors, because they depend on each other. The milk collector wants good quality milk and thus helps farmers to acquire their inputs. He helps farmers with veterinary services and, in some cases, teaches them sanitation procedures for assuring a better quality of milk. By providing such valuable services, the milk collector also helps ensure that farmers will not sell milk to other collectors.

The major risk for the milk collector involved in this model concerns quality. In the past, farmers were prone to cheat and sell milk without fat. However, better communication from the milk collector (including regular warnings and knowledge transfer) has significantly improved the situation. Furthermore, farmers started to realize that the productivity of their cows increased after feeding them with concentrated feed. After some time, the actors started to trust each other. The milk collector helps farmers and in return he demands good quality milk.

Growth or diversification perspectives

One factor hindering the business expansion of the milk collector is the lack of machinery to collect milk. For a greater quantity, he needs more milk coolers.

The growth potential of this model depends on the amount of milk available in the region. One way to achieve growth is ensuring the productivity increase of cows. Since this model helps farmers increase their awareness and knowledge of many important aspects of the dairy business (regarding feeding, proper health of animals etc.), it improves the milk yield of farmers and thus increases the quantity of available milk. This model thus has potential to be replicated.

Concluding remarks

This model brings together smallholders, a feed producer, and a buyer (milk collector). It is not substantially different from the basic milk collection models discussed in the previous model (Model 5). The main distinctive feature of this model is the multidimensional role played by the buyer. Not only does he buy the product (in and of itself this is not a critical function in a sellers' market), but he is also a source of credit (covering the cost of feed and other services), and a provider of veterinary services and expert advice on nutrition, animal health and hygiene.

A key aspect of this model concerns its impact on farmers' knowledge and skills. As a source of expertise, the buyer acts as an educator, causing knowledge to trickle down to even the smallest Georgian farmers, bringing about irreversible improvements in their productivity and competitiveness.

Being grounded in a win-win situation – improved yields, higher sales and profit margins for all actors – the resulting relationships between the buyer, service provider (feed producer) and farmers appear to be sustainable at the current (modest) scale, even though none of the contractual arrangements are formalized.

At the same time, unless scaled up, this model's potential for replicability appears to be limited. In this particular case, the buyer is a *unique* individual – a “one-man show” – combining many different professional qualifications (including zoo engineering) and the ability to develop relationships and instill trust in one person. A much larger scale would be required to sustain the same model, and this would have to have a specialized milk collection organization at its center. A larger scale would be required for such an organization in order to be able to afford hiring specialized expertise (nutrition, artificial insemination, veterinary care, hygiene, food safety regulations, software solutions and automation) and to link suppliers to modern processors and other large buyers (hotel and restaurant chains, and modern retail).

