THE ROLE OF SEMI-SUBSISTENCE FARMS AND CORPORATE FARMS IN THE MODERN SUPPLY CHAIN: EVIDENCE OF UKRAINIAN DAIRY INDUSTRY

Maryna Mykhaylenko, Franziska Schaft
Leibniz Institute of Agricultural Development in Central and Eastern Europe (IAMO)
Theodor-Lieser Straße, 2, 06120 Halle (Saale), Germany

Corresponding author: Maryna Mykhaylenko, e-mail: mykhaylenko@iamo.de

Paper prepared for presentation at the 118th seminar of the EAAE
(European Association of Agricultural Economists),
'Rural development: governance, policy design and delivery'
Ljubljana, Slovenia, August 25-27, 2010

Abstract

This contribution aims to analyze the main factors determining the initiation of vertical coordination between processing enterprises and milk producers in Ukraine. In this regard special attention is paid to the role of uncertainty, asset specificity and resource availability. Furthermore, the impact of vertical coordination on quality improvement, trust development and strategic advantages achieved is analyzed. The survey results indicate that uncertainty is a major driver for the processing level to initiate vertical coordination schemes. Although vertical coordination appears to have positive impacts on both supplier groups, corporate farms tend to benefit more from vertical coordination schemes than semi-subsistence farms.
Key words: vertical coordination, transaction costs, Ukraine; JEL: L14, Q12

1. Introduction

After the collapse of the centrally planed economic system and along with the transition and ongoing globalization processes, coordination mechanisms in the agri-food supply chain of Central and Eastern European countries (CEEC) have changed significantly. Drivers of this development are e.g. the internationalization of supermarkets, changing consumption patterns and consumer demands which in turn increased the efficiency and quality pressure on all supply chain levels.

Vertical coordination mechanisms are perceived as a promising tool to reduce transaction insecurity; to facilitate access to input factors, technology, capital and knowhow. At the same time, the increased use of vertical coordination strategies is a response to the transition-specific shortcomings faced by the markets concerned. In Ukrainian agriculture access to credits and input factors is often seriously impeded by poor liquidity or high investment risks, such as untapped production efficiencies, variable yields, volatile market prices or a lack of agricultural insurance schemes. In addition, agricultural businesses and enterprises often lack sufficient technological provision. When the transition process began, overall milk production in Ukraine dropped substantially, reaching its lowest level in 2000 with 12.6 tonnes (51 % of 1990 production). This negative trend was chiefly due to the drop in production at large agricultural enterprises. At the same time, production volumes shifted both relatively and absolutely from large agricultural enterprises to semi-subsistence farms. In 2008 already more than 60% of the milk deliveries came from the semi-subsistence farms, while 32% of milk was delivered by corporate farms and 8% of milk was imported (State Committee of Statistic, Ukraine, 2009). Milk deliveries from semi-subsistence farms usually mean higher transport and quality control costs; they are also more time-consuming. As this system involves a large number of small deliveries of variable quality, the processing firms must devise complicated logistical plans for milk collection. At present, efficient milk supply chain organization is a major challenge for Ukrainian milk-processing industry.

This contribution aims to analyze the main factors determining the vertical coordination mechanisms between processing enterprises and milk producers[1] in Ukraine. Herein, special attention is paid to the impact of uncertainty, asset specificity and availability of resources on the form of contractual governance and joint action in the buyer-supplier relationship. Furthermore, the impact of vertical coordination on quality improvement and trust as well as strategic advantages achieved by the processing companies and milk producers is analyzed. The following chapter derives the conceptual framework and outlines the research questions. Chapter 3 gives insights in the data collection process and outlines the basic features of the sample. Chapter 4 discusses the main empirical findings while the final chapter briefly summarizes the results.

2. Conceptual framework

Managing agricultural structural change successfully implies that internal adjustments keep pace with external drivers and that moreover agricultural value chains sustain international competitiveness. (Balmann et al., 2006). Agricultural production is increasingly performed by larger, strongly vertically integrated agricultural enterprises. As a result, corporate networks rather than single firms now

