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DISCUSSION PAPER

Institute of Agricultural Development in Central and Eastern Europe

INDUSTRIAL ORGANISATION OF THE FOOD INDUSTRY IN LITHUANIA: RESULTS OF AN EXPERT SURVEY IN THE DAIRY AND SUGAR BRANCH

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ABSTRACT

Based on the analytical framework of the structure-conduct-performance paradigm of the theory of industrial organisation, the paper analyses economic conditions that determine the degree of competitiveness in the Lithuanian dairy and sugar industry. The study is based on information from milk and sugar beet processing enterprises acquired through a survey carried out at the beginning of 1998. The results reveal that the development of market conditions and market behaviour in the sectors examined has in general progressed. This holds especially for the dairy industry. In the sugar bran ch state intervention is still considerable, since the sector is regarded as "strategic". Privatisation in both sectors has been almost completed. Competition can also be considered as functioning, although horizontal concentration has increased over the last years. Economies of scale are of relevance in both food branches. They play a particularly important role in the sugar industry. With regard to capacity utilisation, the sugar industry is in a better situation. A common problem for both sectors is the low investment activity, mainly due to a lack of own funds and unfavourable credit as well as macroeconomic conditions. In addition, the Lithuanian dairy and sugar sector have to cope with a very fragmented input sector which leads to high transaction and transportation costs. In the dairy industry, high seasonality of production, state regulation in the procurement of raw material and unfavourable export conditions are regarded as additional major problems.

ZUSAMMENFASSUNG

Der Diskussionsbeitrag untersucht mit Hilfe des Structure-Conduct-Performance Ansatzes der Industrieökonomik die Faktoren, die die Wettbewerbsfähigkeit der litauischen Milch- und Zuckerindustrie beeinflussen. Der Analyse liegen Informationen zugrunde, die im Rahmen einer Unternehmensbefragung Anfang 1998 gesammelt wurden. Die Ergebnisse zeigen, daß bei der Entwicklung marktwirtschaftlicher Rahmenbedingungen und Verhaltensweisen insgesamt beträchtliche Fortschritte erzielt worden sind. Dies gilt vor allem für die Milchindustrie. Im Zuckersektor sind dagegen staatliche Interventionen noch recht stark, ausgeprägt, weil er als „strategisch" betrachtet wird. Die Privatisierung ist in beiden Branchen fast abgeschlossen. Auch der Wettbewerb kann als funktionsfähig bezeichnet werden, obwohl die horizontale Konzentration in den letzten Jahren zugenommen hat. Positive Skaleneffekte sind in beiden Sektoren von Relevanz. Jedoch sind sie in der Zuckerindustrie von größerer Bedeutung. Hinsichtlich der Kapazitätsauslastung ist die Zuckerindustrie in einer besseren Lage. Ein gemeinsames Problem beider Sektoren ist die geringe Investitionstätigkeit, die ihre Ursachen hauptsächlich in dem Mangel an Eigenkapital und ungünstigen Kredit- sowie makroökonomischen Rahmenbedingungen hat. Darüber hinaus sieht sich die litauische Milch- und Zuckerindustrie mit einem fragmentierten Inputsektor konfrontiert, mit der Folge hoher Transaktions- und Transportkosten. In der Milchindustrie werden die erhebliche Saisonalität der Produktion, die staatliche Regulierung im Bereich der landwirtschaftlichen Rohstoffe sowie ungünstige Exportbedingungen als weitere große Probleme betrachtet.

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1 INTRODUCTION

As part of Lithuania's inheritance from the centrally planned economy of the former Soviet Union, the food processing sector started its transition into a market economy from a very low degree of efficiency, which, to a large extent, accounts for the low competitiveness of domestic vis-à-vis imported food products. Since the bulk of produce from the agricultural sector is raw materials that need to be processed into consumable food products, this lack of competitiveness of the food industry does not only harm this sector but also primary agriculture. Consequently improvements in agriculture will only occur when efforts to increase the efficiency and technological performance of food processing bring significant results.

So far, however, agricultural economists have paid little attention to the problems involved in the restructuring process of the Lithuanian food industry. A first step to breach this gap has been undertaken by the authors of this paper in a previous publication, using publicly available data and information. The objective of this earlier study was to provide a general overview of the restructuring process in the whole food processing sector.[1] In order to gain deeper and more detailed insights into the problems of the Lithuanian food industry seven years after the beginning of transition, in a next step a questionnaire-based survey was carried out in two important subsectors of the Lithuanian food industry, namely the milk and sugar branches.

The objective of the present paper is to present the results of this survey using the structure-conduct-performance (SCP) paradigm of the Theory of Industrial Organisation as an analytical framework. The paper is organised as follows. In chapter 2 the methodological procedure of the survey is laid down. In chapters 3 and 4 the results of the survey are discussed. In both chapters also policy recommendations are provided, identifying a number of measures that are necessary for the future development and improved competitiveness of both the milk and the sugar beet processing sectors. Chapter 5 contains a summary and some concluding remarks. The results of the questionnaires obtained in both of the sectors mentioned are presented in Annexes 1 and 2, respectively.

2 METHODOLOGY

Officially published data provide a first indication with respect to structural changes in the food industry and the performance of this sector. In many respects, however, this information is not sufficient to cover all important aspects of the restructuring process; this holds especially at the level of specific branches of the food industry. For this reason it was deemed necessary to use the direct way of obtaining additional food branch-specific data by means of questionnaires.

2.1 Selection of the sectors to be analysed

In Lithuania the dairy industry is the most important food branch with respect to its share in output and employment of the total food industry. In 1997 the milk processing sector accounts for 30 % of total sales and 28 % of the total number of employees in the food industry (Table 1). The importance of the dairy sector also becomes obvious when looking at the demand side. Expenditures on dairy products make up a large part of household budgets, with

[1] The results of this study were published in the IAMO Discussion Paper No. 9, Girgzdiene, V. et al. (1998): Restructuring the Lithuanian Food Industry: Problems and Perspectives.

5.5 % of total consumption expenditure and 11.8 % of total expenditure on food products in the same year.[2] In the export of agricultural and food products, dairy products account as well for the greatest part with about 33 %. Thus, it was decided to carry out the survey in this particular sub-sector.

The second subsector chosen is sugar beet processing. With respect to its relative size it is of less importance, however, it is a traditional branch in Lithuania with an old infrastructure. Sugar beet processing accounts for 7.4 % of total sales of the food industry in 1997. In the same year the number of employees in this sector made up 4.9 % of the total number of employees in the food industry (Table 1).

Table 1: Average annual employment and sales in the manufacture of food products and beverages in Lithuania 1997

	1997		**1997**	
	Sales in thousand Litas[1]	in %	Number of employees	in %
Manufacture of Food Products and beverages	4846099	100.0	37899	100.0
Milk	**1463124**	**30.2**	**10471**	**27.6**
Meat	747792	15.4	5596	14.8
Flour	356302	7.4	1678	4.4
Grain for fodder	326592	6.7	2167	5.7
Sugar	**360045**	**7.4**	**1856**	**4.9**
Fish	101240	2.1	1472	3.9
Fruit and vegetables	51672	1.1	888	2.3
Plant oil	43496	0.9	302	0.8
Beverages	705748	14.6	5175	13.7
Other food products	690088	14.2	8294	21.9

Note: [1] at current prices, without VAT and excise.

Source: DEPARTMENT OF STATISTICS TO THE GOVERNMENT OF THE REPUBLIC OF LITHUANIA (various years): Industry, Vilnius; LITHUANIAN DEPARTMENT OF STATISTICS, unpublished material.

2.2 Survey Method and Structure of the Questionnaire

The survey in the dairy and sugar branch took the form of face-to-face interviews. This method was chosen in order to obtain a high respondent rate and to be able to clarify any questions immediately. The interviews were limited to managers, economists and accountants, because people in these positions usually have the best level of information regarding their enterprise. The survey was carried out at the beginning of 1998.

The aim of the questionnaire was to collect data on the enterprises' legal status, their incentive structures, and their economic activities during the period 1994-1997, in order to evaluate how

[2] Department of Statistics to the Government of the Republic of Lithuania (1998): Household Income and expenditure in 1997, Vilnius.

the transition process has so far affected the economic behaviour and how this in turn has influenced performance in the sector. The theoretical concept that served as guidance was the structure-conduct-performance paradigm, which attempts to evaluate market performance in relation to a firm's conduct and the market structure. Since each of the main elements of this approach consists of many variables, all of which it would be impossible to include, the questionnaire was limited to the most important ones to which an answer could be expected.

The structure of the questionnaire does not exactly follow the SCP approach. Practical, i.e. mainly psychological reasons had to be taken into account in interviewing. The questionnaire thus had to be designed so that managers would be willing to provide answers. In detail it consisted of the following groups of questions:

1. General questions about the enterprise, e.g. with respect to its legal status and ownership structure (Part 1 in the Annex).

2. Questions concerning the changes in procurement and sales activities of food processing enterprises in order to get an indication of behavioural changes (Parts 2, 3 and 5 in the Annex).

3. Questions about the institutional environment of the enterprises, e.g. market information system and the incentive structure (Parts 4 and 6 in the Annex). This information is intended to be used to explain enterprise behaviour.

4. General questions about the enterprises' main problems and prospects (Part 7 in the Annex). Among other things, the answers should give an indication of the entrepreneurs' attitudes and their market orientation.

In order to avoid simply listing the survey results here, they are presented within the analytical framework of the SCP approach, and the structure of this paper thus deviates from the one used in the questionnaires.

2.3 Criteria for selecting firms and relevance of the sample

On January 1, 1998 there were 67 registered milk processing enterprises in Lithuania, of which 59 were in operation. The selection of firms were based on recommendations by the Milk Processing Association. Criteria for their choice was the production volume and location of the firms. The Milk Processing Association proposed 23 large-scale milk processing enterprises (processing between 50 and 200 thousand tons of raw milk per year) and 2 newly established small-scale ones situated close to Vilnius for participation in the survey. The selected milk processing enterprises represent almost the entire Lithuanian dairy industry, since they purchase over 90 % of total milk procurement. However, only 17 of the selected 25 enterprises agreed to participate in the survey and provide data about their economic activities. The examined milk processing firms accounted for 29 % of all milk processing enterprises in operation. Their share in total milk procurement was 84 % and they employed 86 % of the total workforce in the Lithuanian milk industry in 1997.

In the sugar industry there are four refineries in Lithuania, all of which participated in the survey, thus making it 100 % representative.

Due to the much greater relevance of the dairy sector the results of the survey in this branch are described in more detail (see chapter 3) than the once for the sugar branch (chapter 4).

3 THE DAIRY SECTOR

3.1 Structure

3.1.1 Ownership structure

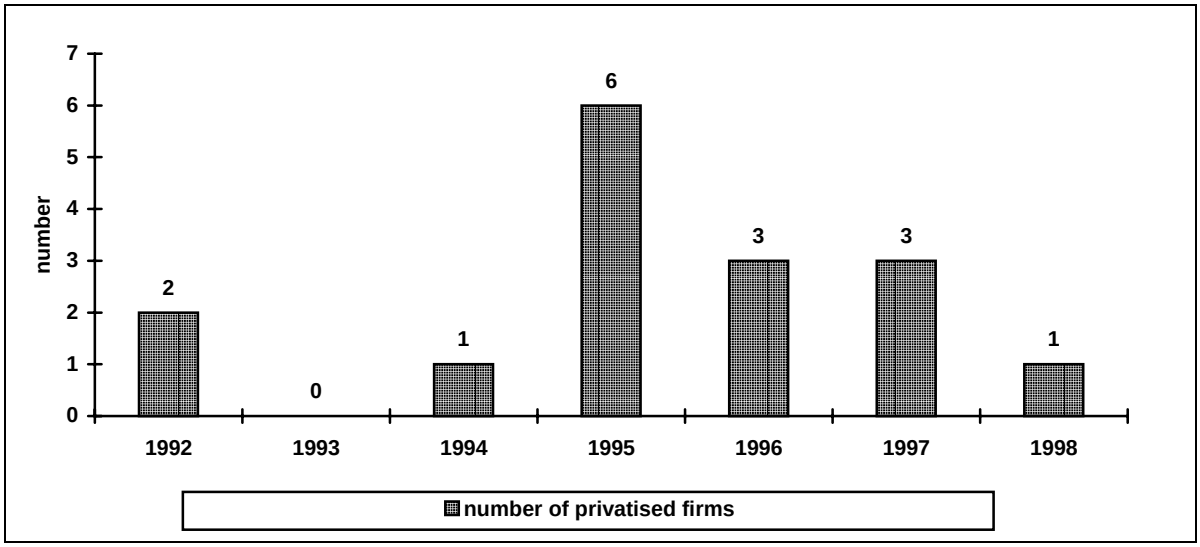
A major step in transforming a centrally planned economy into a market economy is the privatisation of formerly state-owned firms. Markets for goods, factors of production, and foreign exchange will operate better if participating firms are independent, decentralised, and profit-seeking - i.e., if they are private rather than state entities. Private firms are more likely than state enterprises to respond quickly and correctly to price signals in domestic and international markets, because they have stronger incentives. Enterprise managers in private firms are in general subject to

- contractual discipline by shareholders seeking profit maximisation,
- take-over discipline by potential private bidders,
- bankruptcy discipline by creditors.

In contrast, in state enterprises incentives to react properly to market signals are weak, because losses are covered by budget grants or automatic bank credit.

The privatisation process in the dairy sector started in 1992, when of the 17 enterprises in the survey two were privatised and one was newly founded. The privatisation peak was reached in 1995, when six of the observed enterprises (35 %) were privatised (Figure 1).