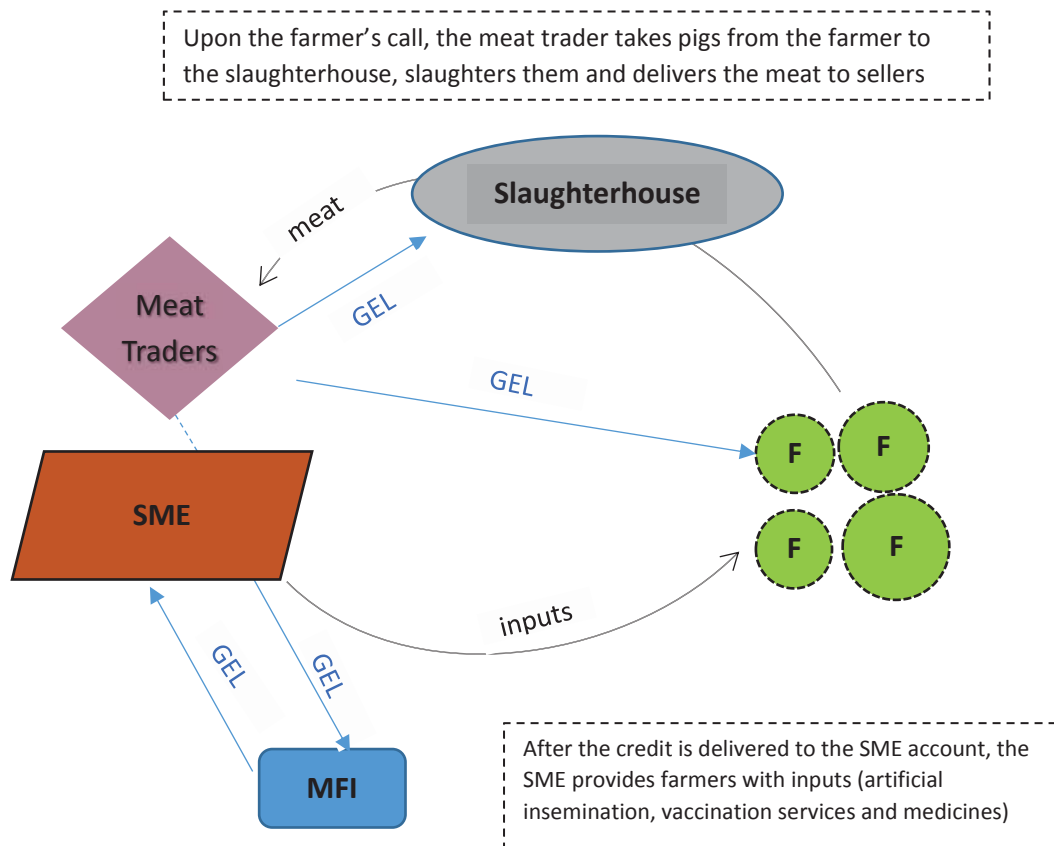
Being very close in spirit to the large-scale milk collection model discussed in the previous section, this model has a future in the Georgian environment. It facilitates value chain integration from small/medium milk producers to modern processors and retail, and provides Georgian dairy farming with a strong impetus for development and modernization.

Model 7: “Outgrower schemes”

General description of the model

This is a complex model that was proposed by an entrepreneur from the Kakheti region. The model does not yet exist in the Kakheti region, but is very promising and modern. It involves the following actors: SMEs (e.g. feed mills), farmers, meat traders, slaughterhouses and micro finance institutions (MFIs). Figure 7.1 presents the structure of this model.

Figure 7.1: Model structure



SME (feed mill, vaccination, artificial insemination, etc.):

- owns/rents arable land and produces cereals;
- owns the feed mill, where it grinds feed and enriches it with additives according to modern standards;
- organizes artificial insemination services for sows (to ensure high productive breeds); and
- arranges veterinary services and vaccination for pigs/piglets.

Farmers:

- Farmers who own farm building fatten pigs and sell them after a certain time (usually after 4-4.5 months, when the pigs are 5-6 months old and reach 90 kg of live weight) to a meat trader. The price is set in advance in a contract between the farmer and meat trader (currently it is 4.80-5.20 GEL per kg of live weight).
- Farmers need concern themselves with neither production technology (high productive breeds, feed and veterinary services) nor a market for selling the final products. All these are organized by the SMEs and meat traders. Nevertheless, decreased responsibilities for the farmer also translate into lower power in decision making (about how to treat animals, when to sell, etc.).

Meat Traders:

- The meat trader has a guarantee of a continued supply of meat of a standard quality. The timeframe and quality is agreed in advance in a contract with farmers.
- After receiving the call from a farmer, the meat trader goes to the farm, collects the pigs, takes them to the slaughterhouse for slaughter and subsequently delivers the meat to the market (e.g. minimarket, supermarket).
- After a certain time (up to one week after pigs are bought), the trader pays back the MFI (loan + interest rate) and the agreed pig price to farmers (deducting the cost of delivered inputs and interest rate).
- All prices are set and agreed in a contract signed at the beginning of cooperation.

The slaughterhouse:

- Provides services to the meat trader. It slaughters pigs and receives a service fee of 30 GEL per animal.

MFIs:

- These ensure access to finance for SME. This is important for the timely delivery of feed, artificial insemination and veterinary services to farmers.
- MFIs transfer a loan to the SME account, but the loan is issued under the name of a farmer. The SME is obliged to provide the farmer with the inputs or services mentioned above. When meat is sold, the meat trader¹² returns the money (loan + interest) to the MFIs (according to the contract between the parties).
- MFIs do not require collateral from farmers, SMEs or the meat trader. However, MFIs require access to the bank accounts of the SMEs and meat traders.
- MFIs benefit from the interest rate, which is agreed upon in each case; the average loan duration will be about 4-6 months, depending on whether farmers buy piglets for fattening or use their own sows to get piglets.