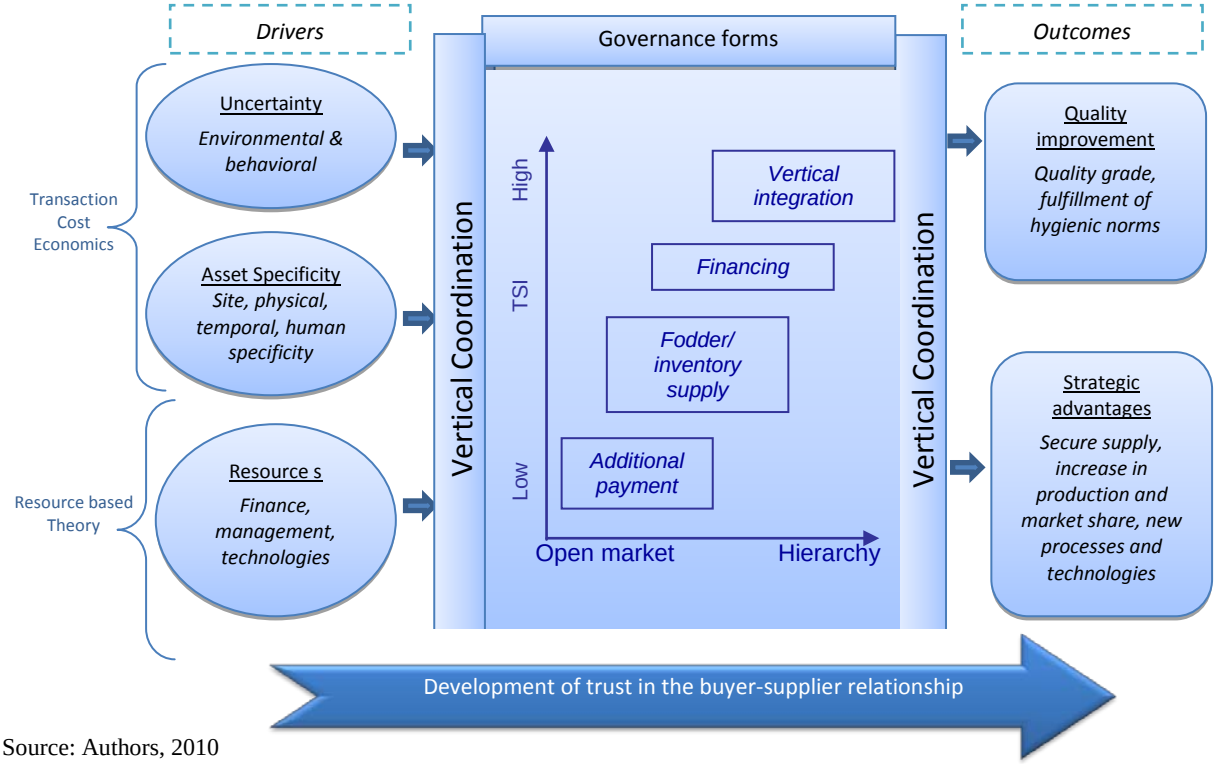
[1] In this article the milk producer group consists of two different supplier types: Corporate farms and semi-subsistence farms. Corporate farms are defined as agricultural enterprises with varying legal forms; they are either successors of the former kolkhozes or newly founded entities. Semi-subsistence farms are defined as household farms which produce for their own consumption and sell the surpluses.

compete against each other. Boehlje (1999) interprets this development as a new form of industrialization in agriculture where the competitiveness of farms and agricultural regions depends to a growing extent on the fact whether the integration in increasingly international operating value chains can be realized successfully. In addition, the concept of supply chain management (SCM) gained growing awareness. According to Boehlje (1999) the supply chain approach is expected to improve efficiency through better flow scheduling and resource utilization, to increase quality through improved managing and controlling abilities, to reduce risks associated with food safety and contamination, to increase the traceability and to improve the response speed of the industry to the changes in the consumer demands. To optimise the work and communication flow between different chain stages, SCM incorporates in many cases vertical coordination schemes. Vertical coordination (VC) is usually defined as a continuum aligning different coordination options between the open market (via market prices) and complete vertical integration in form of single ownership of different production and marketing stages (Williamson, 1975; Schrader, 1986; Sporleder, 1992; Peterson/Wysocki, 1997). Such attributes as information sharing, trust, mutual benefits, shared risks and goals, coordinated planning etc. classify the partnerships or cooperative relationships (Hines, 2004). A variety of economic theories (e.g., neoclassical economics, industrial organization, new institutional economics, game theory), management oriented concepts (e.g., strategic management, decision oriented organization theory, resource-based approach)[2] or behavioural approaches (including concepts as e.g., attitudes, acceptance and trust) can offer useful insights for the improved understanding of food supply chain interactions. In this contribution Transaction Cost Economics (TCE) and the Resourced-based View of the Firm (RBV) are applied to gain insights in vertical coordination schemes among Ukrainian milk processing companies and their suppliers. The combination of both approaches offers a valuable conceptual analysis framework as it allows not only an improved understanding of inter-firm cooperation and alternative governance forms but also considers in addition the importance of firm resources and the competitive advantages of firms. The following sections briefly outline both approaches and their conceptual application.

2.1 Drivers of vertical coordination

The transaction cost concept was initially introduced by Coase in 1937 and further expanded through Williamson's Transaction Cost Economics, which is used to explain economic governance forms of a firm and the extent to which it will integrate vertically. A "transaction" is herein understood as a change between activity stages when "the good or service is transferred across the technologically separable interface" (Williamson, 1981, p.552). Under the behavioural assumptions of bounded rationality and opportunism, Williamson identifies frequency, asset specificity and uncertainty as the main variables that determine whether transaction costs will be lowest in a market or in a hierarchy. Asset specificity (transaction specific investment) is related to the extent to which investments are specific for a given transaction and have no or less value in any alternative uses. Uncertainty results from difficulties of gathering and processing information and therefore increases transaction costs (Schleinitz, 1998). Williamson (1979) recognizes three categories of frequency referring these to the activities in the market: one-time, occasional and recurrent. Since the transaction frequency is in general very high in the dairy industry we assume that a high level of uncertainty and asset specificity will have a crucial positive impact on the decision of the processing companies to implement tighter forms of vertical coordination for their suppliers. Given the presence of opportunism, transaction specific investments in physical and human capital made by one party cause an incentive for another party to make use of this dependence which would cause additional costs for the first party. This evidently requires governance structures which would be able to decrease opportunism and favor inter-relational confidence.

[2] Seminal authors: Neoclassical economics (Jevon, 1871; Menger, 1871; Walras, 1874), Industrial Organization (Chamberlin, 1933), New Institutional Economics (Coase, 1937; Williamson, 1975, 1985; Grossman and Hart, 1986), Game theory (von Neumann and Morgenstern, 1944). Decision theory (Cyert and March, 1963); Resource -based theory (Penrose, 1959; Wernerfelt, 1984; Barney, 1991)



Source: Authors, 2010

Figure 1. Conceptual framework.

