

The impact of EU accession on the exports of Estonia's food processing industry and the implications on its competitiveness

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***Abstract.** This paper seeks to answer whether the investments into strict hygiene and structural requirements undertaken by Estonian food processing companies have been compensated by better export opportunities to the large EU-15 market and by enhanced competitiveness. The study focuses on three sub-sectors of the food processing industry – milk processing, meat processing and fish industry. Enhanced competitiveness not only means larger export volumes, but also a redirection of exports towards higher value-added products, ensuring higher income (profits) to firms. The study concludes that in case of all sectors, the share of high value-added products in exports to the EU has fallen. Only milk processing industry has experienced an increase in the absolute value of exports of high value-added products oriented to end-consumers, whereas these are mainly traded with countries that are the main foreign investors in Estonian food processing industry and retail sector. Profitability has decreased in all three considered sectors after Estonia joined the EU in 2004, indicating a loss in the competitiveness in short term. These developments show that Estonian food processing industry has not (yet) been able to reap the benefits of the EU market and further investments into product quality and development as well as into larger production volumes are necessary.*

1. Introduction

Estonian food industry has been operating in rather exceptional and controversial economic conditions from the beginning of the 1990s. Export possibilities of Estonian food producers were often limited because its trading partners protected their markets with import tariffs and quotas. On the domestic market, Estonian food producers faced tight competition from imports as a result of Estonian highly liberal trade policy. Furthermore, imports were often more price-competitive due to subsidies, whereas Estonia did not support its domestic food industry. The choice of liberal trade policy was part of the general economic stabilisation policy after re-gaining independence; however, it posed heavy pressure on the domestic food industry. On the other hand, this situation singled out the companies that were able to cope with (distorted) market forces and hence, created an efficient food processing industry in Estonia.

However, the economic policy prevailing in Estonia before accession to the EU as well as the trade policies implemented by her main trade partners did not support the competitiveness of Estonian food processing industry neither on export markets nor on the home market. A solution to this problem was expected to be the accession to the EU and the accompanying change in competition environment created by economic policy. With accession to the EU in 2004, Estonian food processing industry fully gained

access to the Single Market of the EU. For an industry with a small domestic market, this was of crucial importance. However, the accession not only led to the final abolishment of all trade barriers on exports to the EU, but also imposed a heavy financial burden on Estonian food processing enterprises in the form of requirements to meet strict EU hygiene and structural standards. Only production units that met these standards were entitled to export to the EU and hence, reap the benefits of a large wealthy market.

The aim of this paper is to study whether the investments into strict hygiene and structural requirements undertaken by Estonian food processing industry are compensated by better export opportunities to the large EU market and result in enhanced competitiveness. Enhanced competitiveness not only means larger export volumes, but also a redirection of exports towards higher value-added products, ensuring higher income (profits) to firms in the food processing industry. The study focuses on three sub-sectors of the food processing industry – milk processing, meat processing and fish industry –, and compares which of these and for what reasons have been more (less) successful in coping with the changes in economic policy. The study uses detailed trade data from 1999-2005 and financial data for food processing sector during 1998-2004.

So far, the discussion on the impact of EU accession on Estonian economic sectors has been mainly at political rather than academic level. This article is the first attempt to analyse the changes in export performance and the corresponding implications on the competitiveness of Estonian food processing industry after the accession to the EU, taking into account the actual immediate impact of EU membership. Earlier studies on the impact of EU integration have been considering only ex-ante effects of accession. The ex-post evaluation of the impact of EU integration on the competitiveness of Estonian food-processing industry is, however, a challenging task for several reasons. Firstly, the period of analysis is too short to be able to conduct a full and thorough evaluation of the impact of integration, as Estonia joined the EU only in May 2004. Therefore, much of the necessary statistical information is still not available. Furthermore, the impact of accession to the EU can only be fully observed after a longer time period since many effects associated to the integration occur in long run. This is especially the case for dynamic non-price effects of integration, related to the investments in product quality and innovation. Secondly, integration with the EU has been a very complex process, covering many years and different stages of trade liberalization, which should, in ideal case, all be taken into consideration. Thirdly, the period of integration with the EU has partly coincided with a transformation from the Soviet command economy into a market economy. This fact refers to the difficulty of distinguishing between the effects of EU accession and the effects related to the transition from one economic system to the other. Fourthly, the division of exports into low and high value-added products is itself a very challenging task, and the available trade statistics only indirectly allow us to draw some conclusions. Finally, there is a serious problem related to the comparability of the data before and after May 2004, as the system of foreign trade data collection changed with accession to the EU. Trade data on transactions between EU countries is now based on statistical reports (Intrastat), which only includes enterprises with large trade turnover. Total trade volumes are estimated using statistical methods. For these reasons, the results of the current study should be seen as a partial, preliminary, and highly tentative exercise.

The rest of the paper is structured as follows. Section 2 introduces the concept of industry competitiveness. Section 3 gives an overview of the changes in policy affecting the access of Estonian food exports to the EU market after accession and the conformity of Estonian food processing industry to the EU requirements. Section 4 describes the general developments in export patterns during Estonia's integration with the EU. Section 5 reports the changes in the value-added level of exports to the EU, while section 6 discusses the changes in the unit value levels of exports. Section 7 discusses the problems and challenges related to gaining the EU markets. Section 8 analyses the corresponding changes in profitability of food processing industry resulting from the accession to the EU, and section 9 concludes.

2. The concept of competitiveness of an industry

The concept of competitiveness is widely used in literature, yet, there is no general agreement on the definition of competitiveness and the concept itself is somewhat ambiguous. There is a disagreement not only about its correct definition, but also about its measurement, the indices to be used in measuring competitiveness, as well as the interpretation of whatever results would emerge from measurements.