Figure 1: Development of privatisation in the investigated enterprises in the Lithuanian dairy sector



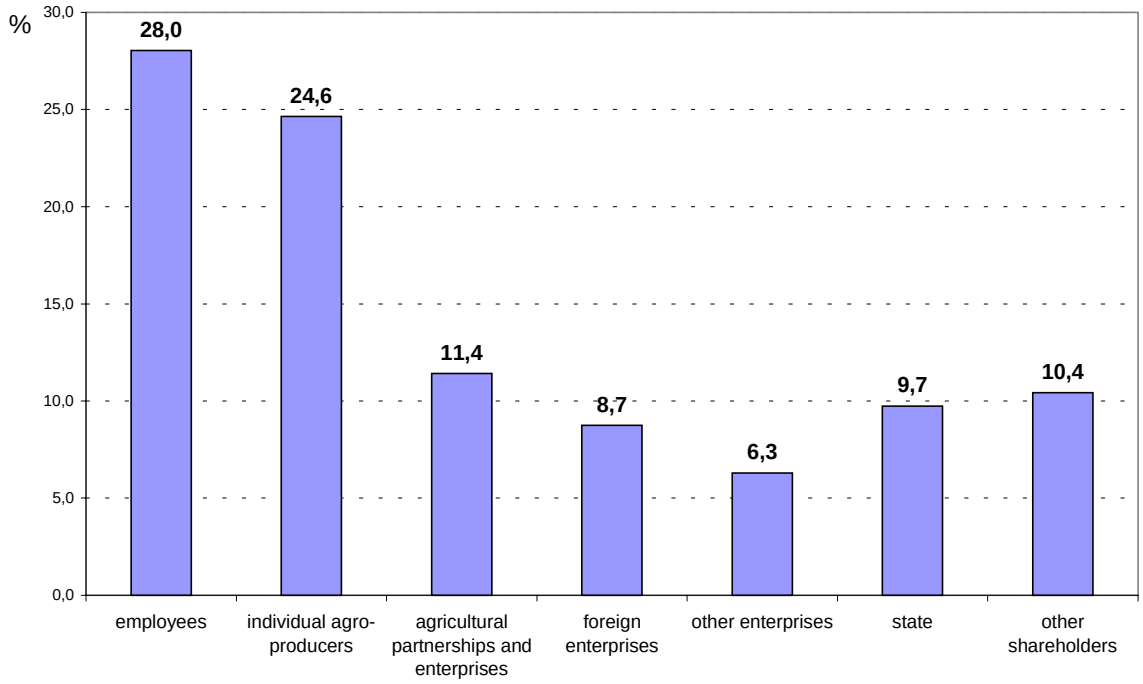
Source: Own survey of the Lithuanian dairy sector.

During the privatisation process most food processing enterprises in Lithuania acquired the legal status of joint stock companies. Of the 17 milk processing enterprises investigated, 16 have the legal status of joint stock companies (94 %) and one of a co-operative. 15 joint stock companies of the sample were formerly state-owned large-scale milk processing enterprises. One small enterprise was newly established in 1992 and also has the status of a joint stock company.

The milk processing co-operative "*Aukstaitijos pienas*", established in May 1997 previously was a joint stock company called "*Kupiskio pienas*". Most of "*Kupiskio pienas*" capital shares (85.5 %) had belonged to agro-producers, who felt that processors received higher profits than they did themselves. With the establishment of the co-operative "*Aukstaitijos pienas*", the agro-producers intended to secure for themselves a higher share of the enterprises' profits. Another aim of the co-operative was to stabilise the market of raw materials, i.e. to guarantee the constant procurement of raw materials and to stimulate processors to provide different kinds of support to agro-producers (inputs, technical and economical advice, cooling equipment, etc.). More than two thousand farmers and between 20 and 30 agricultural partnerships and enterprises (i.e. big enterprises, usually former kolkhozes and sovkhozes) are members of the co-operative.

The overall ownership structure in the sample that has resulted from the privatisation process is presented in Figure 2.

Figure 2: Ownership structure in the investigated enterprises of the Lithuanian dairy sector in 1998, in %



Source: Own survey of the Lithuanian dairy sector.

Agro-producers own most of the shares in the enterprises of the Lithuanian dairy industry. In the 17 investigated companies the shares of individual agro-producers and agricultural partnerships and enterprises on average make up 25 % and 11 %, respectively. At the beginning of 1998 the total capital share of agro-producers ranged between 8 % and 50 % in the enterprises of the survey. This high share of agricultural producers is related to the legislation on the privatisation of food processing enterprises. It stipulated that the shares of agro-service and food processing enterprises were to be offered for sale on preferential terms to all agricultural producers (including agricultural partnerships and enterprises). The aim of giving preferential treatment to agricultural producers was, firstly, to dilute assumed

monopsonistic power in the downstream sector, and secondly, to guarantee processors the supply with agricultural raw materials.

Another important group of owners are employees, including managers. Their share of stocks vary from 7 % to 50 %. On average employees own 28 % of the equity. The share of managers in this group is not large; they hold about 2 % of total joint stock capital in most enterprises. Only in one enterprise, which was newly established in 1992, the share owned by managers amounts to 67 % of the total.

The importance of the state as owner has been gradually reduced during the privatisation process. By 1998 the state only had shares in seven enterprises of the survey. In four enterprises these amounted to up to 3 % of the total, and only in three enterprises the state's share still was considerable, with 22 %, 67 % and 70 %, respectively. In these three enterprises the state has reserved its shares for future sale at nominal prices to former (pre-1940) land owners as compensation, in case they do not intend to take back the actual land.[3] However, since the beginning of 1998, the time of the survey, the state has sold many of its remaining shares, mainly to other enterprises of the same production profile. As a result the state share in the Lithuanian dairy sector on average accounted only for 6 % at the end of 1998.

Foreign capital has also started to penetrate into milk processing. On average the share of foreign capital in the investigated firms is 9 %. Three enterprises in the survey have attracted foreign investors, whose shares amount to between 41 % and 62 % of the total joint stock capital of these enterprises.

Cross-ownership of shares can also be observed in the dairy industry. Seven of the 17 enterprises (41 %) hold shares in other enterprises; three of them (18 %) in enterprises with the same production profile.

The results obtained by the survey support the findings of Girgzdiene et al. (1998), which were based on official statistical data.[4] With regard to behaviour and performance of the dairy branch, the ownership structure that has emerged could have negative impacts. In enterprises where the majority of shares belong to agricultural producers, who are having difficulties in running their own businesses profitably, are unlikely to be able to take on the difficult task of managing a processing enterprise. The danger in employee-owned enterprises is that employees might be more interested in short-term income maximisation rather than in long-term enterprise restructuring, which could result in job and income losses for the individuals. Severe problems both in farmer-owned and employee-owned enterprises can be expected with regard to investment. Both farmers and employees lack funds, and the financing of much-needed investments thus becomes quite difficult (see also Chapter 3.2.4). In addition, these ownership structures could crowd out outside investors, including foreign investors, who could inject much of the needed investment capital. This is due to the agency problems faced by lenders. As long as they have no real possibility to control the efficient use of investment resources, lenders will be reluctant to finance long-term restructuring measures.

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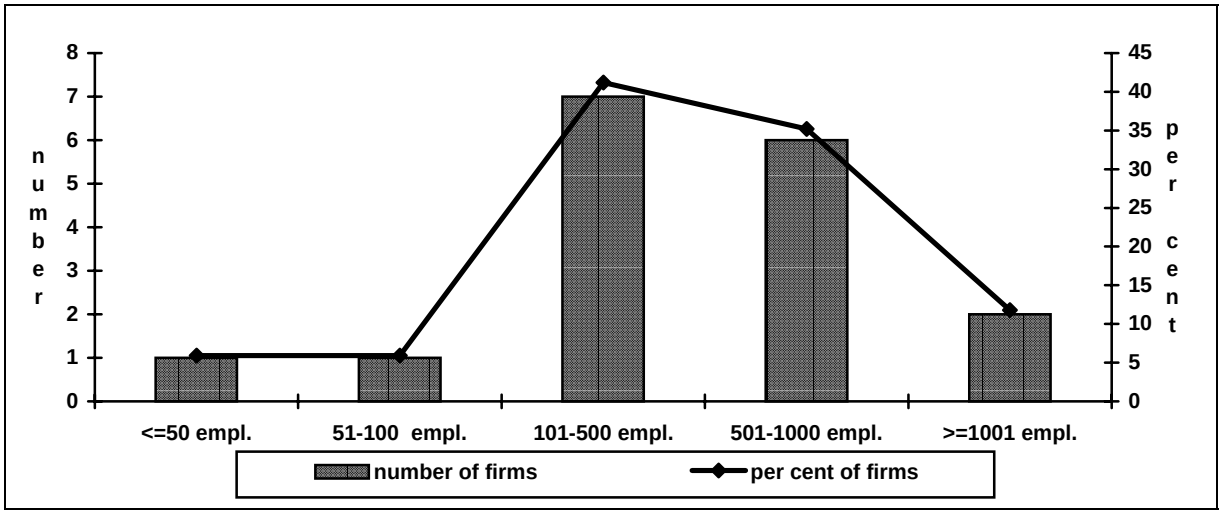
[3] Farmers expropriated in Soviet times who did not want to take back their land, were offered shares in food processing enterprises in compensation instead of money.

[4] The only difference is that the data provided by the questionnaires are more recent, so that the level of privatisation is a little higher.

3.1.2 Size distribution and horizontal concentration

According to the survey results the dairy industry in Lithuania is dominated by medium-and large scale enterprises (Figures 3a, 3b and 3c). If measured by the number of employees the firms' size distribution according to the sample is as follows: 8 enterprises (47 %) have more than 500 employees; of these, two employ even more than 1000 people. Seven enterprises (one co-operative; 41.2 %) fall into the category of 101 to 500 employees, one (5.9 %) into the group of 51 to 100 employees, and one (5.9 %) employs less than 50 people.

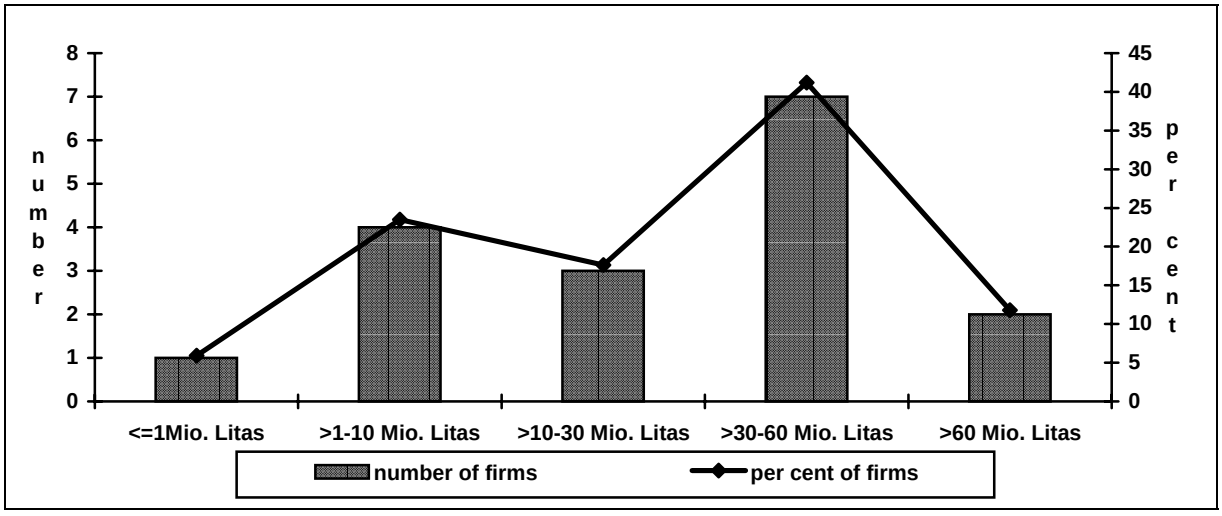
Figure 3a: Size distribution of the investigated enterprises in the Lithuanian dairy sector measured by the number of employees in 1998



Source: Calculations using data from the survey of the Lithuanian dairy sector.

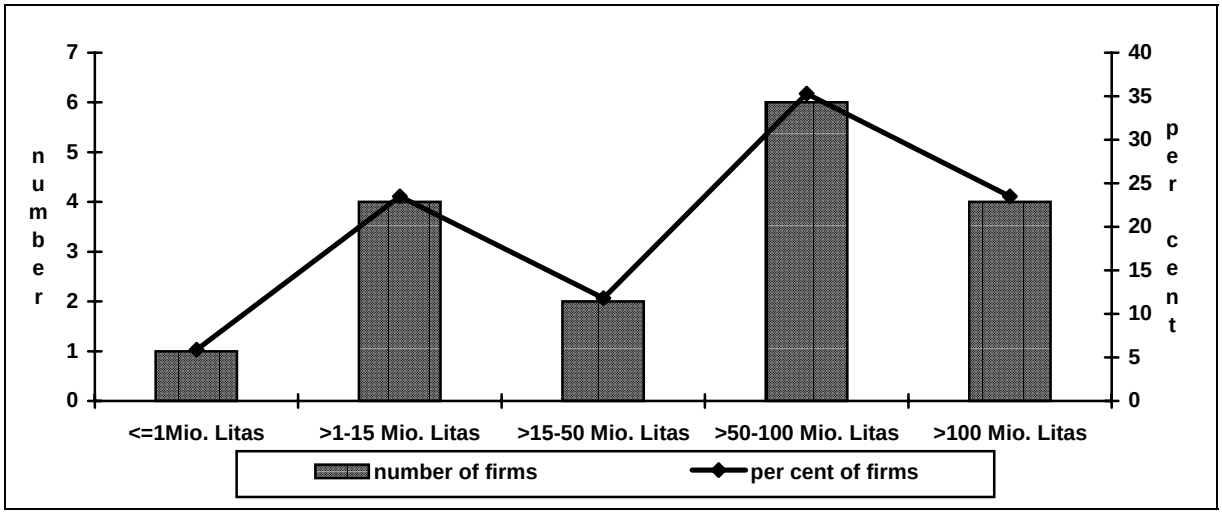
If size is measured by procurement or sales the picture is similar as Figures 3b and 3c reveal.