The RBV allows the analysis of vertical coordination forms from a strategic management perspective. Inter-firm coordination is understood in this context as the opportunity to share resources and to overcome the resource based growth constraints (Hamel, 1991). The RBV shifts the focus away from a cost minimization perspective and shed lights on the importance of the firms´ individual skills, capabilities, and knowledge (Madhok, 2002). In this context, firm resources can be defined as strategic if they enable a firm to implement value creating strategies and if they create constant and unique competitive advantage for the firm (Wernerfelt, 1984; Barney, 1991). In this research it is assumed that the availability of financial-, management- and organizational resources by a processing firm has a positive influence on its decision to implement tighter forms of vertical coordination and furthermore offers strategic advantages of this particular firm over its competitors.

2.2 Outcomes of vertical coordination

According to the reviewed literature it is furthermore assumed that vertical coordination helps to reduce information asymmetry and possible hold-up problems by self-interested, opportunistic parties (Barry, 1993). Closer vertical relationships between producers and processors should provide access to additional information about e.g. product requirements and enhance in general the information flow along the supply chain (Barry et al., 1992). Considering their potential effects we expect that vertical coordination mechanisms should have a positive impact on the delivered milk quality and offer by that strategic advantages for both, the processing firms (e.g., through securing the raw material basis, new products etc.) and the producers (e.g., through improved access to financial resources, technologies and knowledge). Moreover it is expected that the implementation of vertical coordination positively facilitates the development trust among the actors of the processing- and production stage. In this context the term trust includes interpersonal and inter-organizational trust. Both types of trust can evolve during a business relationship and can improve the stress resistance and resilience of a relationships: Interpersonal trust arises on the basis of previous interaction experiences or memberships in definite social groups while inter-organizational trust results from the embedded trust behaviour of corporate units, i.e. firms with a strong corporate identity and high-trust culture (Williamson, 1979).

3. Methodology and data collection

A quantitative survey was conducted in Ukraine from May to July 2009. The sample includes 38 milk processing firms (processor sample) and 44 primary milk producers (producer sample). The processor sample was derived from the firm database of the "Journal of Dairy Industry" which contained information on 354 dairy companies at that time. In addition, several professional dairy organizations were approached to generate additional firm contacts. After clearing the initial address database, 120 processing enterprises could be identified as potentially accessible for the survey. Herein, the existence of vertical coordination schemes was the ultimate selection criterion. Only those enterprises which confirmed their activity in implementing support programs with their supplier base have been asked to participate in the survey. In a last step the managers of the companies who confirmed their willingness to participate were personally interviewed. From an organizational perspective, more than half (23 firms) of the 38 interviewed milk processors are branches of larger concerns. Moreover, one of the interviewed enterprises is a subdivision of another processing company responsible for the milk collection, quality control and further milk delivery to the main company without being further involved into the processing process. These results reflect the high level of horizontal integration which is a major feature of the Ukrainian milk processing sector. Moreover, three different types of capital origin can be observed in the sample (Tab. 1): National investments (also from national dairy companies or agricultural companies), investments from non-agricultural national companies and foreign direct investment from international dairy concerns.

Table 1. Capital origin of the interviewed processing companies, N=38.

	National		FDI*
	Agricultural sector*	Non-agricultural sector**	Agricultural sector*
Processing companies	26	2	10

* Dairy business ** Electronic production
Source: Own data, 2009

According to the number of employees, average volumes of processed milk and annual sales the interviewed companies can be divided into four clusters (Tab. 2). The first group includes 7 enterprises with the smallest number of employees (up to 200) and the lowest average values of processed milk and annual sales. Most of the interviewed processing companies are summarized in Group 2 and 3. Group 4 includes three enterprises which are characterized by the highest number of employees and display the highest average values in milk processing and annual sales among all other groups in the sample.

Table 2. Main characteristics of interviewed processing companies, N= 38.

	Enterprises concerned	Employees	Ø Volume of processed milk	Ø Annual turn-over
	Total	In groups	Thousand tons	UAH million
Group 1	7	26 – 200	28.11	54.22
Group 2	17	201 – 500	78.21	142.70
Group 3	11	501 – 900	101.77	298.31
Group 4	3	901 – 1260	357.44	452.42

Source: Own data, 2009

In addition milk suppliers were interviewed regarding their experience with vertical coordination schemes. The supplier sample includes 19 corporate farms and 25 semi-subsistence farms (Table 3). It has to be emphasized that no direct buyer-supplier-relationships can be derived between the processor and producer sample as the processing companies refused to provide the contact information of their suppliers. However, all milk producers are allocated in the same regions as the interviewed processors and many of them confirmed that they deliver to the interviewed processing companies. As the data evaluation is still ongoing, this contribution primarily focuses on the analyses of the processor sample

Table 3. Main characteristics of interviewed milk producers, N = 44.

	Number of farms	Ø Number of cows	Ø Volume of produced milk
	Total	Total	Thousand tons
Corporate farms	19	409,7	1512.2
Semi-subsistence farms	25	1,3	4.9