So far, **two options** have been developed for farmers:

¹² Note: in this example, the same entrepreneur owns the SME (providing inputs) and the meat trading enterprise.

- 1) Case 1: When a farmer does not have sow(s) and purchases piglets from another farmer (piglets are around one month old). These are then fattened and sold to the meat trader.
- 2) Case 2: When a farmer owns sow(s) and uses this model for other services, such as artificial insemination, feed, vaccination and marketing.

Benchmarking different models of pig farms

Outgrowing scheme Case 1 characteristics:

- The MFI gives a loan for purchasing piglets (with the approval of the SME’s veterinarian).
- The MFI gives a loan for feed and medicines (the SME provides inputs to farmers).

Table 7.2. Financial indicators (annual figures), Case 1: when a farmer buys 100 piglets to fatten and sell (during one year)¹³

#	Indicators	Pig Farmers Financial Performance (100 piglets)		
		Production with Low Costs	Outgrowing: Case I	Production with High Costs
1	Fixed Costs (in GEL)	3,500	3,500	3,500
2	Variable Costs (in GEL)	33,000	35,550	43,000
3	Total Costs (in GEL)	36,500	39,050	46,500
4	Revenues (in GEL)	45,000	45,000	45,000
5	Profit (in GEL)	8,500	5,950	-1,500
6	Net Margin per unit (in GEL)	85	59	-15
7	Net Profit Margin (in %)	19%	13%	-3%
8	Break-Even-Point (in quantity)	29	37	175
9	ROI (in %)	23%	15%	-3%
		Farmers have their own feed (produced by themselves) and only buy additives (premix).	Farmers do not buy anything. The model involves the whole supply chain: the farmer, SME, meat trader, slaughterhouse, and MFI.	Farmers do not have their own feed and buy ready feed for pigs.

Outgrowing scheme Case 2 characteristics:

- The MFI gives a loan for artificial insemination (which the SME provides to farmers).
- The MFI gives a loan for the feeding of sows (which the SME provides to farmers).
- The MFI gives a loan for feed and medicines for piglets (which the SME provides to farmers).

¹³ Note: calculations are made for 100 piglets, when the live weight is 90 kg and the price is 5 GEL/kg. Fixed costs include labor costs and depreciation of capital assets.

Table 7.3. Financial indicators (annual figures), Case 2: when a farmer owns five sows and uses the model to fatten and sell piglets. One sow can give birth to about 20 piglets over 2.5 deliveries a year (during the whole year)¹⁴

#	Indicators	Pig Farmers Financial Performance (5 sows and 100 piglets)		
		Production with Low Costs	Outgrowing: Case II	Production with High Costs
1	Fixed Costs (in GEL)	4,200	4,200	4,200
2	Variable Costs (in GEL)	27,770	34,500	39,270
3	Total Costs (in GEL)	31,970	38,700	43,470
4	Revenues (in GEL)	45,000	45,000	45,000
5	Profit (in GEL)	13,020	6,280	1,530
6	Net Margin per unit (in GEL)	130	63	15
7	Net Profit Margin (in %)	29%	14%	3%
8	Break-Even-Point (in quantity)	24	40	73
9	ROI (in %)	41%	16%	4%
		Farmers have their own feed (produced by themselves) and buy only additives (premix).	Farmers have sows and do not buy anything. The model involves the whole supply chain: the farmer, SME, meat trader, slaughterhouse, and MFI.	Farmers do not have their own feed and buy ready feed for pigs.

Based on the calculations for both cases (Case 1 and Case 2), the highest profit, profit margin, and ROI are achieved by farmers who use self-produced feed (see Tables 7.2 and 7.3; Production with Low Costs). It should be noted, however, that the risks associated with the production of pigs and their marketing/sale are higher in this production system than in outgrowing schemes.

On the other hand, if farmers do not produce feed by themselves, the profit, profit margin and ROI are the lowest (see Tables 7.2 and 7.3; Production with High Costs). It is thus much better to participate in the outgrowing scheme than to produce with high costs.