The multiplicity of different definitions and ambiguity around the competitiveness is partly due to the fact that competitiveness is a broad concept and can be considered at different levels – country (macro level), industry or sector, firm (these constitute micro level), and commodity level. Each of these levels of analysis can be undertaken within different spatial levels, indicating regional, national and international competitiveness (O'Donnell 1997). Nevertheless, whatever the level of analysis, there are two common features important to keep in mind while analysing competitiveness. First, competitiveness is a relative term, and must be therefore assessed relative to some criterion (another firm within the same country, the same industry in another country, another country, another point of time, etc.). Second, the emphasis should be on growth, that is on dynamic performance. (Traill, da Silva 1996)

Competitiveness of an industry belongs to the microeconomic concept, which focuses on the “characteristics of producers in competition for market share and profits or ability to export internationally” (Siggel 2003). Most of the studies on competitiveness assess the performance of an industry by using an aggregate of all the outputs produced in this industry, or by considering its most important commodities (Frohberg, Hartmann 1997a). There is a large variety of definitions of competitiveness at micro level. Frohberg and Hartmann (1997a), for example, define competitiveness as the ability to supply goods and services in the location and form and at the time they are sought by buyers, at prices that are as good as or better than those of potential suppliers, while earning at least the opportunity cost of returns on resources employed. Ezeala-Harrison (1999), on the other hand, defines international competitiveness as the relative ability of a country's firms to produce and market products of standard or superior quality at lower prices. However, it is not enough just to achieve a short term competitive advantage. According to Ezeala-Harrison (1999), competitive advantage refers to the relative advantage that country's firms and industries have regarding their ability to operate profitably within a competitive environment. In order for an industry to be competitive, however, the firms belonging to the industry should maintain a positive (or at least zero) growth rate of aggregate competitive advantage, i.e. profits. This means

that competitiveness is taken as synonymous with firm's long-run profit performance. Boyle (2004), on the other hand, approaches competitiveness from its counterpart claiming that failure in the sense of the inability to penetrate markets or the occurrence of large-scale unemployment can be attributed to the lack of competitiveness. He also defines competitiveness in terms of individual agricultural producers and food processing firms as the ability to outbid rivals in securing customers (Boyle 2004). Martin et al. (1991), examining the Canadian agri-food industry, define competitiveness of an industry as sustained ability to profitably gain and maintain market share. Similarly, Miner (1994) emphasises the terms profitability and market share in defining competitiveness, however, instead of using a general term "market", he refers to both domestic and export markets. In addition, he underlines the applicability of this definition to an industry sector or firm level, but not to an entire industry based on many firms with different structures and operations.

Hence, according to the definitions referred to above, the two keywords for measuring and monitoring competitiveness seem to be "profits" and "market share", both on domestic and export markets. However, market share as an indicator of competitiveness must be used carefully, since it relates the size of market with the size of an industry. So, if the total market is increasing, the market share measure could indicate a loss in competitiveness even if the output of an industry is actually increasing (but slower than total market)(Ash, Brink 1994). This is especially the case of export competitiveness of a small country like Estonia, which industry's shares in world trade or even in EU market are minor and any change in other countries' output can affect the market share of Estonian industries considerably. Furthermore, as emphasized by Buckley et al. (1988), export market share as a measure of competitiveness (especially at the firm level) fails in the case when market share is maintained through drastic price cutting which could have a negative effect on profitability and long term performance. Therefore, in considering export competitiveness, export patterns rather than market share should be taken into account especially in the case of a small country. Profitability, on the other hand, is a better indicator as it directly relates to the performance of an industry firms' on domestic and foreign markets, irrespective of the changes in market size. Buckley et al. (1988) even argue that profitability could be "the single most important measure of competitive success" and "long run profitability is essential for survival". However, firms may be willing to undergo short-run loss in profits in order to achieve long-run growth. Furthermore, the measuring of profitability is often a difficult task. Martin et al. (1991) suggest for agribusiness industry, that buys raw materials, processes them, and resells them in different forms, value added as a proper, although indirect measure of profits. This approach has been followed by many other authors.

However, profits and market size are only the indicators of competitiveness that depend on certain factors. There are two main factors underlying international competitiveness: price competitiveness and product quality. Most studies on competitiveness have focused on price competitiveness directly or indirectly through cost competitiveness and productivity. However, this approach has some caveats. First of all, it is a question of which prices/costs to consider as the measure of competitiveness. Second, the importance of prices has decreased as the determinants of export performance, and the role of non-price factors such as product quality has increased. For instance, concerning the product competition in home markets, Swann and Taghavi (1992) argue that consumers buy imported goods mainly because of some aspect of quality that is

superior to domestic products, rather than because imports are cheaper.¹ Sachwald (1994) defines the non-price aspect as structural competitiveness, whereas this term summarises all the non-price characteristics attached to the product such as quality, degree of novelty or innovativeness, the design, distribution networks and after-sales service. Chen et al. (1999) include also government policy factor under the term “non-price competitiveness”.

The quality aspect of competitiveness has attracted less attention in economic literature as the quality of a product is hard to measure precisely and proxies need to be used instead. Nevertheless, there are some attempts that try to combine the two factors of competitiveness. For example, Swann and Taghavi (1992) rely on consumer theory and compare the expected price, based on quality attributes, with the actual price of products. The product is considered competitive if the expected price exceeds the actual price. Boyle (2004), on the other hand, divides competitiveness into its quantitative and qualitative indicators. The first refers mainly to prices and costs, while the latter takes account of the reliability of supply, reputation of the producer, and the quality of after-sales service. Many authors have used R&D expenditures as an index of non-price measures; however, the use of R&D as a proxy has raised many caveats (see Swann and Taghavi 1992). Hoen and van Leeuwen (1991) measure the quality aspect of competitiveness by relative unit values of trade flows. Cho (1994), however, declares the practice of dividing international competitiveness into two categories as price competitiveness (measured by export prices, production cost and consumer or wholesale prices) and non-price competitiveness (measured by quality status, durability, design and consumer satisfaction) as a misconception. He claims that in the case of the former, the empirics show that strong international competitiveness of a country can raise the price of the products; while in the case of the latter, there is not enough empirical evidence. He concludes that price and non-price factors are the results of nation's international competitiveness, and not the causes of it as often assumed.