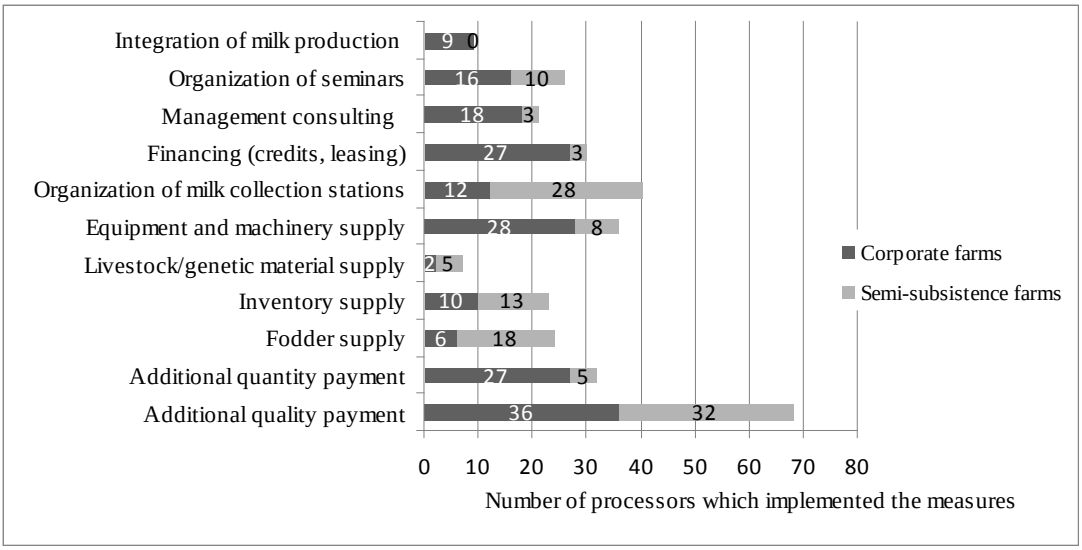
Source: Own data, 2009

4. Empirical results

This section is organized as follows: First, an overview on the support measures implemented by the processing stage will be presented. Secondly, the main factors influencing the decision of processing companies to implement vertical coordination mechanisms with their suppliers' base are analysed. Thirdly, we discuss the impact of vertical coordination schemes on quality improvement, trust development in the buyer-supplier relationship and the generation of further strategic advantages.

4.1 *Vertical coordination measures*

The interviewed processors implement various supporting mechanisms for their main suppliers. The processing enterprises seem to maintain rather long-term relationships with their suppliers, in average they are maintained more than three years. Although the form and extent of the initiated support programs differ, some typical patterns can be observed among the majority of interviewed processors. In general, processing companies implement one or more vertical coordination measures (Figure 2).



Source: Own data, 2009

Figure 2. Measures implemented by the processors, multiple statements, N=38.

The majority of the implemented measures is applied to both producer types. However, some group specific differentiation can be observed: Equipment and machinery supply represents the most substantial part of the support programs offered to the large milk producers. More than 70% of the interviewed processing enterprises provide equipment and machinery to their corporate farms (e.g., agricultural machinery, milking and cooling equipment, and transport vehicles etc.). These transactions are organized by additional contracts and the milk producers compensate for the investments with their milk deliveries. Processors offer in addition credits and/or leasing arrangements to support the purchase of new equipment and machinery. In addition, nine processing companies also vertically integrated several corporate farms which in turn profit from a transfer of technique (e.g. new milking machines, cooling tanks, and agricultural machinery) and know-how. Two different procedures of vertical integration can be observed: either the processing enterprise becomes the single

owner of the milk farm or the ownership is shared between the milk processor and the farm owner. The measures implemented to the semi-subsistence farms are comparably small scaled: fodder, inventory and livestock supply and to lesser extent equipment and financing and refer to the rather basic technical and logistical challenenges which this supplier group is facing. While support measures offered to the large producers are backed up through additional contracts or contract supplements, the support mechanisms for the small scale producers are often implemented without any further formal agreements. Seminar organization, inventory and fodder supply, as well as the organization of the milk collection points[3] (equiped with cooling tanks and mobile quality control labs) are in this context the applied measures.

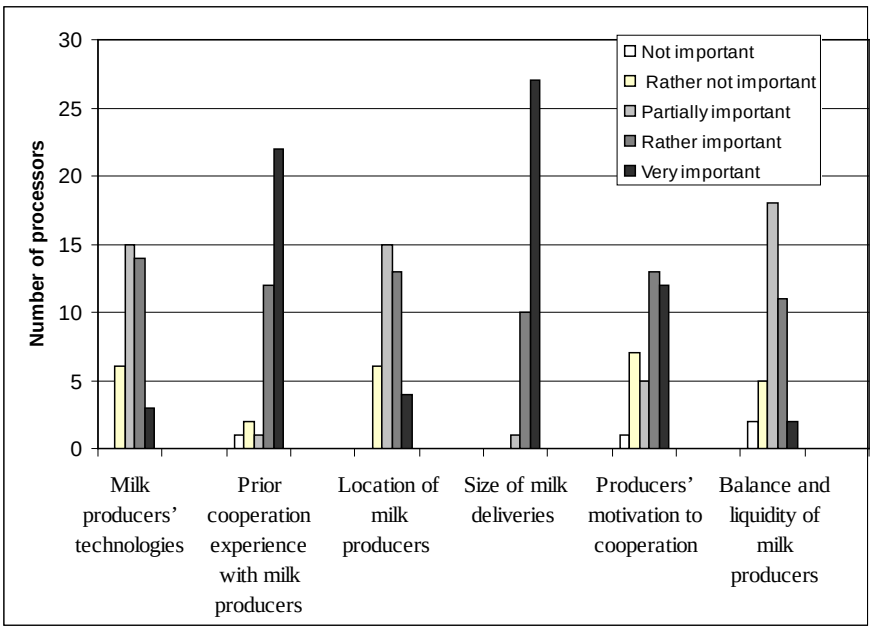
Almost all interviewed processing companies prefer to source their milk from large producers due to the better supply quality, higher delivery volumes and logistical advantages. Only one company emphasizes the interest to collaborate the semi-subsistence farms because of the well established long-term relationship. In general, being unable to collect the necessary production volumes exclusively from their corporate farm suppliers, processors are forced to source an essential part of their milk supplies from the semi-subsistence farms. The deliveries from the corporate farms and semi-subsistence farms constitute in average almost equal shares in the supply structure of the interviewed processing companies. Corporate farms deliver in average 47.5 % and semi-subsistence farms 48.8 % of the milk to the processing companies[4]. Although the semi-subsistence farms play a key role in the milk supplies, their comparably low bargaining power weakens their interaction position with the processors. The exchange relationship between processing enterprises and corporate farms is usually constituted through formalized written contracts. In contract, only 65 % of the processing companies use formalized written contracts in their cooperation with the semi-subsistence farms, the rest of the companies rely on oral agreements or general agreements which have been negotiated between the village municipals and processors. However, the fact that processors implement support programs to their semi-subsistence suppliers and work in direct coordination might indicate a tendency towards the integration of this specific supplier group into the dairy supply chain.