Participating in the outgrowing scheme reduces production risks of farmers (through improved technology). In addition, farmers do not need to invest in piglets, feed, artificial insemination, etc.; all this is provided by SMEs and the costs (for these inputs) is subsequently deducted from the revenues from sold pigs.

¹⁴ Note: calculations are made for 100 piglets, when the live weight is 90 kg and the price is 5 GEL/kg. Fixed costs include labor and depreciation of capital assets.

Characteristics of the cooperation model

Agreements

The following arrangements exist in this model:

1. **The farmer** gets agro inputs from the **SME** in advance and these are then subtracted from the value of pigs sold;
2. **The farmer** and **SME** agree the meat price (live weight) in advance (upon a contract);
3. **The meat trader** has an agreement with the **slaughterhouse**. Prices are set and agreed.
4. **The meat trader** has a formal agreement with large **supermarkets** to deliver a certain standard and quantity of meat on a regular basis. The meat trader might also have its **own minimarkets** to supply.
5. **The MFI** provides loans to the **SME** to deliver the inputs, artificial insemination and vaccinations to farmers. The loan duration and interest rate is agreed in a formal contract.
6. **The meat trader** covers the loan (base + interest) and pays the benefit to a farmer on agreed terms. The meat trader benefits from the difference between the purchase and sale prices of meat.

Figure 7.2: Agreements between the farmer and meat trader

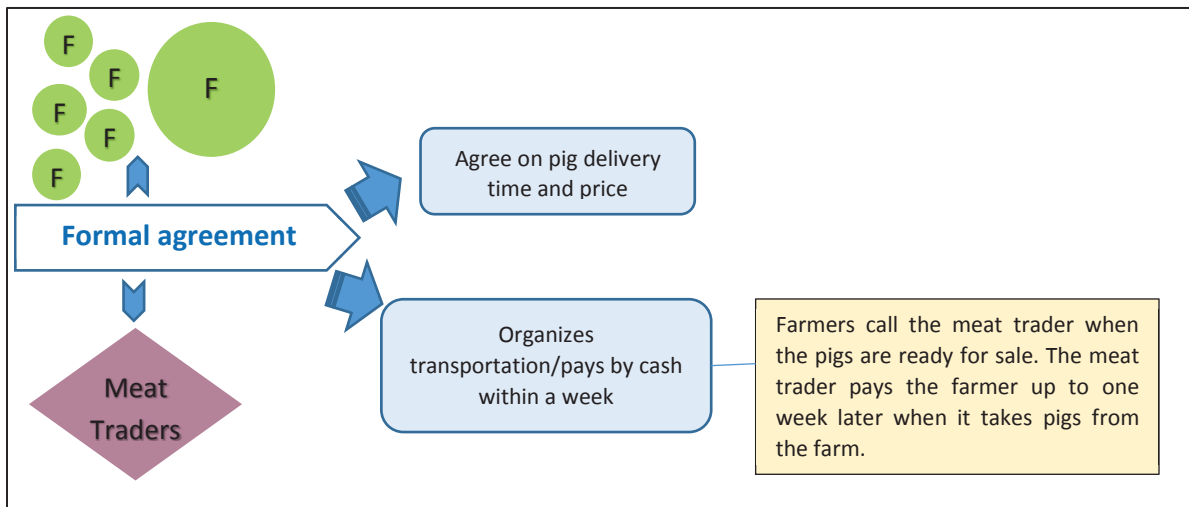
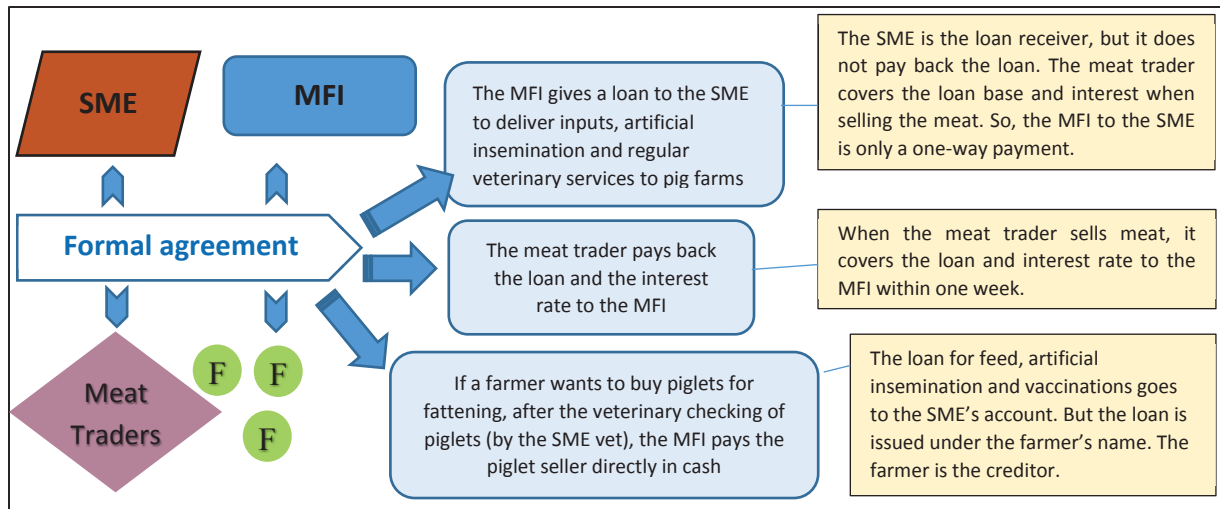