Demand for foodstuffs is characterised by low income and price elasticity (Ezeala-Harrison 1999). This seems to affirm that low prices, and hence, price competitiveness, cannot be the key to long-run success for food processing industry. The products of food processing industry can be divided into three broad categories – bulk products and raw materials, semi-processed products and high value-added processed products, which are mostly directed towards end-consumers. In the case of bulk products, price is definitely the most decisive factor of demand. However, for high value-added (processed) products, quality, brand name, innovation, product differentiation, and after-purchase services become more important.² Their demand enjoys higher income and price elasticities and can, thus, lead to a sustainable long-run competitiveness. Increased exports of processed products increase firms' value added, income, and provide jobs in manufacturing (Reed 1994).

Hence, for an industry in a small country with limited domestic market, the ability to export products with high value-added is a key to long-run sustainable growth and profitability. This ability depends on price factors (such as costs), on the one hand, and from non-price factors (such as product quality and reputation), on the other hand. However, not all factors determining firms' success, and hence, the competitiveness of

¹ See Swann and Taghavi (1992) for the list of the earlier studies emphasising the non-price aspects of competitiveness.

² Nevertheless, even the niche products are very close substitutes for the products of the other countries.

an industry comprising of firms, are controlled by the firms themselves (or are uncontrollable). Instead, many of these factors are determined by the economic policies and regulations of the home country and foreign countries (see figure 1).

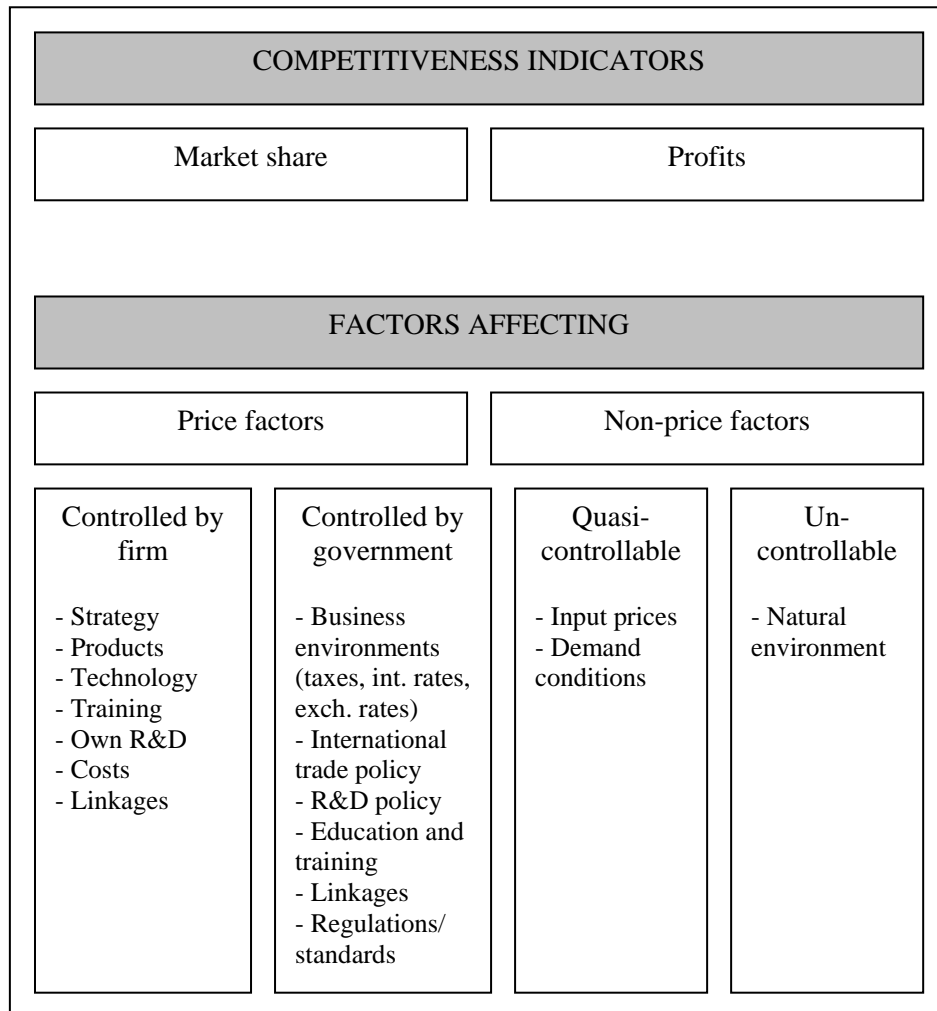


Figure 1. Competitiveness indicators and the factors affecting them (Source: Martin et al. 1991, p. 1457; author's modifications)

For a small or less developed country, the role of foreign countries' policies is often decisive as it determines the possible access to export market. For instance, the practice of tariff escalation by many developed countries implies that exports of high processing level food products by developing countries to developed world are relatively more hindered than exports of low value-added raw products. This in turn impedes the long-run income growth and competitiveness of agri-food industry in less developed countries. Another example of foreign country's policy obstructing exports is the requirement by the EU that imports of processed foodstuffs have to comply with high hygiene and structural standards, which also affected food processing industries in new member states as well as in current candidate countries. The next chapter elaborates the

situation of Estonian food processing industry's conformity to the EU requirements in the course of integration with the EU and the challenges emerging from the accession.

3. The conformity of Estonian food processing industry to the EU requirements

Of all industrial sectors in Estonia, food processing has been most strongly affected by economic transformation and integration with the EU. The share of food processing in total manufacturing has been constantly decreasing since 1993, when food industry reached its independence-time peak forming 42% of the manufacturing output. By 2004, this share had fallen to only 15%. The largest share in food processing is formed by dairy industry (29% in 2004), followed by meat industry (17.4%) and beverages (17.2%). Fish industry is the fourth largest sector with a share of 10.4% in 2004. Of these industries, especially fish processing sector is strongly export-oriented, with the average share of exports to net sales being 79% during 1994-2003. The same indicators for meat and dairy processing were 12 and 34%, respectively.