4.2 Drivers of vertical coordination

Milk delivery volumes and prior coordination experience with the milk producers are considered by the majority of the processors (by 37 and 34 companies respectively) as very important driving force to establish vertical coordination schemes to their suppliers. The fact that the size of milk deliveries is claimed by the majority of the processors as a major driving force of VC indicates that uncertainty plays an important role in the implementation of vertical coordination measures. According to the TCE approach uncertainty is expected to positively influence the decision for tighter forms of vertical governance (Figure 3).

[3] The main idea behind the milk collection stations is to improve the sourcing efficiency; this measure requires the highest organizational and financial resources among all support programs offered to the semi-subsistence farms.

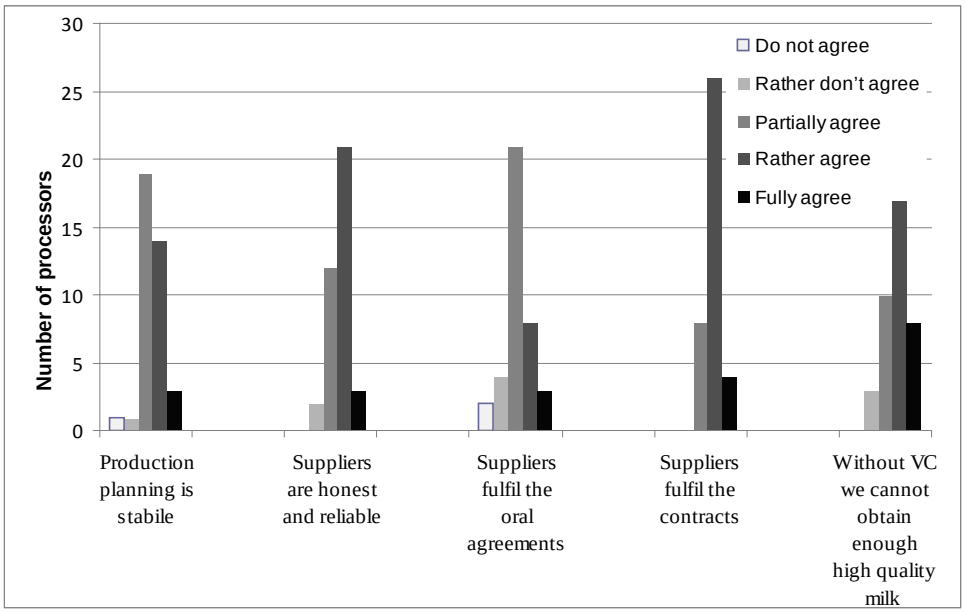
[4] Some processors use intermediary firms for the milk collection from semi-subsistence farms in remote regions in order to simplify the logistics planning. The share of intermediary suppliers constituted only 3.7% within the sample.



Source: Own data, 2009

Figure 3. Factors influencing processors decision to implement VC measures to their suppliers, N= 38.

To operationalize the term uncertainty we distinguish between "supply uncertainty" (e.g., insufficient milk quality and quantity) and "uncertainty of the suppliers´ behaviour" (e.g., suppliers' honesty and reliability, contract fulfilment)[5].



Source: Own data, 2009

Figure 4. Types of uncertainty in the supplier relationship, processors perspective, N = 38.

The majority of the interviewed processors experience difficulties in their production planning. Only three processors fully agree that they face stable milk deliveries (Figure 4). Most of the

[5] Vertical coordination is considered not as a one-time decision but as a rather dynamic process of applying of a variety of support projects to different suppliers over various periods of time. Therefore, companies continually experience some uncertainty and react with the implementation of support programs and tighter governance forms to particular suppliers.

processors assess VC as a vital tool to reduce delivery uncertainties: More than 65% of the processing companies claim that without VC they could not obtain sufficient high quality milk volumes. These results support the assumption on the positive association between uncertainty and the implementation of vertical coordination schemes. Moreover, the survey results give some indications on the interrelation between the uncertainty of suppliers' behaviour and tighter governance forms. Nearly 40 % of the interviewed processors (14 firms) did rather not or only partially agree with the statement that their suppliers behave reliable and honest. Moreover, buyer-supplier relationships which are constituted through written contracts appear to lead to a higher degree of contract fulfilment than less formalized terms of exchange as e.g. oral agreements.