Figure 3b: Size distribution of the investigated enterprises in the Lithuanian dairy sector measured by procurement in 1998 (in Mio. Litas)



Source: Calculations using data from the survey of the Lithuanian dairy sector.

Figure 3c: Size distribution of the investigated enterprises in the Lithuanian dairy sector measured by sales in 1998 (in Mio. Litas)



Source: Calculations using data from the survey of the Lithuanian dairy sector.

According to the information obtained through the survey growing horinzontal integration can be observed in Lithuania. Enterprises have started to acquire shares of other enterprises with the same production profile, or to pay the debts of economically weak enterprises.[5] In those cases where enterprises took not only over part of the equity of other enterprises but bought the whole company this led to increasing concentration in the sector.

Two other developments have fostered the concentration process in the Lithuanian dairy sector. First, the bankruptcy of economically weak and in general small enterprises. Bankruptcy proceedings were opened against four milk processing enterprises in 1997 and against one in 1998. In addition, four economically weak dairies stopped their operation in 1998, although no claim provable in bankruptcy was brought against them yet. Second, mergers between economically strong enterprises have led to higher concentration in the market. The latter seem to play an increasing role. The merger of Mazeikiu pienine and Pasvalio suriai to create the new Pieno zvaigzdes company, now one of the major milk producers in Lithuania took place on January 1, 1999 is one example in this respect.

The rise in concentration can be seen when comparing concentration ratios[6] in 1998 with those of previous years. The data presented in Table 2 refer to all Lithuanian dairy firms and are thus not limited to survey information. The degree of concentration shown in Table 2 was calculated both, on the basis of milk procurement quantities and sales by dairy enterprises. The results reveal that concentration in the Lithuanian dairy sector increased in the period 1995 to 1998 continuously. This growth was especially pronounced in 1998, when CR3, CR4 and CR10 based on milk procurement quantities rose by 7.2 per cent, 8.5 per cent and 8.8 per cent, respectively compared to 1997. Calculations made on the basis of sales provide similar numbers although the level of concentration measured in the period considered is in general a bit higher.

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[5] The largest milk processing enterprises have in recent years each taken over a few smaller dairies. E.g. in July 1998 Birzu akcine pieno bendrove acquired 70 per cent of the shares of Vilniaus pienine. At the beginning of 1999 *Pieno zvaigzdes* acquired 33 per cent of the shares of *Kaunas pienas* and 13 per cent of the equity of *Panevezio pienas.*

[6] Combined market share of the k largest firms in a sector.

Table 2: Concentration indices[1] in the Lithuanian dairy sector in 1995-1998, per cent

	1995	1996	1997	1998	Changes			
					1996 to 1995	1997 to 1996	1998 to 1997	1998 to 1995
Calculations based on procurement quantities								
CR3	24.0	24.8	26.7	33.9	0.8	1.9	7.2	9.9
CR4	29.2	30.5	33.8	42.3	1.3	3.3	8.5	13.1
CR10	55.7	57.4	65.3	74.1	1.7	7.9	8.8	18.4
Calculations based on sales								
CR3	28.6	30.7	33.7	37.7	2.1	3.0	4.0	9.1
CR4	35.2	37.9	42.7	47.9	2.7	4.8	5.2	12.7
CR10	65.9	68.3	73.2	78.5	2.4	4.9	5.3	12.6

Note: [1] Combined market share of the three (CR3), four (CR4), or ten (CR10) largest dairy processing firms.

Source: Calculations by the Lithuanian Institute of Agrarian Economics based on data provided by the Milk Processing Association, the Department of Statistics to the Government of the Republic of Lithuania and Central Securities Depository of Lithuania.

A more comprehensive approach to measure concentration is by calculating the Herfindahl Index.[7] The Herfindahl Index considers all n firms in the sector and their market shares. In case of maximal concentration the index equals 1, given minimal concentration the index amounts to 1/n. The data necessary to calculate the Herfindahl Index was only available with respect to procurement quantities up to 1997. The results show a Herfindahl Index of 0.042, 0.045, and 0.054 for 1995, 1996 and 1997, respectively. Thus, this index confirms that concentration in the Lithuanian dairy sector is increasing.

Concentration processes in the dairy industry can be explained by economies of scale in processing, lower transaction costs and pecuniary economies of scale in procurement and sale, advantages in the areas of acquiring and processing information as well as of research and development (Weindlmaier 1998: 55; Kallfass 1993: 233).[8] Against this background the concentration processes in the Lithuanian dairy industry are reasonable entrepreneurial measures to adopt to market conditions and reveal that the selection function of competition is working. If economies of scale are realised through merger or acquisitions dairy products can

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[7] The Herfindahl Index (H) is defined as the square of the market share of each firm i summed up over all firms n in the sector:

$$H = \sum_{i=1}^{n} \left[\frac{x_i}{\sum_{i=1}^{n} x_i} \right]^2$$ with X_i procurement quantity (or sales) of firm i.

[8] Certainly large enterprises might also suffer from some disadvantages. Potential disadvantages of large enterprises are higher costs of co-ordination and control as well as lower flexibility and lower orientation towards customers requests (Weindlmaier 1998: 55).

be produced at lower costs, and thus the price competitiveness of the Lithuanian dairy sector might be strengthened. This seems to be especially of relevance since many small Lithuanian milk processing enterprises lack the necessary funds to meet the requirements of the changed laws on product quality and standardisation as well as phytosanitary and sanitary regulations. With EU membership these requirements will become even more stringent and thus will be an additional driving force for concentration. The Russian economic crisis, which slowed down milk and cheese exports to Russia and other CIS countries, has provided a further incentive for fusions in the sector. The concentration process in the Lithuanian dairy sector very likely will also generate more foreign investments since large entities are more attractive to investors.

However, horizontal concentration processes always imply the risk of restricting competition. At this stage of the restructuring process it is difficult to make any conclusion, whether the horizontal integration processes observed are endangering competition. The number of enterprises in this small country can still be considered as high. In addition foreign competition is possible due to e.g. the Baltic Agricultural Free Trade Agreement (BAFTA). Thus it might be assumed that Lithuanian milk processing enterprises have at present not much possibilities to abuse potential market power. This points also to the relevance of adequate institutions to secure competition. Anti-trust regulations play an important role in this respect. Lithuania disposes of appropriate anti-trust legislation, to which all companies including those in the agri-food sector, are subject. However, it is important that these regulations are applied.

3.1.3 Vertical integration and co-operation

Vertical integration is a common feature of almost all the enterprises studied. It has emerged as a result of both political decision-making and the self-coordination and self-organisation of economic entities. The Lithuanian government has stimulated vertical integration between food processors and agricultural producers by granting the latter preferences in the privatisation of processing enterprises (see chapter 3.1.1). Some food processors have started to initiate vertical integration or co-operation with primary producers in order to ensure a constant supply of high-quality raw milk. In most cases vertical co-operation has taken the form of contracts. In general the contracts between producers and processors for the supply of raw milk are 1-year and thus short-term agreements. In such cases one speaks of vertical co-operation or incomplete vertical integration (den Ouden et al. 1996, p. 281). All contracts on milk procurement mention the quantity and quality of raw milk, but only in half of them is there a set price. All enterprises in the survey are responsible for the transportation of the raw milk. The spot market is only used for the resale of unused raw material and intermediate products to other processors.

Often contracts on milk supply-purchase include special services for farmers. Ten enterprises (58.8 %) provide at least one kind of service to their milk suppliers. The most commonly provided services are financial support (100 % of positive answers), i.e. interest-free loans or loans on favourable terms for breeding stock purchase, and providing cooling equipment (80 %). Some enterprises provide technical support (50 %), give economic advice (40 %), or provide washing material, milking equipment, and feed concentrate. One enterprise pays its best suppliers bonuses (according to raw milk quantity and quality) at the end of the year.

Contracts are also used for marketing produce. Contracts for sales in the domestic market are usually one-year agreements. Five enterprises have some contracts for periods exceeding one year. Export contracts are also usually short-term. In addition, many of them are made on the

spot, to offer producers an additional possibility to sell any surplus production. Some enterprises export their products through export companies.

The small number of long-term contracts between processors and agricultural producers as well as between processors and the purchasers of their final products is due to the fact that economic agents prefer short-term contracts, which give them the possibility to choose the best supplier or distributor at a given moment. The major problem with long-term contracts is that future uncertainty combines with bounded rationality to create problems in specifying future contingencies. It is impossible, or at least prohibitively costly, to write a comprehensive contract to cover all contingencies. Hence long-term contracts must be incomplete, and this may leave loopholes for opportunistic bargaining, should ambiguities arise. Short-term contracts permit sequential decision-making taking into account new circumstances, which economises on bounded rationality (Clarke 1985, p. 176).

Vertical integration or co-operation includes not only agricultural production but also transport and storage. As has already been mentioned, all enterprises use their own transport facilities. Fourteen of them (82.4 %) transport over 90 % of total raw milk using their own means. Nine enterprises (53 %) additionally use the services of transport agents, but mostly for the transportation of processed products. Only one enterprise mentioned a problem using other transport agents, namely prices that were too high.

Also, almost all enterprises (88.2 %) use their own storage facilities.The problem they face with respect to their own storage facilities is outdated cooling equipment. For storing processed products, their own storage facilities are too small, especially in summer. This is why nine enterprises (53 %) additionally use the services of other storage agents. However, prices are considered too high and processors fear losses in the quality of their products, since storage companies do not accept responsibility for the deterioration of a product's quality.

3.2 Conduct

Conduct is a second important determinant that influences market performance. This chapter summarises the conduct of the firms surveyed with respect to procurement and marketing activities, product polices and investment.

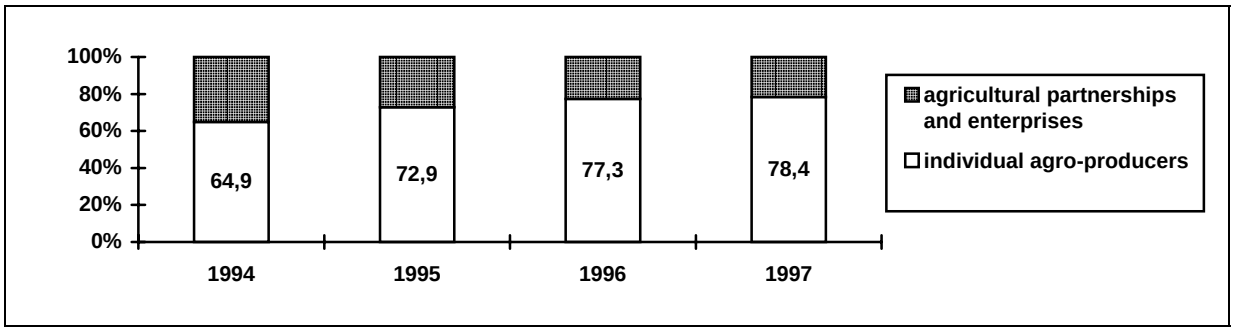
3.2.1 Procurement activities

In 1997 individual agro-producers accounted for about 78 % of the total amount of raw milk delivered to dairies in Lithuania while the share of agricultural partnerships and enterprises in milk supply made up about 22 % (Figure 4). The latter have a declining relevance in total milk procurement. The dominant position of individual agro-producers is also reflected in the results of the survey. This group is the major source of total procurement for the dairies investigated; increasingly on the basis of contracts as mentioned in chapter 3.1.3. In 1997 up to 9000 contracts per processing enterprise were signed with individual raw milk suppliers. Only one processing enterprise purchases less than 10 % of its raw milk from individual raw milk suppliers.

The dominance of family and household farms in the procurement activities provide a hint with respect to the transaction and transportation costs in obtaining the raw material. Most of the family farms have only one to three cows. Corresponding numbers for The Netherlands and Germany amount in 1997 to 44 and 28, respectively (BMELF 1998 and earlier; FAOSTAT Database 1999). In addition the average milk yield per cow is much lower than in EU countries. While for example in 1997 the average milk yield per cow equals 3205 liters in Lithuania, they amount to 5525 liters in Germany and even 6865 liters in The Netherlands in

the same year.[9] These expositions indicate that the Lithuanian dairy industry has to cope with a very fragmented input sector. This leads to relative high transaction and transportation costs for the processing industry. In addition small farmers often lack e.g. the necessary cooling equipment to secure a high quality milk. This all has negative repercussions for the competitiveness of the dairy industry.

Figure 4: Major raw milk suppliers in the Lithuanian dairy sector, 1994-1997, in %



Source: DEPARTMENT OF STATISTICS TO THE GOVERNMENT OF THE REPUBLIC OF LITHUANIA (1998): Agriculture in Lithuania 1997, pp. 55-56.

At present, enterprises obtain information about input prices and input sources mainly from the government, which sets minimum prices, but also from newspapers, their own studies, radio and TV, personal contacts, and the Department of Statistics.