Estonian food processing industry's trade relations with the EU have developed in different circumstances compared to other economic sectors. Formal trade relations between Estonia and the EU started on 1st January 1995, when Estonia and the EU concluded the Association Agreement (also called Europe Agreement). This also embodied a free trade agreement. However, agricultural products were left out of the free trade agreement, although other goods of Estonian origin were granted tariff-free entry to the EU market. Estonia, at the same time, did not apply tariffs or other trade barriers against imports from EU countries already before full membership. Yet, as a result of the free trade agreement, the EU provided some concessions for Estonian agricultural exports, gradually lowering and abolishing tariffs and increasing the amounts of Estonian agricultural products and foodstuffs allowed to enter the EU (i.e. quotas). Nevertheless, the preferential quotas were not fulfilled by Estonia (except for butter and skimmed milk powder).

Frohberg and Hartmann (1997b) have studied the causes behind the lack of success of the Association Agreements for the CEECs that in many cases also hold for Estonia. They conclude that the poor performance of the CEECs' exports of agricultural products and foodstuffs to the EU compared to the agricultural imports from the EU can be explained by many internal and external factors, such as the appreciation of the real exchange rate throughout the 1990s and thereafter, which made the exports of the CEECs relatively expensive and uncompetitive on the world market, while favouring imports; inefficient food industries with overcapacities; agricultural policies implemented by the CEECs; the 1992 reform of the Common Agricultural Policy and the agreement reached at the Uruguay Round that increased market access of all third countries to the EU, reducing so the relative advantage the CEECs had been enjoying under their bilateral agreements with the EU. One of the reasons for the underutilisation of preferential quotas was also certainly the lack of quality and insufficient sanitary standards in the CEECs that made it difficult to export foodstuffs to the highly sophisticated and demanding consumer markets in the EU. The preferential quotas, at the same time, were relatively small, and this impeded the investments by the food industry into stricter product standards.

However, as argued by Frohberg and Hartmann (1997b), the design and the content of the Association Agreements itself can be partly the reason for the underutilisation of the

preference quotas. The annual quotas allocated to imports of foodstuffs from the CEECs were spread evenly over four quarters of the year, whereas unfulfilled quotas could not be compensated for by the CEEC in a later quarter by exporting more. In addition, the required import licences issued by the European Commission for the preferential quotas could only be applied for by importers (established in the EU). However, the importers were required to pay a certain deposit in order to be issued a licence, which was only valid for specific period. If nothing was imported during that period, the right to import ceased and the importer lost the deposit. This shows the riskiness of importing using preferential arrangements, which was especially the case in the first years of the agreements when the business relationships between the EU and the CEECs were not yet well established, and indicates the high bureaucratic cost of importing from the CEECs.

With Estonia's accession to the EU on 1st May 2004, the last remaining formal barriers on Estonia's exports to EU countries were abolished. In addition, the accession to the EU also reduced the burden of bureaucratic barriers. This means that besides formal trade barriers, i.e. tariffs and quotas, also non-tariff barriers to trade (NTBs; also called invisible trade barriers) were dismantled between Estonia and the other EU countries. The removal of NTBs, although less apparent than the abolishment of tariffs and quantitative restrictions, can have a highly significant impact on the competitiveness of Estonian food industry in the markets of the old EU member countries. In addition, the removal of NTBs in the form of border checks also improved access to the markets of other new member states of the EU.³

However, the opening-up of EU market was not without costs for Estonian food processing industry. The accession to the EU was accompanied by the requirement to comply with strict EU hygiene and structural standards. According to the Food Act, a law that was passed in 1999 to bring Estonian legislation in conformity to the *acquis communautaire* of the EU and took effect in 2000, the enterprises engaged in production and processing of foodstuffs had to bring themselves into conformity to the structural and hygiene requirements laid down in the Act by 1. January 2003. This resulted in large investments by the food processing industry; however, the low share of enterprises fulfilling the requirements by the beginning of 2003 enforced the deadline to be extended until the end of 2003. At the same time, enterprises were striving to obtain the right to export their products to EU markets, as the conformity to the requirements of the Food Act did not automatically lead to the approval by the EU. Most of the investments were made in 2002 and in 2003 (see figure 2). In total, 284 thousand euros were invested during 2000-2004, whereas most of the investments were made into machinery and equipment (46%) and into buildings and facilities (35%). Biggest investments in absolute values were undertaken in dairy industry, followed by meat industry.

³ With Estonia's accession to the EU, significant changes occurred also in trade regime with third countries. The most important of these for Estonian food processing industry were definitely the removal of double-tariffs on exports to Russia and the cancelling of the free trade agreement with Ukraine. Although these policy developments also had significant impact on trade patterns, these effects are beyond of the scope of the present paper.

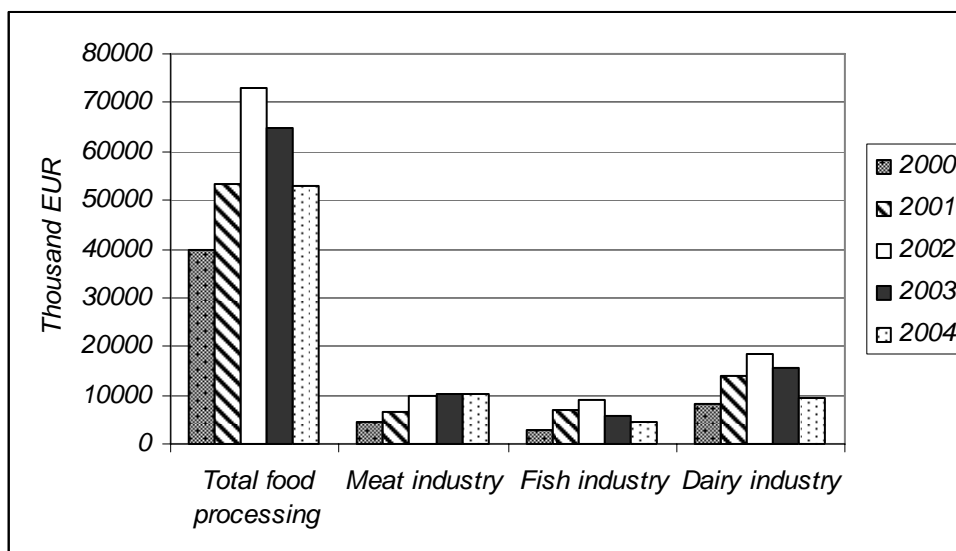


Figure 2. The investments into tangible fixed assets in Estonian food processing industry, 2000-2004 (Source: Statistical Office of Estonia).