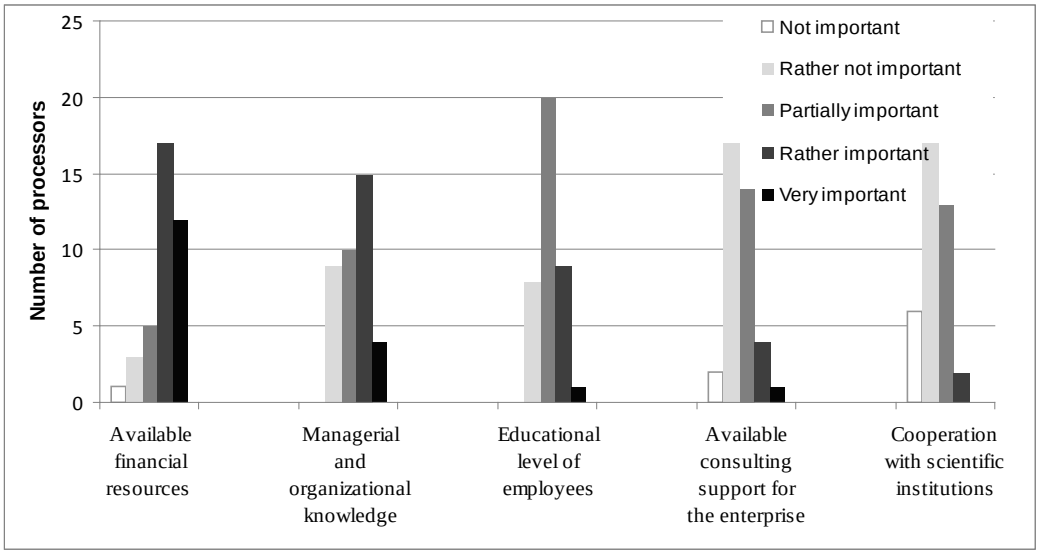
The next paragraph discusses the role of asset specificity as a driver of vertical coordination. In order to determine the extent of transaction specific investment the following attributes are considered: Time invested in the relationship, difficulty to find new suppliers and risk of loosing the investments in case of changing or loosing the suppliers.

Table 4. Asset specificity, the processor perspective, N = 38.

	Do not agree	Rather don't agree	Partially agree	Rather agree	Fully agree
If we change/lose our main suppliers, we will lose what we invested in them	0	8	6	16	8
We invested a lot of time to find our main suppliers	0	5	15	11	7
If we change/lose our main suppliers, it will be difficult to find new	0	2	12	13	11

Source: Own data, 2009

Nearly half of interviewed enterprises state that they invested a significant time amount to find their actual main suppliers (Table 4). Moreover more than 90% of the processors confirm that if they loose or change their main suppliers it would be difficult for them to find new ones. These results reflect the dependency of the processing companies from their supplier base and explain in addition the motivation of the processors to closer align their suppliers to the processing level.



Source: Own data, 2009

Figure 5.The importance of different resources on the processors decision to implement VC, N=38.

Within the conceptual framework of this research the availability of firm specific resources is perceived as the third component in the set of driving forces that support the implementation of tighter

vertical coordination forms. As the survey results demonstrate the availability of financial and managerial resources are the most crucial factors that influence the processors decision to implement vertical coordination schemes (Figure 5). More than 75% of the processors (29 firms) claim that the availability of financial resources is very or rather important for their decision to implement VC. Still, nearly half of the interviewed processors claim that managerial and organizational knowledge as a very or rather important factor in this context. It can be assumed that the relatively high amount of foreign owned companies in our sample (Table 2) also might have had a positive impact on the decision to initiate VC in the respective firms. In contrast, the educational level of employees, the availability of consulting support or the coordination with scientific institutions proofs to play for most of the interviewed enterprises a rather insignificant role.

4.3 Impacts of vertical coordination

The majority of the interviewed enterprises confirm that the quality of milk deliveries has improved as a result of the implemented support programs (Table 5). We distinguish between the general quality of the milk deliveries in terms of quality grade, average content of fat and protein, physical cleanness of the milk and the fulfilment of hygienic standards during production process in particular (e.g. the cleanness of the milking machinery and fulfilment of the sanitary regulations during and after the milking process including cooling). In this regard more than 90% of the processors (35 firms) observe significant improvements among their corporate farms and state that they fully or rather agree with the statement that this supplier group improved the fulfilment of hygienic norms. In contrast, the performance of the semi-subsistence farmers is rather differently assessed. Only 52 % (20 firms) of the processors fully or rather confirm hygienic improvements in this supplier group. This performance gap between the two producer groups might be explained by the fact that semi-subsistence farms have already reached their production- and quality capacities as still most of them perform the milk extraction process manually. According to the quality requirements this milk can not reach the highest quality classes anyway. This situation is further supported by the fact that semi-subsistence farms receive - in contrast to the large farm suppliers - rather small scaled support programs which do not predominantly focus on the supply of equipment and machinery (Figure 2). In contrast, corporate farms profit to a large extent from an intensive technical transfer which enables them to comply with the requested hygienic standards and by that to improve their overall milk quality.

Table 5. Impact of VC on the quality of delivered milk, the processor perspective, N=38.

After the implementation of vertical coordination:	Do not agre	Rather don't agree	Partially agree	Rather agree	Fully agree
Quality of milk deliveries from producers increased					
- Corporate farms	0	0	5	13	20
- Semi-subsistence farms	0	2	21	11	4
Producers better comply with hygienic norms					
- Corporate farms	0	0	3	18	17
- Semi-subsistence farms	0	2	16	17	3