3.2.2 Marketing activities

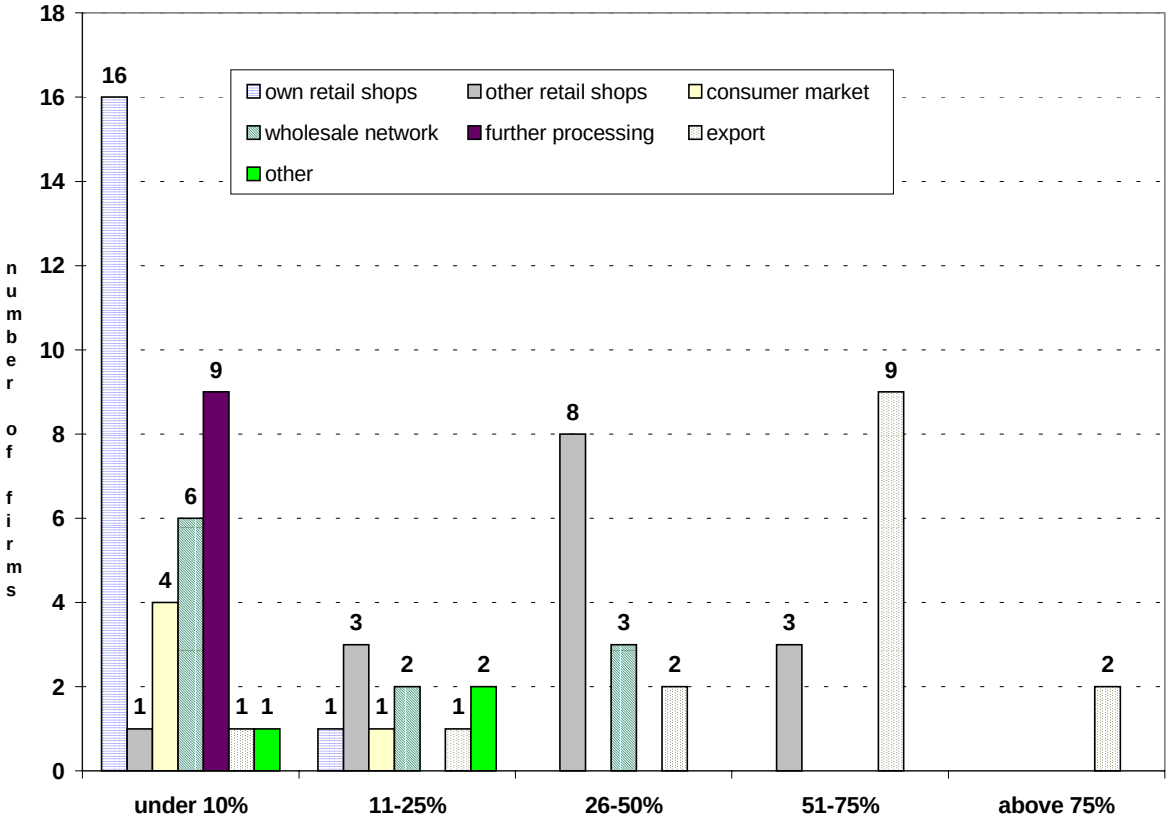
Milk processing enterprises tend to sell their products through different marketing channels: their own network of shops, other retail shops, direct deliveries to consumers via local markets, other processors. In addition, a large share of their production is exported (Figure 5).

The distribution of milk products via the processors' own network of shops or directly through the network of other retail shops has become widespread. All milk processing enterprises have at least one own retail shop where they sell dairy products only for the local market. Some enterprises have a network of own retail shops in different cities; five firms (29 %) have more than six own retail outlets, and three (17.6 %) of them have more than 20 shops. However, despite the relative large number of own retail shops of the 17 firms investigated 16 distribute less than 10 % of total sales through this marketing channel. The main reason for this low level is that consumers more and more prefer supermarkets, where they can buy everything they need at once. In reaction, enterprises' own retail shops have recently started to sell different foodstuffs together with dairy products, with the aim of attracting more customers.

Sales through other retail shops account for 26 to 50 % of the total market outlet in eight firms (47 %), and for over 50 % in three firms (18 %). Direct sales to consumers are not significant. Eleven enterprises distribute their products through wholesale networks. However, also this channel accounts in most cases for less than 10 % of total sales. Nine firms supply less than 10 % of their sales for further processing. Sales through other channels (middlemen, distributors, catering) are of no relevance either.

[9] See ZMP 1998; Department of Statistics to the Government of the Republic of Lithuania 1998 and earlier: Statistical Yearbook of Lithuania, Vilnius; BMELF 1998 and earlier; FAOSTAT Database 1999.

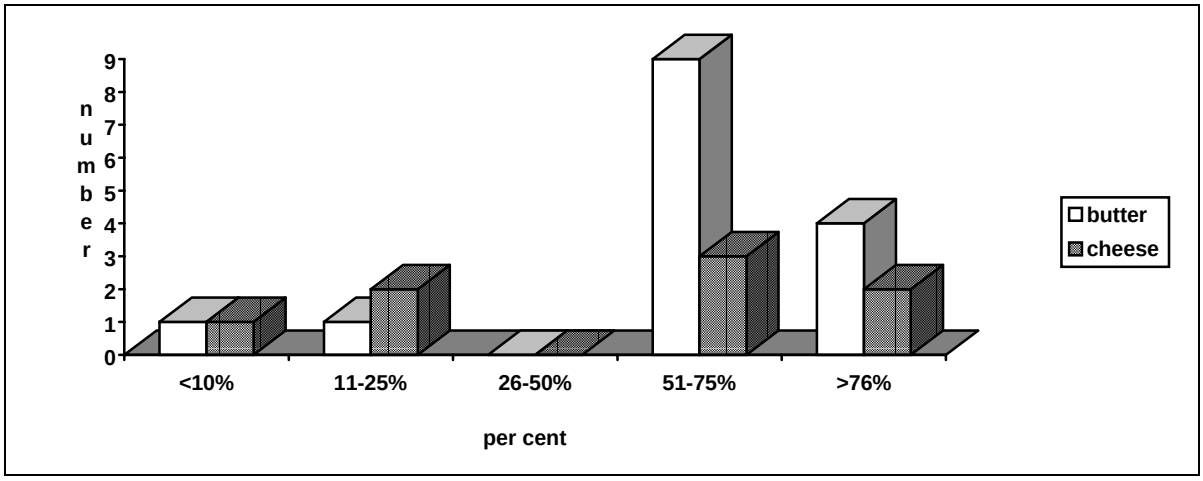
Figure 5: Marketing channels and their shares in total sales in the investigated enterprises in the Lithuanian dairy sector, in %



Source: Calculations using data from the survey of the Lithuanian dairy sector.

Another important marketing channel is export. Until 1991 Lithuania was a major supplier of dairy products to the former Soviet Union. However, with the breakdown of the Soviet Union Lithuanian exports have fallen dramatically. Nevertheless, over 50 % of the Lithuanian milk production in 1997 were exported. This is also reflected in the results of the survey. Of the enterprises studied, nine export over 50 % of their total production, and two even over 75 %. The main products exported are butter, fat cheese, milk powder, and canned milk. In 1997, 64 % of the total butter and 58 % of the cheese output were exported in Lithuania. In the survey fifteen firms (88 %) export butter and eight firms (47 %) export cheese (see Figure 6).

Figure 6: Share of butter and cheese production exported of the investigated Lithuanian dairy enterprises, in %



Source: Calculations using data from the survey of the Lithuanian dairy sector.

According to the results of the questionnaire, the delay between delivery of the processed dairy products and payment is on average 2 to 3 weeks in the domestic market; in foreign markets, payment in advance is most frequently used. Sometimes the repayment periods are extended. In such cases, the liquidity of the firms may suffer. However, only five of the enterprises surveyed (29 %) mentioned delays between delivery and payment of between 1 and 1.5 months. Thus, from the results of the survey the problem of delays in payment seems to be of little relevance on the marketing side of the dairy industry.

The marketing activities of the surveyed firms are based mainly on their own market research and personal contacts, but also on market reports, radio and TV. One enterprise uses the Internet to search for information on new markets and marketing channels.

3.2.3 Product policies

In all enterprises products are under both internal and external control. Milk as a raw material purchased from agricultural partnerships and enterprises is controlled at milk laboratories on livestock farms. Milk purchased from small farmers is controlled at laboratories in processing enterprises. Processing enterprises control technology standards and the quality standards of food products. External control of quality standards is organised at every stage of the food production chain by the State Veterinary Service, State Quality Service, and State Hygiene Inspection. In view of Lithuania's aim to join the EU, one of the main challenges for exported dairy products is to meet EU quality requirements and standards. There are 23 adopted international standards (ISO, IDF) applied to milk processing. The EU Veterinary Committee in January 1998 approved and gave licences to 11 Lithuanian milk processing enterprises for exporting their dairy products to EU countries. Nine of the enterprises are among those examined here. The certificate obligates them to strictly meet all EU requirements, from cows' health to milk processing and production realisation.

Branding is an important marketing tool used in western market economies in order to create a product image and thus to mark it out from competing products. Most of the surveyed firms (12) have started to make use of this marketing tool. Eight of them have brands for all dairy products from their enterprise; the other four have brands for individual products such as butter, fat cheese and whole milk products.

3.2.4 Investments

There is an urgent need for the modernisation of the dairy industry. This was expressed by almost all enterprises in the survey. Except for four enterprises, all are planning investments in the future. The major investments concern equipment and technology modernisation, transport renovation and new technologies. However, so far investments in this sector have been rather slow and economic performance is not yet sufficient. The major reasons for the low investment activity seem to be the ownership structure, high interest rates and debts of the enterprises.

As mentioned in chapter 3.1.1 privatisation policy gave preference to agro-producers and employees acquiring shares in processing enterprises. As a result, ownership now rests with a group of people who do not have enough funds for investment. There is reason to believe that the ownership structure might have an impact on the investment activities of enterprises, as is shown by the example of the two enterprises that were privatised in 1992, i.e. before the legislation that gave preference to agro-producers (see also chapter 3.1.1); both of them attracted more foreign investors than the others.

High interest rates and debts seem to be additional important factors for the low investment activities. They are the main reasons why only about 50 % of the enterprises investigated had access to credits (see Annex 1, Question 7.5). Altogether only nine of the observed milk processing enterprises (53 %) have received credits and have thus had recent investment (1994-1997). This fact reflects the general financial situation in the dairy sector.

The firms surveyed have mainly invested in enterprise reconstruction, equipment modernisation (cooling, packing), new technologies for the production of new ranges (aseptic milk[10], Italian cheese or ice cream), as well as in transport renovation (see Annex 1). The development of new products is seen as an important measure to improve the competitive situation of firms. However, as mentioned above too little investments have so far taken place in this field.

3.3 Performance

3.3.1 Sales

On average the value of sales of processed dairy products grew in real terms by only 4 % in the investigated firms in the period 1995 to 1997.[11] Total sales linked to the number of employees show that the enterprises achieving higher sales engage larger numbers of employees.

More interesting however, is to analyse the relation between labour productivity and the size of the enterprise. Table 3 shows that sales per employee are highest in enterprises that have the largest sales. This provides an indication that economies of scale are of relevance in the Lithuanian dairy sector.

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[10] Milk heated with a ultra high temperature (136°C) in order to keep it fresh in packs for half a year.

[11] The increase equals in nominal terms 41 %. Since the average inflation rates were quite high in 1996 and 1997 amounting to 24.7 % and 8.9 %, respectively the increase in sales in real terms is much lower.

Table 3: Relation between sales per employee and total sales in the investigated Lithuanian dairy enterprises

total sales, million litas		sales per employee, thousand litas				
		<=92	92<=138	138<=184	>184	total
<=10	number*	3				3
	%**	100 %				100 %
10<=50	number	3	1			4
	%	75 %	25 %			100 %
51<=100	number	1	4	1		6
	%	17 %	66 %	17 %		100 %
>100	number		2	1	1	4
	%		50 %	25 %	25 %	
total	number	7	7	2	1	17
	%	41 %	41 %	12 %	6 %	100 %

Notes: *number of enterprises **% of all enterprises included in each group.

Source: Calculations using data from the survey of the Lithuanian dairy sector.

3.3.2 Capacity utilisation

16 of the 17 respondents state that overcapacity is a problem in their enterprises. Capacity utilisation rates in the observed enterprises amount on average over the whole year to 62 % (see Annex 1, Question 7.7). The results of the survey indicate that this problem is especially pronounced in small scale enterprises. Overcapacities lead to high fixed costs and thus hamper the competitiveness of the dairies on domestic and international markets.

At present raw milk production in Lithuania reveals a very high seasonal fluctuation. Thus, in some enterprises capacities are used in summer time to a high degree while the utilisation rate in winter time is much lower reaching in one enterprise only 20 %.[12] This indicates the importance of providing incentives for a more even raw material supply by farmers by e.g. seasonal price differentiation.

3.3.3 Achievements and problems

During the last two years all surveyed milk processing enterprises reacted in some way to the changed macroeconomic and supply as well as demand conditions. A large percentage of the firms (41 %) consider the introduction of new technologies and equipment as the main achievements of their enterprise. The increase in the volume of production, the introduction of new products, and the maintenance of profitable work are mentioned next (see Annex 1, Question 7.1).

[12] In some of the enterprises investigated the utilisation rate is up to 100 % in summer. In these cases lower utilisation in winter time cannot really be considered as overcapacity. Unfortunately, not from all respondents specific information was obtained with respect to capacity utilisation in different seasons.

The major problems impeding a further improvement of the dairy processing enterprises' performance are, according to their own judgement, export prices that are too low, prices for raw milk that are too high due to state regulation policy, a lack of capital for the modernisation of outdated equipment, and the quality of raw milk. In addition problems still exist in the area of marketing (see Annex 1, Question 7.2).

70 % of the businesses in the survey are seeking to improve the marketing of their products. Five firms (29 %) consider a further reduction of production cost as a next step in improving their performance. Other measures planned are enterprise reconstruction and equipment modernisation (18 %), the introduction of new ranges (12 %), quality improvements (6 %), as well as striving to obtain credits on more favourable terms (see Annex 1, Question 7.9).

The enterprises' efforts to increase their performance should according to the respondents be accompanied by the following government measures: more export support for Lithuanian dairy products, and a deregulation of prices for raw materials (see Annex, Question 7.10).