In table 1, the ratio of investments into tangible assets compared to net sales is given. It can be seen that on average, meat industry has invested relatively more than fish and dairy industries, whereas the investments in meat processing units have lagged behind compared to fish and dairy industries. In these two industries, the investments culminated in 2002.

Table 1. The ratio of investments into tangible assets to net sales, 2000-2004 (%)

	Total food processing	Meat industry	Fish industry	Dairy industry
2000	5.1	4.4	2.7	3.6
2001	6.1	5.1	5.1	5.6
2002	8.1	7.2	7.9	7.8
2003	7.2	7.4	5.7	6.5
2004	5.2	7.0	4.4	3.1
Average 2000-04	6.3	6.2	5.2	5.3

Source: Statistical Office of Estonia; own calculations.

Table 2 reports the compliance of food production units with the Food Act and with the EU standards (which gave the right to export to the EU) during 1998-2004. The fall in the total number of firms has been a direct effect of harmonization of Estonian legislation with the EU rules, as a result of which the firms were forced to invest in heavy structural, sanitary and hygiene (as well as product safety) standards in order to comply with the Food Act by 2003 or exit the business. As a result, concentration in food industry increased. This table shows clearly that even though the EU abolished tariffs and quotas faced by Estonian food exports, the EU market was still relatively

closed because only a few producers were entitled to sell their products on the EU market (for example, until 2003, there were no meat processing units in Estonia fully meeting the EU requirements and hence permitted to export to the EU). The firms approved by the Food Act but not confirmed by the EU are only allowed to sell their products on domestic market. During the whole period, fish industry has been leading in the number of enterprises possessing the right to export to the EU.

Table 2. The conformity to structural and hygiene requirements in Estonian food processing industry, 1998-2004

	1998	1999	2000	2001	2002	2003	2004
Total nr of enterprises							
Meat industry	281	284	278	219	143	135	139
..large capacity	17	17	17	15	13	14	16
..low capacity	264	267	261	204	130	121	123
Dairy industry	41	41	44	38	38	41	42
Fish industry	125	127	135	109	97	95	96
Approved by The Food Act (from 2001) ^a							
Meat industry				7	n.a.	79	139
..large capacity				1	n.a.	7	16
..low capacity				6	n.a.	72	123
Dairy industry				n.a.	n.a.	38	42
Fish industry				n.a.	n.a.	77	96
Confirming to the EU requirements							
Meat industry	0	0	0	0	0	2	16
Dairy industry	2	4	7	11	14	15	15
Fish industry ^b	14	18 (10)	25 (13)	27 (13)	36 (14)	41 (10)	50 (11)

Source: Ministry of Agriculture of Estonia, various yearbooks.

Notes: ^a Initially, all food processing units had to confirm to the hygiene rules laid down in the Food Act by 1.01.2003. However, because many enterprises did not meet the requirements by that date, extension was given to bring the units in conformity during the year 2003.

^b The numbers in brackets refer to ships that meet the EU requirements.

Even though the fulfilling of the requirements laid down in the Food Act and by the EU put heavy burden on food processing firms' economic situation, a part of the finances for the necessary investments was received from the SAPARD (measure 2) investment support. During the period 2002-2005, in total 18.5 million EUR was paid out to food processing industry, whereas the largest share of that was allocated to meat industry (41%), followed by fish industry (31%) and finally dairy industry (27%)(see table 3). 75% of that amount was paid by the EU and 25% by national budget. So far, however, only a few investments associated with environmental regulations have been made. With Estonia's accession to the EU, SAPARD investment support was replaced by the National Development Plan (NDP). From NDP, food processing industry was preassigned 11.4 Million EUR as investment support during 2004-2006.

Table 3. SAPARD investment support to Estonian food processing industry, 2002-2005 (Mill EUR)

	2002	2003	2004	2005 ^b	Total	Share (%)
Total food manufacturing	4.8	5.0	7.0	1.6	18.5	100
Meat industry	2.4	2.7	2.4	0.1	7.6	41.2
Dairy industry	1.6	0.9	1.3	1.3	5.0	27.3
Fish industry	0.8	1.4	3.3	0.3	5.8	31.4

Source: PRIA.

Notes: During 2004-2005, no applications for support were accepted, only facilities were paid out.

Strict hygiene, structural and product safety standards definitely result in higher short-run production costs in firms. This, however, does not (necessarily) reduce industry's competitiveness. On the opposite, investments into mentioned standards would enhance the competitiveness in long run due to the improvements in the product quality and safety. Similarly, we could ask whether these significant investments into stricter hygiene and product standards that raised firms' costs and led to exit of business by many smaller firms are compensated for by better export opportunities to the large EU market and result in enhanced competitiveness of Estonian food processing industry. To answer this question, we not only look at the changes in trade values, but also assess the changes in trade structure according to the value added (or processing) level of exports. In the following, we seek to answer whether Estonian exports of foodstuffs indicate an increase in the share of processed consumption-ready foodstuffs, or do primary and semi-processed products constantly dominate the trade? Exports of higher processing level products can improve the sustainability of Estonian food processing industry's competitiveness by securing a long-term profitability and providing more jobs. Furthermore, in the case of low value-added bulk products, Estonian food sector competes for the EU market (as well as for other foreign markets) with production from developing countries. However, the fast increasing labour costs in Estonia raise the price of production, which clearly refers to the inability of Estonian food sector to compete (based on cost advantages) in long term with developing countries on the market of bulk products. In the case of high value-added products, on the other hand, non-price parameters such as quality and differentiation become more important, enabling to gain markets despite of increasing production costs.