Source: Own data, 2009

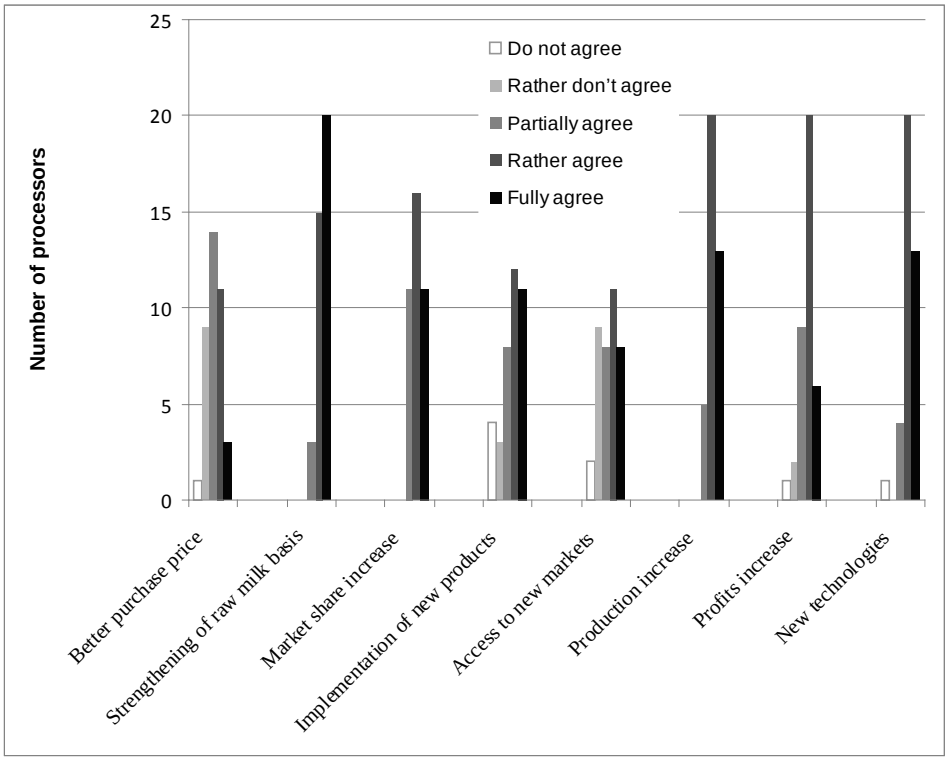
It can be argued that even smaller and financially intensive support mechanisms can contribute to quality improvements on the level of semi-subsistence farms. However, given the observed coordination strategies and their variation among both supplier groups it is questionable how semi-subsistence farms can sustainably further increase their income base from their milk supply activities and improve their bargaining position in the food supply chain once they have reached a certain production volume and quality level. The majority of processors observe various positive changes among their suppliers after the implementation of VC measures. Still, there are some differences among the supplier groups (Table 6).

Table 6. Impact of VC on trust, the processor perspective N=38.

After the implementation of vertical coordination:	Do not agree	Rather don't agree	Partially agree	Rather agree	Fully agree
Milk producers are more interested to provide information on milk production and quality					
- Corporate farms	1	0	3	18	16
- Semi-subsistence farms	1	5	14	15	3
Milk producers break the contract terms and oral agreements less frequently					
- Corporate farms	0	0	6	23	9
- Semi-subsistence farms	2	4	16	13	3
Singular delivery and short-term contracts transform into long-term coordination					
- Corporate farms	0	0	4	14	20
- Semi-subsistence farms	0	2	13	15	8
We can better rely on our milk producers in terms of milk quality and delivery volumes					
- Corporate farms	0	0	4	16	18
- Semi-subsistence farms	3	5	19	8	3

Source: Own data, 2009

In general, more processing companies state to have trustful relationships with the corporate farms than with the semi-subsistence suppliers. More than 80% of the processors rather or fully agree that the contract fulfilment from the side of the corporate farms has improved since the implementation of VC, while only 16% of them observed a comparable positive development among their semi-subsistence farm suppliers. In addition, nearly 90% of the processors assess the deliveries from corporate farms as reliable, but only 11% value the semi-subsistence farms suppliers as reliable partners. According to the personal interviews, the processors perceive the corporate farm suppliers in tendency as equal and indispensable partners. It can be assumed that the better assessment of the corporate farms performance might occur due to the fact that this supplier group benefits in many cases from scale advantages which not only facilitate the further exploitation of homogenous product qualities, -prices and –volumes but also lead to improved management opportunities: These can e.g. be reflected in a specialised division of labour as well as the recruitment of qualified staff which is capable to efficiently initiate and exploit the know-how transfer throughout value chain. In turn semi-subsistence farms can not utilize these scale advantages which puts them in a comparably weak bargaining position and increases their dependency from their processor.



Source: Own data, 2009

Figure 6. Strategic advantages achieved by processing companies through VC, N=38.

More than 90% (35 firms) fully or rather agree that vertical coordination contributed to strengthen their raw milk supplies (Figure 6). These results confirm the initial assumption that uncertainty is a major main driver for the implementation of the tighter vertical coordination forms. The improved delivery base leads consequently to production increases on the processing side, which is fully or rather confirmed by over 86% (33 firms) of the interviewed processors. Moreover, the same amount of processors strategically benefits from the implementation of new technologies and processes as a result of vertical coordination, while more than two thirds of the processors fully or rather agreed that their market shares (71%) and profits (68%) increased. It could be assumed that quality and volume related improvements on the supply side as well as technological innovations supported the processing side to further diversify into new (high-quality) markets segment which could have turn a certain positive impact on market shares and firm profitability.

Table 7 presents the suppliers' perspective on the potential advantages achieved through vertical coordination. The main strategic advantages emphasized by the both supplier groups are improved communication- and information processes between the chain stages. However, the semi-subsistence farms appear to have a lower satisfaction level regarding the strategic advantages than the corporate farms. Beside improved information access and communication flows, extended contract duration and more reliable relationships are the strategic advantages most often claimed by semi-subsistence farms. Interestingly and in clear contrast to the corporate farm suppliers, the semi-subsistence farms state that neither their delivery volumes and milk quality nor their production planning has been improved through vertical coordination. These results can be explained by fact that the support programs for the semi-subsistence farms are mostly of a technical (e.g. fodder and inventory supplies) or organizational (e.g. milk collection points) nature and do not predominantly refer to the improvements of the production process by means of equipment supply or financial assistance as applied to the corporate farms.