Figure 7.3: Agreements among the farmer, meat trader, SME and MFI



There is one main **agreement** (signed contract) among the actors. This contract is agreed by the four main actors of the model: the SME, MFI, meat trader and farmer. Besides that, there might be some additional contracts such as that between the farmer and the meat trader or between the meat trader and the slaughterhouse.

Risks

The major agricultural risks (production and marketing risks) are well tackled by this model. Nevertheless, if piglets/pigs die, the responsibility for paying back the credit is assigned following an investigation to clarify which actor made a mistake in the production process. This responsibility might be distributed among the parties (farmer and SMEs).

Risk reduction strategy used in the model

- **Production risk:** in order to get good quality pig meat in a decent time, risks are related to the quality of breed, feed, and veterinary services. The SME takes care of all these issues by providing (i) productive breeds via artificial insemination (or through purchasing good quality piglets), (ii) proper feed (enriched with additives), and (iii) regular veterinary services.
- **Marketing risk:** the pigs are purchased on a contract basis and the price (live weight) is agreed upon in the contract. Marketing risk is thus reduced for farmers.

Additional serious risks might be related to unprofessional handling and fraud. Risks related to breaching the terms of agreements still exist, but these are adequately addressed in the contracts signed by all parties.

In order to better address the risks, the model would require involvement of an insurance company. However, due to the high mortality rate in pig farming, insurance companies are reluctant to cooperate. They are, nevertheless, willing to become involved in a similar model for cattle farming.

Concluding remarks

Outgrowing schemes have the advantage of integrating landless smallholders – who may not be able to produce their own feed – into the pork (and beef) production value chain. Their main attraction from the farmers' point of view is reducing production and marketing risks, providing opportunities for learning and technological upgrades, and improving access to finance. The latter aspect makes this model especially attractive for small and start-up farms with limited financial resources. Outgrowing schemes also benefit other actors in the value chain: meat processors, service providers, financial intermediaries, etc.

One outgrowing scheme has been recently piloted in Racha ("Blauenstein Georgia" in Shardometi village) by a Swiss-Georgian joint venture, with a focus on high quality raw meat and meat products. The centerpiece of the Racha model is a modern slaughterhouse and butchery adhering to the highest European standards and operating at the high end of the Georgian beef market (it is the only Georgian producer of aged beef and high quality sausages, supplying hotels, restaurants and maintaining its own retail outlet in Tbilisi). Blauenstein Georgia outsources the fattening of animals (Swiss and German breeds) to a small number of local farmers, who must meet minimum land requirements and have access to water and asset ownership, to ensure that they have the ability to feed and take care of the animals to a requisite standard (as prescribed by Blauenstein).