4. General export patterns

Since 1995, the trade in agricultural products and foodstuffs in Estonia has been in deficit, while the deficit has been deepening over years (see figure 3).⁴ This has been, in large, a result of the trade policy conducted in Estonia, which opened domestic markets to subsidised imports from abroad, leaving the domestic industry without any protection. Only in 2000-2001, exports grew faster than imports, partly as a result of

⁴ Due to the divergence in the classification of trade and industry data, the Harmonised System (HS) trade categories 01-24 are considered here, constituting of agricultural products and foodstuffs.

introduction of tariffs on agricultural imports in 2000 and partly as a result of re-direction of exports away from Eastern markets towards Western markets after Russian crisis in 1998. The accession to the EU in 2004 boosted both Estonian exports and imports of foodstuffs, but the growth of exports exceeded the one of imports. Nevertheless, a study by the Estonian Institute of Economic Research showed that in November 2004 compared to May 2004, the share of domestic foodstuffs in the turnover value of retail sector only increased in four product groups, while decreased in 19 product groups (Ministry of Agriculture 2004). This indicates strengthened competition pressure from imports as a result of the accession to the EU.

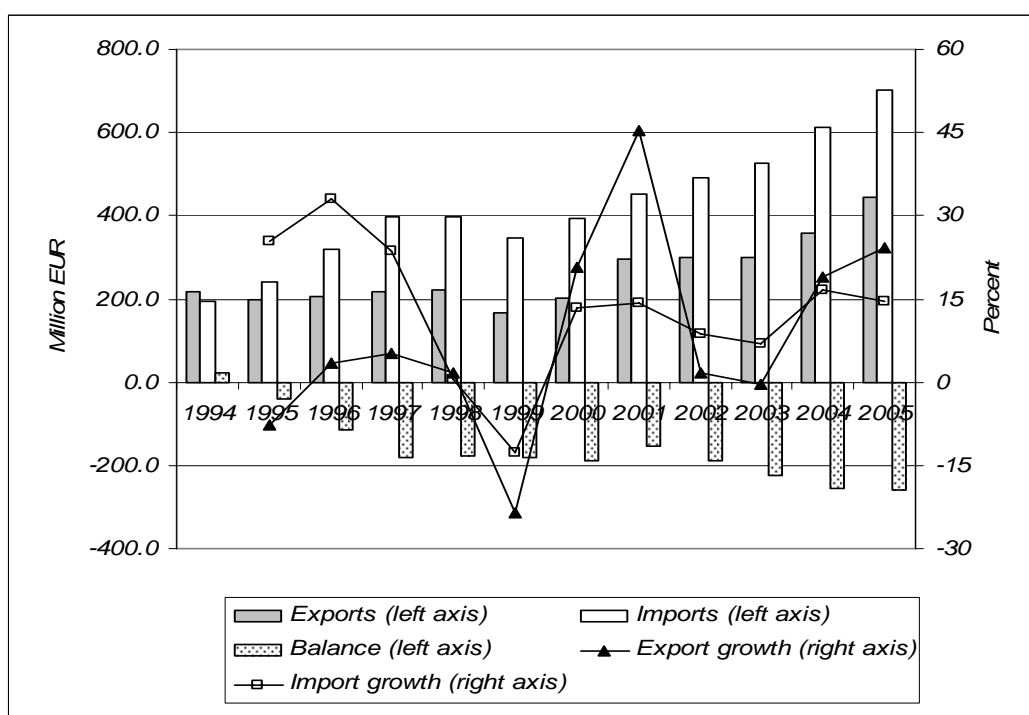


Figure 3. Trade in agricultural products and foodstuffs 1994-2005, absolute values and annual growth rates (Source: Statistical Office of Estonia; own calculations).

The formal accession to the EU on 1st May 2004 also had a significant effect on trade structure, although trade patterns had changed already during the integration process. The role of the EU old member states (EU-15) as a destination for Estonian agricultural products and foodstuffs has increased gradually from the mid-1990s onwards (see figure 4). In 1995, the EU-15 formed 30% of Estonian agri-food exports, whereas this share increased to 37% in 2003. Just shortly before the accession, during January-April 2004, the share of the EU-15 was 37% of Estonian exports. After the accession, however, that figure increased by 13 percentage points, to 50% (May-December 2004). This indicates that although the formal trade barriers for exports to the EU-15 were abolished already during the integration process, the NTBs existed until the actual membership. Also the role of CEECs as a destination for Estonian agricultural exports has increased from the mid-1990s on (from 13% in 1995 to 35% in 2003). With Estonia's accession to the EU, however, the share of CEECs decreased slightly (from 35% in 2003 to 34% in May-

December 2004). After the accession, the EU-25 accounted for around 80% of Estonian exports of agricultural products and foodstuff. The share of other countries not belonging to the EU has decreased over time, from 57% in 1995 to 20% in 2004. Estonia's accession to the EU led to an export diversion – the share of non-EU countries fell from 27% in January-April 2004 to only 16% in May-December 2004 (for example, exports to Ukraine fell by around 50% as a result of abolishment of the free trade agreement between Estonia and Ukraine).