3.4 Policy recommendations for the dairy sector

Low prices of exported products, high quality requirements, customs barriers in the trade with some countries, as well as various technical difficulties in registering official documents are impeding the export of Lithuanian dairy products. An improvement of these conditions for Lithuanian dairy producers is therefore an important government measure to increase the performance of the milk industry. This holds especially given the high share of dairy exports in total milk production.

Trade agreements can be seen as one way to reduce trade barriers and thereby ease the export of Lithuanian agro-food products. Such agreements seem to be especially of relevance with the New Independent States, which at present often pursue intransparent and unfair trade practices with respect to exports from Lithuania. At this point it should, however, be noted that trade agreements also facilitate the imports of other countries into the Lithuanian market and thus can increase competition on the domestic market as is revealed by the Baltic Agricultural Free Trade Agreement (BAFTA). While this might increase the problems in the Lithuanian dairy sector in the short run, it will very likely enhance efficiency in this branch in the medium to long run, thus preparing the dairy industry for the competition it will face after accession to the EU.

Another possible way to support the export of Lithuanian dairy products could be export subsidies. This alternative is very much favoured by the Lithuanian dairy industry. From a purely theoretical point of view, however, this would mean an unjustified discrimination against unsupported economic sectors. With export subsidies there is the danger that economic agents will rely more on government rents than on the profits they can achieve by selling competitive products on the market. Export subsidies thus reduce the incentive to enhance efficiency. In addition such a policy requires considerable budget funds. It is doubtful that a transition country like Lithuania disposes of enough funds to spend them to support specific interest groups, without hampering the overall economic development. From a political economic point of view, it could be argued that export subsidies are justified in the time of transition in order to save social costs, which the government fears may occur when producers are too rapidly exposed to the pressure of foreign competition (infant industry argument). Experience shows, however, that subsidies, once granted, are difficult to abolish, since lobby groups always find arguments to continue state protection, and politicians are hardly likely to refuse support if they depend on the lobby groups' votes in the next elections. Finally, the implementation of this instrument, will increase Lithuania's problems in its

negotiations with the World Trade Organisation and would violate the commitments Lithuania has signed in the BAFTA. Given these arguments export subsidies can not be recommended as a policy to support the Lithuanian dairy sector.

Less problematic is state support for the establishment of trade agencies in those countries that are potential importers of Lithuanian dairy products. Such trade agencies should help to find new markets and trade partners, organise exhibitions, presentations and seminars in order to spread information about Lithuanian dairy products. In addition the government could support the creation of brands for dairy products that meet international quality requirements in order to improve the image of Lithuanian dairy products and thus help gaining market shares on foreign markets. To increase the competitiveness of Lithuanian products in international markets it also seems of great relevance that the Lithuanian government introduces quality standards and sanitary controls that are in accordance with EU regulations. Milk processing enterprises themselves can also do much to solve their export problems. For example they can cooperate and form so-called joint producers' associations, in which processors undertake common efforts to intensify and improve their export activities.

One field where government intervention is already quite pronounced is the regulation of procurement prices. Since 1995 procurement of the main agricultural products has been regulated by minimum purchasing prices and producer subsidies. The minimum purchasing price is set depending on milk quality. However, minimum purchasing prices distort market prices and impose additional constraints on the milk processing sector. Since minimum prices are usually set above market prices, processors are faced with higher raw material costs, which thus reduce their competitiveness compared to a case where there is no state interference. In addition high procurement prices may lead to overproduction, which again requires state intervention in order to ease the pressure on the raw milk price. In this situation the state could purchase the overproduction and/or grant export subsidies in order to sell the overproduction on the world market. The repercussions of such a policy has been already discussed above. Therefore, from an overall economic point of view state influence on raw milk purchasing prices should gradually be reduced, and state support to milk producers should if at all take other forms.

A problem of particular relevance for the dairy industry is the fragmentation of the input sector (see chapter 3.2.1). This is the result of the restructuring and privatisation of the agricultural sector which was carried out in two ways: land was returned to its previous owners (restitution) and non-land assets were transferred to the private sector in exchange for investment vouchers, green vouchers and cash. As a consequence the share of land used by family farms and household plots rose from 10 % in 1991 to 65 %, with an average size of the former of less than 8 ha and of the latter of about 2 ha. Setting the necessary institutional framework for the development of an effective land market and leasing system by the government could resolve many of the current problems of these fragmented farm structures in the medium to long run. This would lead to substantial gains in operational efficiency and hence to increased competitiveness not only of Lithuanian agriculture but also of the downstream sector including the dairy industry.

With regard to the problem of finding new markets, more market information could help processors to achieve better returns for their produce. A systematic and continuous collection of market data would increase market transparency, giving primary information about suppliers, traders and consumers. Effective and up-to-date information would make market participants aware of market conditions and support them in their decision-making. Although a lack of market information is apparently not seen as playing a decisive role, the problem is

still acknowledged. This is obvious, since all investigated firms would even be willing to pay for additional information (see Annex 1, Question 4.3). So far there is no standardised information easily accessible to every market participant. Informative publications on the basis of a market information system, and Internet pages about high-quality dairy products as well as other foodstuffs produced in Lithuania, should improve marketing.

The major policy measure to enhance investment in new modern technologies with the aim to decrease production costs, is to provide favourable macroeconomic conditions, such as low inflation rates, low real interest rates, and a transparent tax regime.

4 THE SUGAR INDUSTRY

4.1 Structure

4.1.1 Ownership structure

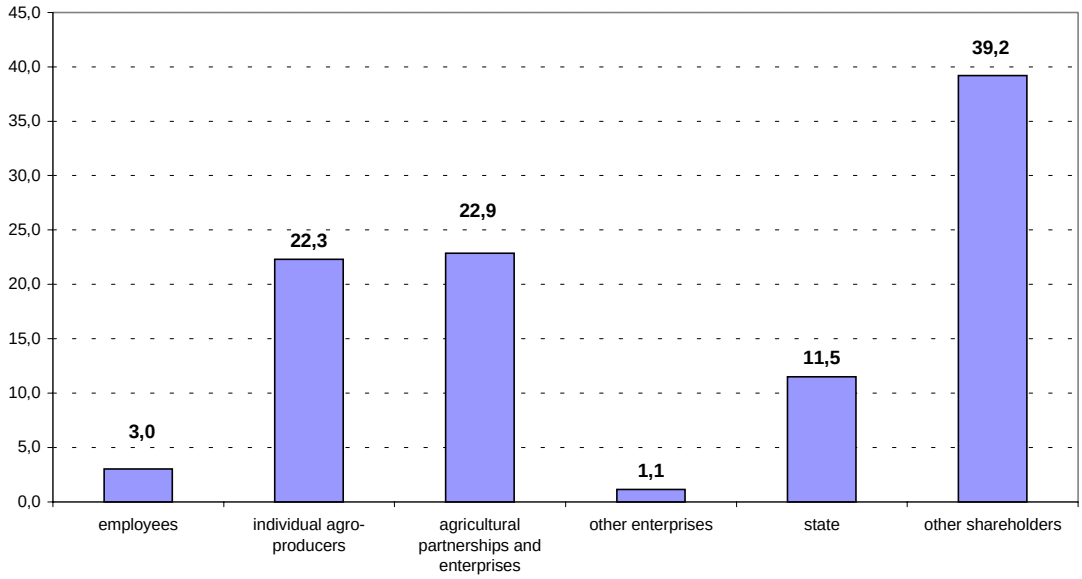
Unlike in the dairy industry, privatisation in the sugar industry was delayed and started only in 1995. The sugar sector was considered a so-called "strategic sector", which should therefore be under stricter government control. All four sugar refineries were intended to either merge into a holding company, in order to more easily attract domestic investors, or to establish one joint stock company the "*Lietuvos cukrus*". However, neither of these solution was realised, and enterprises in the sugar industry were privatised according to the so-called special legislation and thus in a similar way as the milk, meat and grain industries (see Girgzdiene et al., 1998).

As in the dairy sector, agro-producers and employees were given preference in the privatisation process. The price of shares was set at 2.5 % of the nominal value when sold to them. However, agro-producers and employees did not appreciate the real value of the shares and resold part of their shares to other interested natural persons. On August 8, 1996 the Government of the Republic of Lithuania passed a resolution and stipulated a procedure for the resale of shares to other natural persons. It provided for a sale of shares only to natural or legal persons engaged in the production of sugar beet. In spite of that resolution, other natural and legal persons were able to acquire a significant part of the refineries' equity. They hold the biggest part of the shares in the sugar industry, on average 39.2 % (Figure 7). Many of them are wholesale and retail trade companies.

In contrast to the dairy sector, employees including managers are of little relevance as owners in the sugar industry. In April 1998, they possessed only up to 5 % of the shares in the sugar industry, with an average of 3 %.

The shares of individual agro-producers (farmers and household farms) and of agricultural partnerships and enterprises were almost equal, and amounted to 22.3 % and 22.9 % respectively. Together, agro-producers held about 50 % of the total equity in three refineries and 30.6 % in the fourth; on average, their shares equalled 45.2 % in the sugar industry.

Figure 7: Ownership structure in the Lithuanian sugar industry, in %



Source: Calculations using data from the survey of the Lithuanian sugar refineries.

The state possessed on average 11.5 % of the sugar refineries' capital stock. Whereas its share was only symbolic in two refineries (0.01 % and 0.7 %), it was still considerable in the other two, amounting to up to 20.4 % and 24.9 %, respectively. These are economically weaker enterprises, whose shares were difficult to sell. However, on July 30, 1998, and thus after the survey was carried out, the public auction of the remaining state shares of the sugar refineries was announced. Several foreign investors expressed their interest in the Lithuanian sugar industry. Among them were *Südzucker* (Germany and Belgium), *Danisco Sugar* (Denmark, Germany and Sweden) and *Nordzucker* (Germany). The Lithuanian government set several conditions for the participation of foreign investors in the final privatisation of the Lithuanian sugar industry. One of the main conditions was that the potential buyers should be a large sugar producers with an annual EU production quota of not less than 800 thousand tons of sugar. In addition the investors were required

- to guarantee the processing of domestic sugar beets;
- to restructure the enterprises and to modernise their equipment and technology;
- to make suggestions how to cover the refineries' debts to agro-producers and other creditors.

The Danish concern *"Danisco Sugar"* fulfilled these conditions and acquired the remaining state shares as well as part of those of other owners. As a result "*Danisco Sugar*" has become the majority shareholder of the Lithuanian sugar industry.

Cross-ownership is not very significant in the sugar industry. On average only 1.1 % of sugar refinery shares are held by other enterprises.

4.1.2 Size distribution and horizontal concentration

The Lithuanian sugar sector consists of four old sugar beet processing enterprises. Two of them fall into the group of 350 to 500 employees, while the other two engage between 500 and 600 employees each (see Annex 2, Question 1.4). As a result of privatisation, they have all become joint stock companies. Since there are only four enterprises, horizontal

concentration is much higher in the sugar sector than in other branches of the food industry. Calculated on the basis of procurement quantities of raw materials, the concentration ratio CR3 was rather constant over the period 1994-1997, amounting to 79-80 %.

In the sugar sector as in other branches of the food industry, the total number of employees slightly decreased during the 1995-1997 period, e.g. in the period 1997 to 1998 the decline equalled 0.8 %. Each refinery engages seasonal workers. Their numbers fluctuate from 150 to 200 in different refineries, and depend in addition on the amount of sugar beet purchased during the season.

4.1.3 Vertical integration and co-operation

Vertical integration with sugar beet growers was initiated in the same way as in the milk processing sector or other sectors of agro-food processing. In order to ensure a constant flow of sugar beet as raw material for the processing enterprises, and as a result of political decision-making, agro-producers could acquire shares on preferential terms (see chapter 4.1.1).

At present all sugar beet purchases are governed by contracts (see Annex 2, Question 2.2). For the 1997 season the four sugar beet processing enterprises signed 5521 contracts with agro-producers for the purchase of raw sugar beet, of which 5179 contracts were signed with individual agro-producers (owners of family farms and household plots), 338 with agricultural enterprises, 1 with a sugar beet producers' co-operative, and 3 contracts with other enterprises. In 1995 and 1996 the number of contracts was 4225 and 5202, respectively.

Every year before the beginning of the sugar beet season the Association of sugar beet producers and the managers of the sugar refineries discuss the terms for sugar beet supply and purchase. Supply-purchase contracts are usually signed for one season, laying down quantity, quality requirements (percentage of floriferous plants, leaves, soil, basic sugar content in sugar beets), and the price of raw sugar beet.[13] The contracts also regulate who is responsible for transport and storage, and the terms of payment for sugar beet to agro-producers. In general raw sugar beets are transported to processing enterprises using agro-producers' means of transport, but, under the terms of the supply-purchase contracts, it is the processors who must pay for transportation. All sugar enterprises use their own storage facilities for storing raw materials. Three sugar refineries have problems with storing raw sugar beet, i.e. the deterioration of the raw material and thus the share of waste is stated to be quite pronounced.

As in the milk sector, all processing enterprises provide special services to sugar beet producers. They give economic advice, supply high-quality seeds, fertilisers, chemicals, or provide financial support (interest-free loans or loans on favourable terms) for purchasing these items.

A major part of the sugar sales is effected on the spot market, the rest on the basis of short-term contracts of up to one year (see Annex 2, Question 3.2). The latter holds especially for sales via retail shops and for further processing. Sales through the wholesale network and the export of molasses are done on the spot market.

Three of the four enterprises use their own facilities for the transportation of a small part of their processed products. This share accounts in two refineries to 11-13 %, and in one to only 1 % of the total quantity of transported products. All enterprises use the services of other

[13] However, it should be noted that the scope for these contracts is quite narrow, since state regulation is considerable in the sugar sector (see chapter 4.2.1).

transport agents. All respondents state that there exists fierce competition in the transport sector, so that no problems are seen in buying this service from outside. The same holds with respect to storing. Neither those enterprises that use their own facilities nor those who rely on the service of other storage agents account any problems (see Annex 2, Question 5.4).