Table 7. The strategic advantages achieved by milk producers through VC, N=44.

	Do not agree	Rather do not agree	Partially agree	Rather agree	Fully agree
Better milk price					
Corporate farms	0	0	4	12	3
Semi-subsistence farms	0	2	10	12	1
Better communication with the dairy					
Corporate farms	0	0	1	6	12
Semi-subsistence farms	0	2	3	9	11
New knowledge of milk production and quality					
Corporate farms	0	1	8	8	2
Semi-subsistence farms	1	6	10	8	0
Higher milk production and quality					
Corporate farms	0	2	5	9	3
Households	6	15	4	0	0
Access to financial resources					
Corporate farms	0	0	6	6	7
Semi-subsistence farms	20	5	0	0	0
More information from the dairy					
Corporate farms	0	0	0	6	13
Semi-subsistence farms	0	1	6	12	6
Guarantee our investment in milk production					
Corporate farms	0	0	3	7	9
Semi-subsistence farms	1	4	8	11	1
Better planning possibilities					
Corporate farms	0	0	2	8	9
Semi-subsistence farms	0	2	6	15	2
New knowledge in production planning					
Corporate farms	0	2	5	8	4
Semi-subsistence farms	11	10	4	0	0
Long-term cooperation					
Corporate farms	0	0	1	9	9
Semi-subsistence farms	0	1	4	18	2
We can rely on our agreement with the dairy					
Corporate farms	0	0	4	6	9
Semi-subsistence farms	0	0	5	19	1

Source: Own data, 2009

5. Summary

The empirical results support the assumption that uncertainty, transaction specific investments and resource availability are important driving factors for the implementation of vertical coordination in the Ukrainian dairy sector. Securing the raw milk deliveries is the main motivation of the processors to initiate vertical coordination measures. The availability of financial resources is of decisive importance when it comes to the decision to implement vertical coordination.

The survey results indicate that although vertical coordination measures have a positive impact on both supplier groups, corporate farms tend to have higher benefits from the vertical coordination schemes than semi-subsistence farms. The measures implemented to the semi-subsistence farms are in tendency rather small scaled and less capital intensive. Though the semi-subsistence farms deliver an essential part of the milk supplies to the processing industry, the survey results show that the processing companies focus on the cooperation with their corporate farm suppliers and not always consider the semi-subsistence farms as the full-value cooperation partner. Given the observed coordination strategies and their variation among both supplier groups it is questionable how semi-subsistence farms can sustainably further increase their income base from their milk supply activities and improve their bargaining position in the food supply chain once they have reached a certain production volume and quality level. Moreover, processing companies claim to have more trust in their corporate farms suppliers. It can be assumed that the better assessment of the corporate farms

performance might be due to the fact that this supplier group benefits in many cases from scale advantages and improved management opportunities which semi-subsistence farms can not utilize.

References:

Balmann, A., Dautzenberg, K., Happe, K., Kellermann, K. (2006). On the dynamics of structural change in agriculture: Internal frictions, policy threats and vertical integration, *Outl. Agricult.* 35, 115-121

Barney, J.B. (1991): Firm resources and sustained competitive advantage, *Journal of Management*, 17: 99-120

Boehlje, M. (1999). Structural Changes in the Agricultural Industries: How Do We Measure, Analyze and Understand Them? *American* J*ournal of Agricultural Economics*, Vol. 81, No. 5, Proceedings Issue: 1028-1041.

Coase R. H. (1937): The Nature of the Firm. *Economica, New Series.* Vol. 4, № 16: 386-405

Hamel, G. (1991). Competition for competence and inter-partner learning within international strategic alliances. *Strategic Management Journal, Summer Special Issue,* 12: 83-103.

Hines, T. Dr. (2004): *Supply Chain Strategies. Customer driven and customer focused*. Great Britain: Elsevier.

Madhok, A. (2002). Reassessing the fundamentals and beyond: Ronald Coase, the transaction cost and resource-based theories of the firm and the institutional structure of production. *Strategic Management Journal*,23 (6): 535-550.

Peterson H.C., Wysocki A., Harsch S.B. (2001). Strategic choice along the vertical coordination continuum. *International Food and Agribusiness Management Review*, 4: 149-166

Schleinitz, J. (1998): Vertragsgestaltung in den Transformationsländern Mittel- und Osteuropas. Eine transaktionskostentheoretische Untersuchung. 169 S. *Karlsruhe Papers in Economic Policy Research*, Band 6.

Sporleder T.L. (1992): Managerial Economics of Vertically Coordinated Agricultural Firms. *American Journal of Agricultural Economics*, Vol. 74, Nr. 5, Proceeding Issue: 1226-1231

Schrader, L.F. (1986): Responses to forces shaping agricultural marketing: contracting. *American Journal of Agricultural Economics*, Vol. 68, No. 5, Proceedings Issue: 1161-1166.

Wernerfelt, B. (1984): A Resource-Based View of the Firm. *Strategic Management Journal*, Vol. 5, Nr. 2: 171-180

Williamson O.E. (1975). *Markets and hierarchies, analysis and antitrust implications*. New York NY. Free Press.

Williamson, O.E. (1979). Transaction cost economics: the governance of contractual relations. *Journal of law and economics*, 22: 233-261.

Williamson O. E. (1981). The economics of organization: the transaction cost approach. *The American Journal of Sociology*, 87 (3): 548-577.

Williamson O. E. (1985). *The economic institutions of capitalism: Firms, markets, relational contracting*. New York: Free Press.