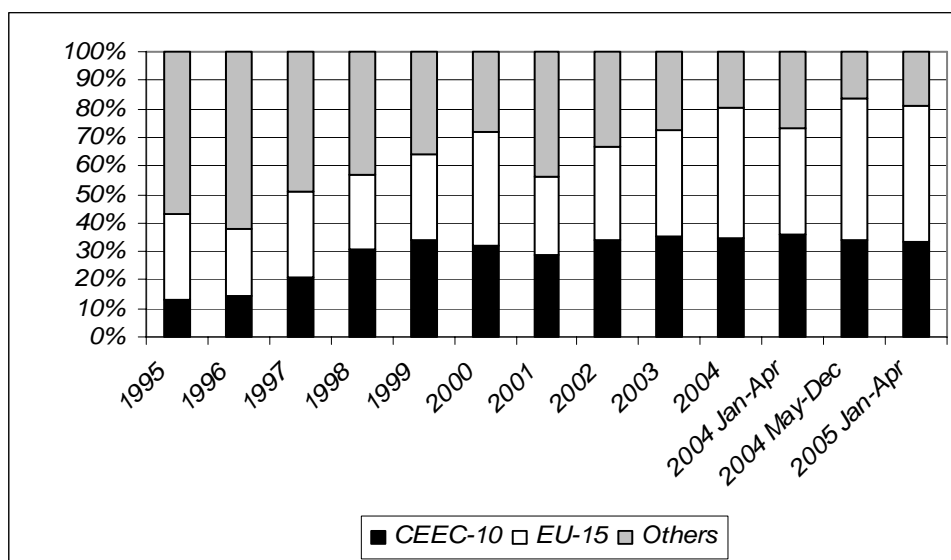


Figure 4. The share of different country groups in Estonian exports of agricultural products and foodstuffs in 1995-2005 (Source: Statistical Office of Estonia; own calculations).

Note: CEEC-10 consists of Cyprus, Czech Republic, Hungary, Latvia, Lithuania, Malta, Poland, Slovak Republic and Slovenia.

Also the composition of agri-food trade has changed over time, giving some (indirect) insights about the non-price or quality competitiveness of Estonian food industry. Table 4 presents the shares of raw products and processed products in Estonian exports in agricultural products and foodstuffs with selected partners. In overall, the processing level of Estonian exports has slightly increased – the shares of raw products and processed products in 1999 were 71% and 29%, respectively. In 2004, the respective shares were 69% and 27%. However, even more interesting are the patterns of trade with the EU and its new member states. Clearly a shift from raw products towards higher value-added processed foodstuffs has occurred in Estonian exports to the EU-15, indicating an improvement in the competitiveness of Estonian foodstuffs exports to the EU. The shift towards more processed products was especially significant in 2004 compared to 2003, when the share of processed agricultural products in Estonia's exports to the EU increased more than twofold. Although the role of raw products has fallen from more than 90% during 2000-2003 to 76% in 2004, their share, nevertheless, is still relatively high. The trade with the CEECs that joined the EU in 2004 has, on the other hand, become more oriented towards products of lower processing level – the

share of raw products has increased from 60% in 1999 to 65% in 2004 (with a peak of 69% in 2002). Most remarkable changes have occurred, however, in Estonian agricultural exports to Russia, where the share of processed products has increased more than four times during 1999-2004, being 61% in 2004. Again here, the most remarkable shifts in product composition occurred in 2004 compared to 2003, associated with the abolishment of double-tariffs and application of MFN tariffs on Estonian agricultural exports by Russia from May 2004 on (related to the fact that from 2004 on, Russia has to treat exports from Estonia equally to exports from other EU countries).

Table 4. The share of products of different processing level in Estonia's agricultural exports to selected partners, 1999-2004 ^a

Destination		Share in all agri-food exports (%)					
		1999	2000	2001	2002	2003	2004
World	Total agricultural products	100	100	100	100	100	100
	- Raw products	71	78	78	80	76	69
	- Processed products	29	21	21	20	23	27
EU-15	Total agricultural products	100	100	100	100	100	100
	- Raw products	87	93	91	94	92	76
	- Processed products	13	7	8	6	8	17
NMS-10 ^b	Total agricultural products	100	100	100	100	100	100
	- Raw products	60	62	64	69	67	65
	- Processed products	40	36	36	31	33	32
Russia	Total agricultural products	100	100	100	100	100	100
	- Raw products	86	87	89	71	67	39
	- Processed products	14	13	12	32	33	61

Source: Eurostat – Agricultural Trade Statistics.

Note: ^a The shares of raw products and processed products do not always add up to 100 due to the existence of confidential trade.

^b New member states of the EU from 1st May 2004.

However, according to the classification of Eurostat, the production of dairy, meat and fish processing industry is categorized under raw materials; hence table 4 gives no further insights about the level of value added in the exports of these industries. Therefore, next we look more closely at the structure of meat, dairy and fish exports.

5. Changes in the value-added level of exports

One way to analyse the changes in the level of value-added in exports is to consider the changes in export values of products of different processing level. However, this is not a perfect measure since the available trade data is usually not of sufficiently detailed level, which does not allow distinguishing between products of clearly low or high processing level. Furthermore, there are many possible ways to classify agricultural

products and foodstuffs according to their value-added content.⁵ The United States Department of Agriculture, for example, distinguishes between bulk commodities and high-value products (HVP)(Whitton 2004). The latter group is divided into three subgroups consisting of raw HVP, semi-processed HVP, and processed HVP. According to this approach, all meat products (excl. fats) and dairy products belong to the last group. A very different approach was chosen by Winger et al. (2003). In their analysis of the level of “added value” products in New Zealand food exports, representatives of food industry were asked to define HS 10-digit code level product groups as either “added value” or “commodity”. Products could be categorised as value-added by type, processing methodology, storage regime, or market. In case the industry representatives described product group as incorporating both value-added products and commodities, financial value analyses was applied to find the proportion of added value products within the product group. Financial value analyses basically involved calculation of the unit values of exports for each 10-digit product group over all destinations and for each market separately. Any market with a unit value higher than the average figure over all markets was considered as value-added market. In the opposite case, the market was seen as commodity. By summing up the total value of all “value-added markets” within a specific product group, the total value of value-added products in that product group was derived. In this approach, value-added is not viewed in terms of products’ processing level or distance to consumers, but rather in terms of shareholder value. According to the authors, this ensures that value-creating technology incorporated into minimally processed food is taken into account. However, the direct adoption of the above described method poses many caveats, such as the ambiguity around the definition of value-added, the questionability of the criterion for value-added markets in case of different purchasing power levels in different countries as well as the potential price distortions due to the existence of trade barriers, and the reliability of New Zealand’s industry representatives’ appraisal in Estonian case.