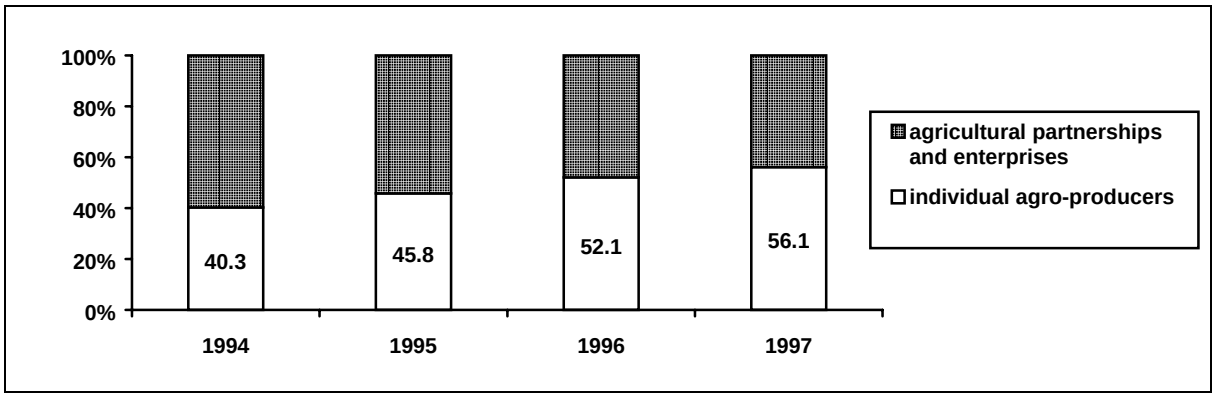
4.2 Conduct

4.2.1 Procurement activities

Since state regulation in the sugar sector is quite considerable, food processors do not have many possibilities to develop market-oriented behaviour. The most important parameters of action, price and quantity, are regulated by the government. Every year the Ministry of Agriculture sets processors quotas of sugar beet procurement and minimum sugar prices. The four sugar firms divide the domestic market into roughly equal procurement shares.

Until 1995 the amount of sugar beet purchased from individual agro-producers was smaller than the share purchased from agricultural enterprises and partnerships in Lithuania. Since 1996 the share of individual agro-producers has tended to be greater. In 1997 agricultural partnerships supplied to processors 44 % of the total amount or 433 thousand tons of sugar beet, and individual agro-producers supplied 56 % or 540 thousand tons (Figure 8). These results are confirmed by the survey. The dominance of individual producers in the procurement activities provide a hint with respect to the transaction and transportation costs in obtaining the raw material. As in the dairy sector (see chapter 3.2.1) this has negative repercussions for the competitiveness of the sugar industry.

Figure 8: The major suppliers of sugar beet to processing enterprises in Lithuania, in %



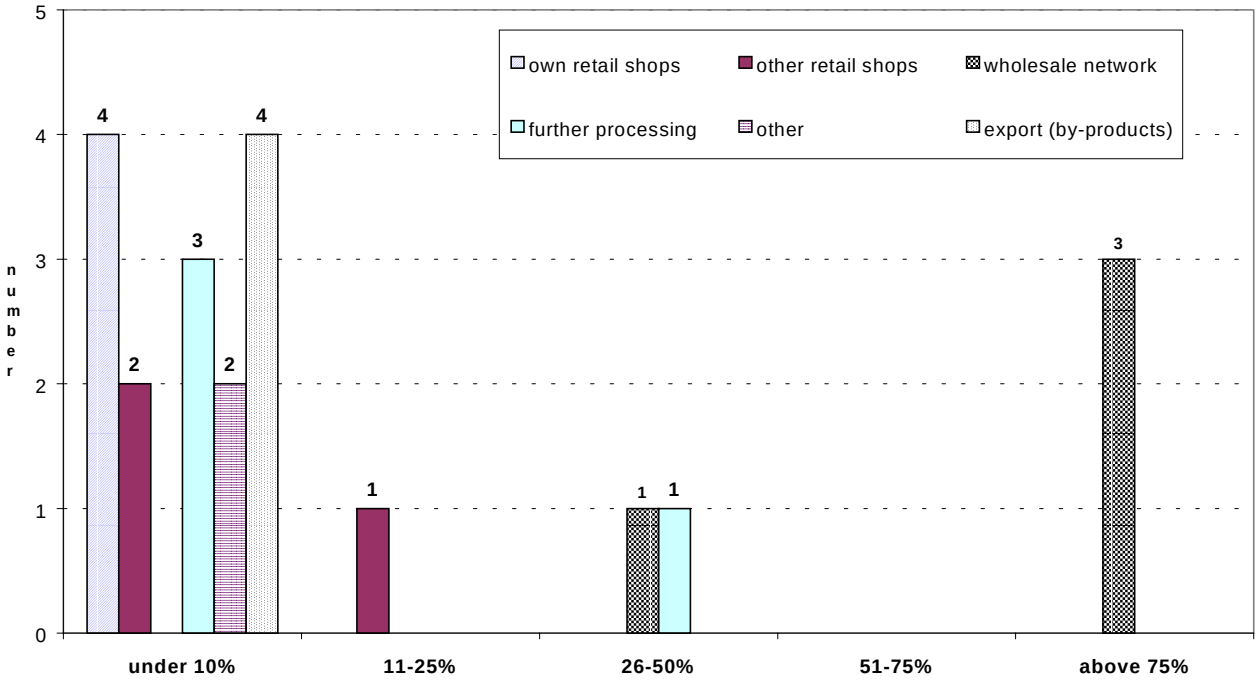
Source: Department of Statistics to the Government of the Republic of Lithuania (1998): Agriculture in Lithuania 1997, Vilnius.

The government also controls the import of raw materials. Aimed at protecting domestic sugar beet producers, imports of raw material are only allowed, if there is a lack of domestically produced sugar beets.

4.2.2 Marketing activities

Each refinery has at least one retail shop of its own. In 1997 up to 10 % of the total sugar output were sold in these shops. Similar quantities of sugar were sold via other retail shops and for further processing. Most sugar went on the market through wholesalers. In three of the four refineries this marketing channel made up over 75 % (Figure 9).

Figure 9: Marketing channels and their share in total sales in the Lithuanian sugar sector, in %



Source: Calculations using data from the survey of the Lithuanian sugar sector.

The decision which marketing channel to use is influenced by the information available about marketing conditions. At present the main sources utilised for market information are processors' own market research, personal contacts, the Department of Statistics, newspapers, radio and TV. According to the results of the survey existing sources, however, do not fully satisfy the need for information. Processing enterprises especially require more information on new markets, marketing channels, and prices. Market information is an influential factor that can help agro-producers and processors to obtain better returns for their produce and improve their marketing efficiency. All sugar processors would be willing to pay for this kind of information, as well as provide data to the market information system.

4.2.3 Investments

Sugar beet processing is a capital-intensive activity, using specialised machinery and equipment. During the last years, sugar beet processors were short of investment funds and only had limited technology available. There were no major investments in any of the enterprises during the period 1994 to 1997, only small purchases for the repair of equipment were undertaken. The urgent need for a modernisation of the sugar industry was expressed by all respondents. The four existing refineries are very old and have outdated and worn-out equipment. The reasons for the low investment activity are the same as in the milk sector (see chapter 3.2.4). Three of the sugar beet processing enterprises are planning investments for technology modernisation in the future. The possibilities for getting credits, however, are limited for two of the refineries, since they already have debts due to previous loans.

4.3 Performance

4.3.1 Sales

Average annual sales of all refineries increased in the period 1994 to 1997 in real terms by 40 %.[14] However, not all enterprises could realise a rise in this performance indicator in the considered period. One enterprise experienced a decline in sales in real terms.

The sugar refineries export only by-products, namely molasses and sugar beet cake. The share of sold by-products is not significant and amounts to up to 4 % of total sales in different refineries. The main region for exports of molasses and dry sugar beet cake is the European Union. Processors complain about the low export prices received for these products.

Surprisingly, output declines with the number of employees (see Table 4). One reason for this result might be that in the two enterprises that have the highest number of employees state ownership played at the time when the survey was carried out a relevant role. As mentioned already above those firms are characterised by a weak performance. Labour productivity increases tremendously with the amount of total sales as is revealed in Table 5.

Table 4: Relation between total sales and number of employees in the Lithuanian sugar sector, 1997

		sales, million litas			
number of employees		**<=50**	**50-100**	**>100**	**total**
350<=500	number*			2	2
	%**			100 %	100 %
>500	number	1	1		2
	%	50 %	50 %		100 %
total	number	1	1	2	4
	%	25 %	25 %	50 %	100 %

Notes: *number of enterprises **% of all enterprises included in each group.

Source: Calculations using data from the survey of the Lithuanian sugar sector.

[14] The increase equals in nominal terms 166 %. Since the average inflation rates were quite high in the period 1995 to 1997 amounting to 39.5 % in 1995, 24.7 % in 1996 and 8.9 % in 1997 the increase in sales in real terms is much lower.

Table 5: Relation between sales per employee and total sales in the Lithuanian sugar sector, 1997

Total sales, million litas		sales per employee, thousand litas				
		<100	101-200	201-300	>301	total
<=50	number*	1				1
	%**	100 %				100 %
50-100	number		1			1
	%		100 %			100 %
>100	number				2	2
	%				100 %	100 %
Total number		1	1	0	2	4
	%	25 %	25 %	0	50 %	100 %

Notes: *number of enterprises **% of all enterprises included in each group.

Source: Calculations using data from the survey of the Lithuanian sugar sector.

4.3.2 Capacity utilisation

Larger areas under sugar beet crop and a considerable rise in yield increased the capacity utilisation level of the processing industry during the last years. Three enterprises used their equipment fully in 1997. In one enterprise, the utilisation rate was 92 % (see Annex 2, Question 7.7).

4.3.3 Achievements and problems

Of the four enterprises three consider their main achievements since the beginning of the transition from a centrally planned to a market economy to be an increase in the procurement of raw material, a rise in output of sugar in total and per day during the campaign, as well as a reduction of production costs. Only one respondent states that his enterprise has had no achievements since the beginning of the 90s (see Annex 2, Question 7.1).

In three enterprises the main problem is according to the survey results the lack of capital for modernising the outdated production technology. Debts seem to be one major reason for the lack of access to credits in two of the considered enterprises. One respondent mentioned the supply of raw material as a great concern.

The managers of two sugar refineries expect to increase their profitability in the near future by reconstructing the enterprises, introducing new technology and equipment, and lowering production costs. The two other respondents expect to maintain their respective levels of production. In order to do so, one of these enterprises intends to lay off part of its workforce (see Annex 2, Table 7.9).

In contrast to the milk industry, the sugar industry's demands for government support reveal a more interventionist attitude. Half of the enterprises would like to see a stronger protection of the domestic market. Moreover, they request more government activity in attracting outside domestic and foreign investors (see Annex 2, Question 7.10).

4.4 Policy recommendations for the sugar sector

Many Lithuanian politicians and agricultural economists see the main objective of the Lithuanian sugar sector in meeting the domestic demand for sugar and in guaranteeing employment in agriculture and food processing for social reasons. Therefore, protection of the domestic sugar market is considered necessary at least until an agreements with the World Trade Organisation (WTO) is reached. At present Lithuania uses its Antidumping Law to protect its sugar market. The law was prepared and passed in 1998 taking into account the requirements of the EU and WTO. Although the aim of softening the hardships linked to the transition to market conditions with protectionist measures is well-intentioned, such policies in general always have negative impacts on the development of internationally competitive branches. Instead of profit-seeking, rent-seeking behaviour of economic agents is encouraged. This is why the government should slowly reduce the protectionist measures on this market (see also section 3.4).

The most important measure for improving the situation in the sugar industry is the creation of favourable investment conditions in order to attract domestic and/or foreign investors that restructure enterprises and modernise the equipment and technology. The commitment of '*Danisco Sugar*' in the Lithuanian sugar industry is an important step in this direction.

5 SUMMARY AND CONCLUSIONS

The development of market conditions and market behaviour in the sectors examined has in general progressed. This holds especially with respect to the dairy industry while in the sugar industry, state regulation is still considerable, since the sector is regarded as "strategic".

Privatisation in the dairy industry has been almost completed. As a result, the ownership structure in milk processing enterprises has changed. The share of the state amounts on average to only 9.7 % in the investigated enterprises. Agro-producers, who were given preference in the acquisition of shares in processing firms, are the most important ownership group. This holds for the sugar industry as well. In this branch privatisation started much later but in 1998 it was as well completed. All investigated enterprises in both sectors are joint stock companies, except for one milk processing firm, which has changed its legal form to become a co-operative.

As a result of the privatisation process, vertical integration with agro-producers through ownership relations is quite considerable in both sectors. According to the results of the survey the share of agro-producers amounts on average to 36 % in the dairy sector and to 45 % in sugar refineries. Moreover, vertical co-operation with primary producers has also taken the form of contracts, mostly of a short-term nature, which regulate the procurement of raw material. Relations between processors and agro-producers in the sugar sector are to a large extent regulated by the state which sets procurement quotas and minimum purchasing prices, and competitive behaviour can thus hardly be developed. All enterprises considered in the surveys dispose of their own transport and storage facilities. However, most of them depend in addition on services of independent transport and storage firms. The answers of the respondents indicate that competition is functioning in these sectors.

In the Lithuanian dairy industry, horizontal concentration has increased over the last year. However, so far market power seems to play no role. The Lithuanian sugar sector only consists of four enterprises. The relative high concentration in this sector has to be seen in the context of the country´s small size. A larger number and thus smaller enterprises are unlikely to achieve significant economies of scale. Indeed it seems more likely that a further

concentration will take place in the sugar industry as well as in the dairy branch in the future. This points to the importance of adequate institutions to secure competition. In addition, by opening up domestic markets to foreign competition the Lithuanian government can prevent that market power is abused.