Farmers included in the outgrowing scheme are trained by Blauenstein. They are also provided with calves, feed additives, and veterinary care services. Calves are bought back by Blauenstein once they reach a certain weight. The animals are slaughtered and the meat is cut, processed and marketed by Blauenstein. No third parties (NGOs or independent service providers) are involved in the scheme to overcome coordination problems. However, it is entirely possible that in the future both feed provision and veterinary care could be outsourced as well.

There are two main challenges with the outgrowing scheme presented by the Kakhetian entrepreneur in our case. The first is related to the need to ensure coordination across all actors in the value chain, including smallholders, microfinance organizations, service providers, and the slaughterhouse (the buyer). Some degree of vertical integration would be required for all the pieces to fall into place. Having all functions under one roof (one owner), as is the case with Blauenstein Georgia, would be the most straightforward way to ensure seamless coordination.

The second and more serious challenge, would be ensure financial viability and quality standards. To the extent that it aims to produce low-margin, mass-produced pork meat, this scheme will only be financially viable if it engages smallholders who are not self-sufficient in animal feed (as we have seen, the low cost independent production scenario, which assumes the availability of feed, is more profitable for farmers).

The Blauenstein model is very different. It engages in product innovation and targets the highest end of the Georgian meat market. Enjoying high margins, it can afford to work with the best Georgian farmers who can be trained to the Swiss standard. Instead of working with a large number of smallholders, who would be difficult to monitor, Blauenstein seeks to work with about a dozen medium and large farms that will be included in the company's supply network on a permanent basis. The same may not be

possible in a scheme that engages many small farmers who may have insufficient resources (land and infrastructure) and/or a limited capacity to learn and stand on their own feet.

To conclude, outgrowing schemes have a lot of potential in the Georgian context; however, to be realized they require very strong leadership from the buyer's end of the value chain, as is the case with Blauenstein Georgia. In addition to addressing coordination failures in the value chain, a strong buyer (meat processor) must engage in product innovation in order to create new market opportunities and higher margins for suppliers. In the absence of product innovation, such a scheme may not generate sufficient value added and collapse.

Conclusion

General features of agreements

The analyzed agreements are mostly informal and trust-based. Standards are generally shared among actors and information flow is good.

The following benefits are associated with informal agreements:

- Agreements are less costly for participants. They usually involve very small amounts of money and it is not worth using courts or other third parties for enforcement.
- Means of exchange are personalized. The terms of payments, provision of inputs, money borrowing, etc. are adapted to individual cases and can frequently be changed by actors.
- In most cases, very modest investment is required (low entry costs).
- Risks are shared. If the reason for breaching an arrangement is *force majeure* (unexpected events after the conclusion of an arrangement), the risks are often shared by the partners. Nevertheless, in many cases the stronger party bears such risks.

The following problems exist with informal agreements:

- Agreements are unpromoted and the participating actors are unprotected.
- Breaching agreements is common. In several cases, the reason for breaching a contract is just that one party has found a better partner (offering a slightly higher price, a different frequency of payments, etc.).
- High risk of supply breaches (which follows from the aforementioned points).
- Informal arrangements are driven by small scale production, which limits possibilities for growth and development.
- Pricing is not linked to the quality of milk. Such quality-detached pricing limits farmers' possibilities to add value.
- Informal agreements undermine macro-economic development as no taxes are paid, no support programs can be accessed and lobbying efforts have no effect.

Other characteristics of the analyzed models

Some other findings from the analyzed models are summarized in the following points:

- Collection of milk via an intermediary is less costly for dairies. Informally, it is agreed that IMs should deliver cheaper and good quality milk. However, the arrangement related to quality is not (or cannot be) enforced by the dairies.
- For dairies, "borrowing" cattle, herding them on their farms and subsequently buying the milk produced on those farms are less costly than collecting milk door-to-door or through a hired intermediary. This only works when a dairy has enough space and feed for borrowed cattle.

- Intermediary milk collection balances the needs of dairy cattle farmers (to sell very small quantities of milk) and dairies (to have enough milk, which is cheap and of acceptable quality). This is important from the development point of view (very poor farmers might be included). However, the future of such a model is not guaranteed. IMs might develop their capacity (by having more storage facilities, partnering with bigger farms, negotiating a better price with bigger producers, etc.) and thus exclude very small farmers from this model.
- The coordination mechanism depends on the distance between market actors (if a dairy wants to collect milk from remote farmers, it engages intermediaries).
- In some models access to land is essential and brings all actors together.
- Knowledge transfer is present in several cases.
- Embedded services are often provided by actors (dairies and milk collectors) and are subsequently deducted from the farmers' sales revenues. Such services are mostly limited to the delivery of feed and provision of veterinary services.

Growth potential of actors

- **Farmers.** Small- and medium-size dairy cattle farmers might significantly increase their productivity by improving feeding practices and veterinary services. Farmers who already rely on improved breeds, artificial insemination, modern feeding practices and automatic milking systems should improve their cost structure and establish links to larger milk processing companies. The latter can either be done by formalizing contracts (featuring a higher milk price for stable milk delivery) or significantly increasing milk production to be able to directly deliver to large companies.
- **Intermediary milk collectors.** The value added of these actors is in the range of 0.03-0.04 GEL per liter of collected milk. The growth potential is not obvious for small intermediary milk collectors who only collect small amounts of milk (e.g., 65,000 liters per year). Such small scale operations result in very modest yearly profits (about 2,000 GEL/year) and offer almost no potential for business development. On the other hand, large specialized milk collectors that have contracts with large milk processors (e.g. Sante) and collect around 1,000,000 liters of milk have reasonable profits (about 40,000 GEL /year) and are clearly business oriented. In general, the incomes of IMs depend on the volume of milk (0.05 GEL per liter of collected milk). In order to increase their revenues, IMs could provide embedded services (e.g., improved feed and veterinary services) to their farmers and thereby increase the quantity of supplied milk.
- **Dairies.** Most dairies plan to specialize in cheese production (expanding cheese production by collecting more milk and/or having their own cows). Pig farming is often an additional activity of dairies. Respondents argued that having free whey for feeding piglets is the main incentive for adding pig farming to their businesses. The yearly profit from 25 sows is 35,000-40,000 GEL and this sum is comparable with the yearly profit from producing of 30 tons of cheese. Dairies argue that an unstable market environment is the main constraint for expansion. Access to finance was often described as an important constraint for business development. Another major problem for registered dairies is that farmers who produce cheese on their farms are not controlled by the National Food Agency (NFA).

Concluding appraisal of the models

Each of the analyzed models offer some potential for better integration of smaller farmers with other market system players. However, some models have much greater potential than others.

The highest potential was noticed for Models 7 (outgrowing schemes), 3 (subcontracting schemes) and 6 (trilateral agreements). Each of these models enable knowledge and technology transfer to smaller farmers. The models are characterized by higher levels of control over the quality of produce and allow all actors to add value in the chain. At the same time, all three models require a high level of coordination among the actors. Having a proper coordination mechanism very much depends on the existence of a good leader in the market system.

Relatively modest potential was noticed for Models 5 (milk collection schemes) and 4 (service agreements schemes). While specialized (large) milk collectors contribute to the technological upgrading of dairy cattle farmers, intermediary milk collection schemes (at the current, very small scale of operation) have relatively low potential for the future. While intermediaries currently contribute to integrating very small farming families in the value chain, such small levels of intermediation are likely to be phased out as soon as Georgia fully enforces EU food safety standards. Service agreements also differ in their potential for upgrading technology and integrating farmers into modern value chains. While traditional agreements on herding cows (in summer or in winter) offer relatively little potential, some variations of service agreements (e.g., a dairy “borrowing” cows to ensure sufficient milk supply) offer a good environment for transferring knowledge of professional farming standards to smaller farmers.

Among the analyzed models, we found the smallest potential for Models 2 (renting schemes) and 1 (farm cooperatives). Rental schemes allow participants to obtain some small efficiency gains in production, through specialization in either crop or dairy production. Some synergies also come from seasonal arrangements (using land for pasture after crops are harvested). Nevertheless, an important problem in such rental agreements is the lack of knowledge of good agricultural practices, often leading to unsustainable use of land. As for the farm cooperatives model, few efficiency gains were observed. Since both the cooperatives studied are newly established, it is difficult to make judgments about their success and sustainability. This point notwithstanding, the main limitation of this model is that it lacks the element of leadership that is so crucial for taking full advantage of cooperation.