Sales, as a performance parameter, have increased in both sectors. Economies of scale are important both in the dairy and in the sugar industry, however they are of much higher relevance in the latter. With regard to capacity utilisation, the sugar industry is in a better situation. In the dairy sector, the capacity utilisation rate was in 1997 on average 62 %, in the sugar sector, the respective figure was 98 %.

A common problem for both sectors is the low investment activity, mainly due to unfavourable macroeconomic conditions. In the dairy industry, difficult export conditions were named as a further major problem. The sugar industry is oriented towards meeting mainly domestic needs. It exports only by-products, so that there is actually no export problem.

The more developed market-orientation of the dairy industry becomes obvious in the issue of priorities of government policy to improve the performance of enterprises. While milk processors would like to see an end to state regulation in the procurement of raw material, the sugar industry demands for more protection.

The efficiency in both branches could be improved by the following policy measures.

In the dairy sector the government should (see also section 3.4):

- abolish minimum prices on raw milk procurement;
- improve export conditions by signing e.g. trade agreements and establishing trade agencies in important importing countries;
- create favourable investment conditions;
- encourage and support enterprises to adjust to international quality standards;
- set the necessary institutional framework for the development of an effective land market and leasing system to overcome the problems associated with the fragmented farm structure and
- improve market information systems.

In the sugar sector the government should:

- improve investment conditions for technology modernisation;
- decrease protection of the domestic sugar market.

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ANNEX 1

TRANSLATION OF THE QUESTIONNAIRE TO THE LITHUANIAN MILK PROCESSING FIRMS AND SUMMARY OF THE RESULTS

1 INTRODUCTION

1.1 a) What is the legal ownership status of this enterprise?

	Ownership status of the enterprise		Total
	joint stock company	co-operative	
number	16	1	17
%	94.1	5.9	100.0

1.1 b) Was the enterprise privatised or newly founded, and when?

	1992	1993	1994	1995	1996	1997	1998
number	2	0	1	6	3	3	1
%	11.8	0	5.9	35.3	17.7	17.7	5.9

One firm was newly founded in 1992

1.2 Who is the owner of the firm? If there are several owners, please try to give their approximate shares in total ownership (in %).

Types of owners		Share of Ownership
Entrepreneur	average	-
	maximum	-
Employees	average	22.94
	maximum	50.30
Managers	average	5.10
	maximum	67.00
Farmers (individual agroproducers)	average	24.64
	maximum	89.40
Agricultural enterprises	average	11.41
	maximum	36.00
Banks	average	0.13
	maximum	1.50
Foreign shareholders	average	8.74
	maximum	61.50
Other enterprises	average	6.29
	maximum	50.60
Government or municipalities	average	9.73
	maximum	70.44
Other shareholders	average	10.43
	maximum	44.00

1.3 Does your company hold any shares of other enterprises in your branch?

6 cases (35.3 %) - yes
11 cases (64.7 %) – no

	Shares of other enterprises	
	Number of enterprises	% of responses
enterprises with the same production profile	2	25.0
daughter enterprise	1	12.5
others	5	62.5
Total responses	8	100.0

1.4 a) How many people worked approximately in your enterprise?

	Number of employees			
01.01.1998	<=50	51<=100	101<=500	>501
Number: Total	1	1	7	8
joint stock companies	1	1	6	8
co-operative			1	
%: Total	5.9	5.9	41.2	47.0
joint stockcompanies	5.9	5.9	35.3	47.0
co-operative			100	

1.4 b) Has the number of employees in recent years increased, decreased or remained constant?

	Development of employees	
	increase	decrease
Number: joint stock companies	11	5
co-operative	1	
%: joint stock companies	68.7 %	31.3 %
co-operative	100.0 %	

2 PROCUREMENT

2.1 What is your average annual value of procurement of agricultural raw materials?

	Procurement in **1997** in thousand Litas		
	average	maximum	minimum
all firms:	36428.9	93540.0	572.0
of which joint stock companies	33765.3	93540.0	572.0
co-operative*	38936.0	38936.0	38936.0

Note: *co-operative was established in 1997.

	Procurement in **1996** in thousand Litas			Procurement in **1995** in thousand Litas		
	average	maximum	minimum	average	maximum	minimum
all firms:	31779.1	83931.0	461.2	23206.4	59131.4	560.0

2.2 a) From how many producers in each of the given categories do you buy your main agricultural raw materials? Please just cross the respective category.

b) Please specify the % of total procurement value, bought through the different channels.

c) Please specify for each of the mentioned channels, whether you buy your supplies on spot markets, under contracts no longer than 1 year or on longer term contracts.

2.2.1 Procurement of Raw Materials

The number in the cells indicate the number of enterprises

	number of suppliers					share of total procurement, %					Contracts		
Categories	1-2	3-5	6-10	11-20	>21	<10	11-25	26-50	51-75	>76	on spot	until 1 year	above 1 year
household farms (2-3 ha) + family farms	1				16	1		2	10	3	1	17	1
agricultural enterprises		1	2	4	9	3	6	6				16	
producers cooperatives	1												
traders													
imports													
other enterprises	4	2	1		1	3	2	1	1		2	5	

The numbers in the cells indicate the % of enterprises

	number of suppliers					share of total procurement, %					Contracts		
Categories	1-2	3-5	6-10	11-20	>21	<10	11-25	26-50	51-75	>76	on spot	until 1 year	above 1 year
household farms (2-3 ha) + family farms	6				94	6		12	59	18	6	100	6
agricultural enterprises		6	12	24	53	18	35	35				94	
producers cooperatives	6												
traders													
imports													
other enterprises	24	12	6		6	18	12	6	6		12	29	

2.2.2 Referring to the content of the contract, do you make agreements on quality, prices, quantity, reponsibility for transport or storing or other terms of payment?

	yes		
Category	Number of responses	% of responses	% of all enterprises in the survey
Quality	17	25.5	100.0
Prices	12	18.4	70.6
Volumes/quantity	15	22.7	88.2
Responsibility for transport	16	23.4	94.1
Responsibility for storing	5	7.8	29.4
Other terms of payment	1	2.1	5.9
Total responses	66	100.0	388.2

2.2.3 Do you provide special services for farmers under contract, like technical or economic advice, financial support or deliver special inputs?

10 cases - yes (58.8 %)
7 cases - no (41.2 %)

Specified (% of positive answers):

providing credits partly on favourable terms for the purchase of

new breeds	100 %;
cooling equipment	80 %;
technical support	50 %;
washing materials	20 %;
milking equipment	20 %;
feed concentrate	10 %;
paying bonus for the best milk suppliers at the end of the year	10 %;
providing economic advice	40 %.

2.3 Do you import raw materials?

No import of raw milk.

3 SALES

3.1 What is your annual value of sales of finished products?

	Sales in **1997** in thousand Litas		
	average	maximum	minimum
all firms:	64037.6	190119.9	998.0
of which joint stock companies	64615.6	190119.9	998.0
co-operative*	54789.0	54789.0	54789.0

Note: *co-operative was established in 1997.

	Sales in **1996** in thousand Litas			Sales in **1995** in thousand Litas		
	average	maximum	minimum	average	maximum	minimum
all firms:	56147.3	159847.5	690000	45309.4	141566.0	741.0

3.2 a) To how many retailers in each of the given categories do you sell your products?

b) Please specify the % of total sales value sold through the mentioned channels.

c) Please specify for each of the mentioned channels, whether you sell your products on spot markets, under contracts no longer than 1 year or on longer term contracts.

3.2.1 Sales of processed products

The numbers in the cells indicate the number of enterprises

	number of retailers					share of total sales, %					Contracts		
Categories	1-2	3-5	6-10	11-20	>21	<10	11-25	26-50	51-75	>76	spot market	until 1 year	above 1 year
Own retail shops	9	3	2		3	16	1				1	5	1
Other retail shops				1	16	1	3	8	3			15	3
Consumer market	2	1			1	4	1						
Wholesale network	3	3	2	1	2	6	2	3			1	8	2
Further processing	4	8				9					2	8	1
Export	1	5	2	3	3	1	1	2	9	2	11	8	1
any others? middleman			3			1	2					4	

The numbers in the cells indicate the % of enterprises

	number of retailers					share of total sales, %					Contracts		
Categories	1-2	3-5	6-10	11-20	>21	<10	11-25	26-50	51-75	>76	spot market	until 1 year	above 1 year
Own retail shops	53	18	12		18	94	6				6	29	6
Other retail shops				6	94	6	18	47	18			88	18
Consumer market	12	1			6	24	6						
Wholesale network	18	18	12	1	12	35	12	18			6	47	12
Further processing	24	47				53					12	47	6
Export	6	29	12	18	18	6	6	12	53	12	65	47	647
any others? middleman			18			6	12					24	

3.3 Please attribute grades which reflect the relative importance of the following regions for your exports? Grade 1 means not relevant, Grade 5 means very important.

Categories		Grade 1 to 5
Baltic States	average	3
	maximum	5
	minimum	1
CIS (Commonwealth of Independent States)	average	5
	maximum	5
	minimum	1
European Union	average	3
	maximum	4
	minimum	2
Other Central and Eastern European countries	average	3
	maximum	4
	minimum	2
Others (Japan, USA, Canada)	average	3
	maximum	5
	minimum	1

3.4 Are there any major problems you face when exporting your products?
All 16 enterprises exporting products face problems:

specified:	% of positive answers:
low export prices	(100 %);
lack of foreign markets	(69 %);
customs	(56 %);
border problems	(38 %);
quality requirements	(19 %);
interstate agreements	(19 %).

3.5 Are the products under quality control?

All companies have an intern and an extern quality control system.

3.6 Do you have your own product brands?

12 cases - yes (71 %); if yes, for which products:

all dairy products; whole dairy products; butter; fat cheese.

5 cases - no (29 %).

3.7 How long is the average delay between delivery of your products and payment by your customers (in weeks)?

Average	Media	Modus	Minimum	Maximum
2.8	2.0	1.5	1.5	6.0

In most cases the delay between dairy products delivery and payment in domestic market last 2-3 weeks, in foreign markets payment often takes place in advance.

4 MARKET INFORMATION SYSTEM

4.1 What are the main sources of information you use considering the development of input and product prices?

The numbers in the cells indicate the number of enterprises

Sources of information	Categories			
	input prices	output prices	marketing channels	new markets
Advisory service	1	1		
Agricultural chambers	1	1	1	1
Market reports		3	3	5
Statistical committee	3	1		
Personal contacts	3	9	13	12
Radio and TV	3	3	2	2
Newspapers	7	2		
Own marketing research	5	13	13	13
Internet			1	1
Other government decisions	3			
Other		3		

The numbers in the cells indicate the % of enterprises.

Sources of information	Categories			
	input prices	output prices	marketing channels	new markets
Advisory service	6	6		
Agricultural chambers	6	6	6	6
Market reports		18	18	29
Statistical committee	18	1		
Personal contacts	18	53	76	71
Radio and TV	18	18	12	12
Newspapers	41	12		
Own marketing research	29	76	76	76
Internet			6	6
Other government decisions	18			
Other		18		

4.2 What kind of additional information do you need?

15 cases - new markets (88 %);
15 cases - marketing channels (88 %);
14 cases - product prices (82 %);
6 cases - quality requirements (35 %);
4 cases - input prices (24 %);
3 cases - input sources (18 %).

4.3 Would you be prepared to pay for additional information?

All firms state that they would be willing to pay for additional information

5 TRANSPORT AND STORAGE

5.1 Do you use your own transport facilities?

All firms use own transport facilities.

5.1.1 Which share of raw materials are transported by your own transport facilities?

Number of employees	share of raw materials transported by own transport facilities		
	average	maximum	minimum
<=50	100	100	100
51<=100	89	97	80
101<=500	93	100	80
>501	97	100	90

5.1.2 Which share of your processed products are transported by your own transport facilities?

Number of employees	share of processed products transported by own transport facilities		
	average	maximum	minimum
<=50	100	100	100
51<=100	18	35	0
101<=500	39	80	5
>501	54	85	10

5.2 Do you use other transport agents?

9 cases - yes (53 %); if yes:

Are there any problems you encounter?

1 case of positive answers - yes: too expensive service
8 cases - no

Is there fierce competition among transport firms?

7 cases - yes
2 cases - no

5.3 Do you use your own storage facilities?

15 cases - yes; if yes:

Do you have any problems with storing of processed products in your own storage facilities?

6 cases - yes: too small storage facilities (especially in summer time)

Do you have any problems with storing of raw materials in your own storage facilities?

2 cases - yes: cooling equipment

5.4 Do you use other storage agents?

9 cases - yes; if yes:

Are there any problems you encounter?

4 cases - yes:

Storage firms don’t take responsibility for products quality deterioration;
too expensive service;
transportation problems.

6 INCENTIVE STRUCTURE

6.1 Since when is the current director of this enterprise in charge?

The numbers in the cells indicate the number of enterprises

	Up to 1989	1989-1990	1991-1992	1993-1994	1995 and later
joint stock company	8	1	1	4	2
co-operative					1

The numbers in the cells indicate the % of enterprises

	Up to 1989	1989-1990	1991-1992	1993-1994	1995 and later
joint stock company	50.0	6.3	6.3	25.0	12.5
co-operative					100

6.2 How was the director of the company appointed?

9 cases – elected by supervisory board;
7 cases - elected by meeting of shareholders;
1 case - elected by co-operative board.

6.3 Do the salaries of managers depend on profits?

12 cases - yes; if yes, please describe the existing system:
extra pay 10-20 % every quarter and at the end of the year

6.4 Do the wages of employees depend on profits?

11 cases - yes; if yes, please describe the existing system:
extra pay 10-20 % every quarter and at the end of the year

6.5 What was the average level of wages in your enterprise?

Average wage per month in **1996** for **skilled** workers, Litas			Average wage per month in **1996** for **unskilled** workers, Litas		
average	maximum	minimum	average	maximum	minimum
836	1200	573	504	792	300

Average wage per month in **1997** for **skilled** workers, Litas			Average wage per month in 1**997** for **unskilled** workers, Litas		
average	maximum	minimum	average	maximum	minimum
1008	1834	713	596	769	400

6.6 Considering the laying off of workers, are there any legal constraints which pose a major problem for your firm?

2 cases - yes; if yes, please specify constrains:
fierce competition in the region; the decrease of production.

7 GENERAL QUESTIONS

7.1 What would you personally consider as the main successes of your enterprise in the last two years?

New technologies and equipment	(41 %);
Increased volume of production	(29 %);
Introduction of new products	(29 %);
Profitable work	(29 %);
New markets	(18 %);
The same domestic and foreign markets	(12 %);
Increased raw milk supply	(12 %);
License for export into the EU countries	(12 %);
Timely payments to raw milk suppliers	(6 %);
Repaid credits	(6 %).

7.2 What would you personally consider as the main problems of your enterprise at the moment?

Low export prices	(41 %);
Too high raw milk procurement price (state regulation policy)	(35 %);
Markets and marketing problems (especially in summer season)	(35 %);
Outdated and worn out equipment	(24 %);
Lack of capital for reconstruction and modernisation	(24 %);
Raw milk quality	(24 %);
Whey processing and realisation	(12 %);
Lack of raw milk	(6 %);
Raw milk collecting	(6 %);
Transportation of products	(6 %);
High price for sugar and tin	(6 %);
Seasonal prevalence	(6 %);
Customers debts for production of 1993	(6 %).

7.3 Did you have any major investments since privatisation (1994-1997)?

	yes		no	
	count	%	count	%
joint stock company	8	50	8	50
co-operative	1	100		

If yes, the most important items:

for enterprise reconstruction;
different kinds (cooling, packing) of equipment for modernisation;
new technologies for production of new assortment (aseptic milk, italian cheese or ice cream);
renovation of transport facilities.

If no, the main reasons:

lack of circulating capital.

7.4 Do you plan any major investments for the near future (1998-2000)?

	yes		no	
	number	%	number	%
joint stock company	13	81.3	3	18.8
co-operative	1	100		

If yes, the most important items:

for equipment and technology modernisation;
renovation of transport facilities;
new technologies;
to establish joint stock enterprise with foreigners;
to repay recover investment made in 1996 for new technology.

7.5 Do you have sufficient access to credit markets?

	yes		no	
	number	%	number	%
joint stock company	9	56.3	7	43.8
co-operative			1	100

If no, the main problems:

high interest rate;
debts.

7.6 Did you take any loans in the last two years?

	yes		no	
	number	%	number	%
joint stock company	14	87.5	2	12.5
co-operative			1	100

7.7 Is overcapacity a problem for your enterprise?

16 cases - yes
1 case - no

	equipment utilisation rate, %		
	average	maximum	minimum
Answers of 13 enterprises	61.5	100	32

7.8 Could you specify the costs structure in your enterprise:

	share in cost structure, %		
	average	maximum	minimum
capital costs	2.6	6.0	1.0
cost for raw materials	67.0	78.5	46.0
labour costs	7.7	13.0	2.0
cost for energy, fuel	5.8	14.0	2.5

7.9 What could be the main measures of your enterprise to increase your profitability in the near future?

12 cases - improvement of marketing;

5 cases - decrease of production costs;

3 case - enterprise reconstruction and equipment modernisation;

2 cases - extension of production introducing new assortment;

1 case - quality improvement;

1 case - credits on favourable terms;

1 case - additional sources to buy raw milk.

7.10 What could be the main measures of your state authorities to increase the profitability of your enterprise in the near future?

13 cases - export support;

6 cases - improvement of state regulation policy of raw milk procurement prices (free raw milk procurement prices);

1 case - search for new markets;

1 case - interstate agreements;

1 case - credits with lower interest rate;

1 case - solution of interstate problems with debtors;

1 case - more stable and known in advance energy prices.

7.11 Considering the development of your enterprise in the near future, do you personally expect your input and output to increase, decrease or remain at the actual level?

	expecting development of input			
	increasing		remain	
	number	%	number	%
all firms:	14	82	3	18

	expecting development of output			
	increasing		remain	
	number	%	number	%
all firms:	16	94	1	6

ANNEX 2

TRANSLATION OF THE QUESTIONNAIRE TO THE LITHUANIAN SUGAR PROCESSING FIRMS AND SUMMARY OF THE RESULTS

1 INTRODUCTION

1.1 a) What is the legal ownership status of this enterprise?

All firms are joint stock companies

1.1 b) When was the enterprise privatised?

Three firms were privatised in 1996, and one in 1995

1.2 Who is the owner of the firm? If there are several owners, please try to give their approximate shares in total ownership (in %).

Types of owners		Share of Ownership
Entrepreneur	average	-
	maximum	-
Employees	average	2.82
	maximum	5.07
Managers	average	0.21
	maximum	0.82
Farmers (individual agroproducers)	average	22.29
	maximum	28.70
Agricultural enterprises	average	22.86
	maximum	30.50
Banks	average	-
	maximum	-
Foreign enterprises	average	-
	maximum	-
Other enterprises	average	1.14
	maximum	4.57
Government or municipalities	average	11.49
	maximum	24.86
Other Shareholders	average	39.19
	maximum	68.60

1.3 Does your company hold any shares of other enterprises in your branch?

No company holds any shares.

1.4 How many people worked approximately in your enterprise

01.01.1998	Number of employees	
	350<=500	500<=600
companies	2	2

2 PROCUREMENT

2.1 What is your average annual value of procurement of agricultural raw materials?

	Procurement in **1997** in thousand Litas			Procurement in **1996** in thousand Litas		
	average	maximum	minimum	average	maximum	minimum
companies	42372.6	56334.0	33239.5	29531.6	35320.0	25392.2

	Procurement in **1995** in thousand Litas			Procurement in **1994** in thousand Litas		
	average	maximum	minimum	average	maximum	minimum
companies	26873.8	22999.0	20823.6	17500.8	32389.5	11166.2

2.2 a) From how many producers in each of the given categories do you buy your main agricultural raw materials?

b) Please specify the per cent of total procurement value, bought through the different channels.

c) Please specify for each of the mentioned channels, whether you buy your supplies on spot markets, under contracts no longer than 1 year or on longer term contracts.

The number in the cells indicate the number of enterprises.

	number of suppliers					share of total procurement, %					Contracts		
Categories	1-2	3-5	6-10	11-20	>21	<10	11-25	26-50	51-75	>76	for a season	until 1 year	above 1 year
household farms (2-3 ha) + family farms					4			3	1		4		
agricultural enterprises					4			4			4		
producers cooperatives	1										1		
traders													
imports													
any others?		1				1					1		

2.2.1 Referring to the content of the contract, do you make agreements on quality, prices, quantity, reponsibility for transport or storing?

Category	yes	Per cent of responses	Per cent of cases
Quality	4	20	100
Prices	4	20	100
Volumes/quantity	4	20	100
Responsibility for transport	4	20	100
Responsibility for storing	4	20	100
Total responses	20	100	500

2.2.2 Do you provide special services for farmers under contract, like technical or economic advice, financial support or deliver special inputs?

4 cases - seeds; fertilizers; chemicals (100 %);
3 cases - financial support
(passive credits for the purchase of fuel, fertilizers and pesticides) (75 %);
1 case - economical advice (25 %).

2.3 Do you import raw materials?

In 1996 47 thousand tons of sugar cane semiproduct were imported because of lack of raw material.

3 SALES

3.1 What is your annual value of sales of finished products?

	Sales in **1997** in thousand Litas			Sales in **1996** in thousand Litas		
	average	maximum	minimum	average	maximum	minimum
companies	97404.1	150828.0	36236.6	73145.5	87468.1	56725.0

	Sales in **1995** in thousand Litas			Sales in **1994** in thousand Litas		
	average	maximum	minimum	average	maximum	minimum
companies	46020.9	55102.4	40874.0	36597.2	60437.0	27836.0

3.2 a) To how many retailers in each of the given categories do you sell your products?

b) Please specify the per cent of total sales value sold through the mentioned channels.

c) Please specify for each of the mentioned channels, whether you sell your products on spot markets, under contracts no longer than 1 year or on longer term contracts.

The numbers in the cells indicate the number of enterprises.

	number of retailers					share of total sales, %					Contracts		
Categories	1-2	3-5	6-10	11-20	>21	<10	11-25	26-50	51-75	>76	spot market	until 1 year	above 1 year
Own retail shops	4					4							
Other retail shops				1	2	3	1					3	
Consumer market													
Wholesale network	3		1					1		3	4		
Further processing		2		1		2		1			3	3	
export (by-products)	3	1				4					4		
any others?		1	1			1					2		

3.3 Please attribute grades that reflect the relative importance of the following regions for your exports? Grade 1 means not relevant, Grade 5 means very important.

All firms export by-products only to the EU countries; the importance is in one case middle, in one case important and in two cases very important.

3.4 Are there any major problems you face when exporting your products?

2 cases - no;
2 cases - yes (low prices for molasses and dry sugar beet cake).

3.5 Are the products under quality control?

All companies have an intern and an extern control system.

3.6 Do you have your own product brands?

In all firms for granulated sugar.

3.7 How long is the average delay between delivery of your products and payment of your customers?

The average delay between delivery of the products and payment of the customers are in 1 case one week, and in 3 cases ten days.

4 MARKET INFORMATION SYSTEM

4.1 What are the main sources of information you use considering the development of input and product prices?

Sources of information	Categories			
	input prices	output prices	marketing channels	new markets
Advisory service				
Agricultural chambers				
Market reports				
Statistical committee	3			
Personal contacts				
Radio and TV	2			
Newspapers	4			
Own marketing research		4	4	4
Internet				
Other government decisions				

4.2 What kind of additional information do you need? 4 cases yes:

4 cases - new markets;
4 cases - marketing channels;
1 case - products' prices.

4.3 Would you be prepared to pay for additional information?

4 cases - yes.

5 TRANSPORT AND STORAGE

5.1 Do you use your own transport facilities?

1 case - no;
3 cases - yes.

5.1.1 Which share of your processed products is transported by your own transport facilities?

1 case - 1 %;
1 case - 13 %;
1 case - 11 %;
1 case - none.

5.1.2 Which share of raw materials are transported by your own transport facilities?

No one use own facilities for transportation of raw materials.

5.2 Do you use other transport agents?

All enterprises use others.

5.2.1 Are there any problems you encounter?

No problems.

5.2.2 Is there fierce competition among transport firms?

All interviewees answered yes.

5.3 Do you use your own storage facilities?

All interviewees answered yes.

5.3.1 Do you have any problems with storing of processed products in your own storage facilities?

No problems.

5.3.2 Do you have any problems with storing of raw materials in your own storage facilities?

1 case - no;
3 cases - yes: waste during storing period.

5.4 Do you use other storage agents?

2 cases - yes.

5.4.1 Are there any problems you encounter?

No problems.

6 INCENTIVE STRUCTURE

6.1 Since when is the current director of this enterprise in charge?

2 cases – 1994;
1 case - 1995;
1 case - 1986.

6.2 How was the director of the company appointed?

All directors are elected by supervisory board.

6.3 Do the salaries of managers depend on profits?

Salaries of managers are in all enterprises not depended on profit.

6.4 Do the wages of employees depend on profits?

Salaries of employees are in all enterprises not depended on profit.

6.5 What was the average level of wages in your enterprise?

	Wages in Litas	
Enterprise	**1996**	**1997**
1	740	700
2	1054	1193
3	1070	1200
4	1193	1230

6.6 Considering the laying off of workers, are there any legal constraints that pose a major problem for your firm?

3 cases - no; seasonal work;
1 case - yes; seasonal work.

7 GENERAL QUESTIONS

7.1 What would you personally consider as the main successes of your enterprise in the last two years?

increased supply of raw materials;
increased quantity of processed sugar beet per day;
increased sugar output
lower production costs.

7.2 What would you personally consider as the main problems of your enterprise at the moment?

lack of raw material;
debts;
lack of circulating capital;
attraction of favourable investors.

7.3 Did you have any major investments since privatisation (1994-1997)?

4 cases - no.

7.4 Do you plan any major investments for the near future (1998-2000)?

1 case - no;
3 cases - yes: enterprises reconstruction and technology modernisation.

7.5 Do you have sufficient access to credit markets?

2 cases - no: debts;
2 cases - yes.

7.6 Did you take any loans in the last two years?

4 cases - yes.

7.7 Is overcapacity a problem for your enterprise?

1 case - yes (share of capacity utilisation 92 %).

7.8 Could you specify the costs structure in your enterprise:

	share in cost structure		
	average	maximum	minimum
capital costs	5.1	5.7	4.5
cost for raw materials	69.3	71.1	67.9
labour costs	2.5	3.1	1.4
cost for energy, fuel	8.7	11.8	6.3

7.9 What could be the main measures of your enterprise to increase your profitability in the near future?

2 cases - reconstruction of enterprise;
2 cases - the decrease of production costs;
1 case - new technology;
1 case - to lay off a part of workers.

7.10 What could be the main measures of your state authorities to increase the profitability of your enterprise in the near future?

2 cases - strong security policy for domestic market;
2 cases - introduction of excise duty for sugar;
2 cases - attraction of investments for technology modernisation;
1 cases - credits on favourable terms.

7.11 Considering the development of your enterprise in the near future, do you personally expect your in put and output to increase, decrease or remain at the actual level?

	expecting development of input		expecting development of output	
	increase	remain constant	increase	remain constant
companies	2	2	1	3

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