Therefore, assuming that higher level of processing and nearness to end-consumers indicate in general higher value-added, we follow the classification of agricultural and food products applied by van Berkum (1999). Transferring the SITC (Standard International Trade Classification) codes used in the mentioned approach into the HS (Harmonised System) codes, the main product groups (at 4-digit level) in Estonian exports of foodstuffs according to their level of processing are presented in table 5.⁶ Although meat and fish are considered as primary products mainly for household consumption, it is clear that a large part of the exports of these products do not directly reach households, but will be processed by local processors before reaching the end-users. Concentrated milk (mainly in the form of milk powder) and whey are considered as processed products mainly for industrial use, while sausages, hams, yoghurt, butter, cheese, ice-cream and prepared or preserved (tinned) fish belong to the group of processed products mainly directed to end-consumers.

Yet, these product groups each embody many different products that can be of different processing level. Therefore, for more firm conclusions, data for exports of considered industry sectors on HS 6-digit level was analysed. In general, the classification of products as given in table 5 was followed, only in case of milk and milk products, some

⁵ The way how Eurostat classifies agricultural products and foodstuffs according to their processing level was shortly introduced in the last chapter.

⁶ Although the production of meat, fish and dairy industry can be also found as constituents in other product groups as, the minor importance of these product groups in exports allow us to neglect it here.

modifications were done (detailed data on the division of product codes according to their processing level and the export values to the EU-15 can be obtained from the author on request).

Table 5. The classification of products by processing level^{a, b}

	Primary products mainly for industrial use	Primary products mainly for household consumption	Processed products mainly for industrial use	Processed products mainly for household consumption
Meat processing		0201, 0202, 0203, 0204, 0206, 0207		1601, 1602
Dairy processing	0401		0402, 0404	0403, 0405, 0406, 2105
Fish processing		0302, 0303, 0304		1604

Source: van Berkum, 1999 (author's modifications).

Notes: ^a The HS4 codes contain the following product groups:

0201 – fresh or chilled bovine meat, 0202 – frozen beef, 0203 – pork, 0204 – meat of sheep or goats, 0206 – edible offal of meat, 0207 – poultry, 0302 – fresh or chilled fish, 0303 – frozen fish, 0304 – fish filet, 0401 – milk and cream, 0402 – concentrated milk and cream, 0403 – yoghurt, 0404 – whey, 0405 – butter, 0406 – cheese and curds, 1601 – sausages, 1602 – prepared and preserved meat (e.g. hams), 1604 – prepared and preserved fish, 2105 – ice cream.

^b The original table did not include fish products.

Table 6 shows the results of the analysis of the export values and shares of products of different processing (and, hence, value-added) level in exports to the EU-15 during 1999-2005. The figures clearly indicate that the EU accession did remarkably ease the access to the EU-15 market for Estonian meat industry; however, a shift towards unprocessed, low value-added exports occurred after Estonia joined the EU. This was a result of the significant (by 487% during 2003-2005) increase in the exports of unprocessed meat and a 76% fall (during 2003-2005) in exports of processed meat products (the level of the meat exports to the EU-15 was, however, negligible before accession). Relative to the years before accession, also the share of processed products in fish exports dropped, accompanied with a modest increase in total exports of fish and fish products to the EU-15 (by 14% during 2003-2005). In case of milk exports, the role of processed intermediate products mainly for industrial use increased during 2004/2005 compared to 2003,⁷ nevertheless, remained lower than in the earlier pre-accession years. The accession remarkably facilitated access to the EU market for primary dairy products (non-concentrated milk and cream), which export increased almost 6 times in 2005 compared to 2003, and their share in total dairy exports increased from less than 2% to 8% in 2005. However, the share of high value-added consumer products did not increase. On the opposite, their exports increased only by 8% during 2003-2004, and their proportion in the total milk exports dropped to 47% in 2004 compared to 57% in 2003. In 2005, exports of high value-added milk products even decreased (by 11% compared to 2004) and their share fell to only 42.5%. Nevertheless, these shares surpass the respective figures during 1999-2001.

⁷ The exports of processed milk products mainly for industrial use increased by 56% in 2004 compared to 2003 in value terms, and remained relatively stable in 2005.

Table 6. Exports of products of different value-added level to the EU-15, 1999-2005

		Exports to the EU-15							Change (%)		
		1999	2000	2001	2002	2003	2004	2005	2004 /2003	2005 /2004	2005 /2003
Meat and meat products											
Value (in euros)	Unprocessed meat	99627	95303	98876	139535	821742	1791381	4822804	118.0	169.2	486.9
	Processed meat products	119105	63149	130562	356683	356604	121567	85150	-65.9	-30.0	-76.1
	Total	218732	158452	229438	496218	1178346	1912948	4907954	62.3	156.6	316.5
Share (%)	Unprocessed meat	45.5	60.1	43.1	28.1	69.7	93.6	98.3			
	Processed meat products	54.5	39.9	56.9	71.9	30.3	6.4	1.7			
Fish and fish products											
Value (in euros)	Unprocessed fish	22325359	26711191	23737833	26482301	25919985	30358727	29938526	17.1	-1.4	15.5
	Processed fish products	3811674	4641108	6232151	7770271	7232354	6642625	7923282	-8.2	19.3	9.6
	Total	26137033	31352299	29969984	34252572	33152339	37001352	37861808	11.6	2.3	14.2
Share (%)	Unprocessed fish	85.4	85.2	79.2	77.3	78.2	82.0	79.1			
	Processed fish products	14.6	14.8	20.8	22.7	21.8	18.0	20.9			
Milk and milk products											
Value (in euros)	Primary products	7237	615657	744904	725860	867428	2227791	5029154	156.8	125.7	479.8
	Processed intermediate products	8999929	20185099	18706948	24081881	19996094	31223187	30912118	56.1	-1.0	54.6
	Processed products for household consumption	4168585	12837466	13534024	18411357	27559096	29841260	26559008	8.3	-11.0	-3.6
	Total	52709566	98789495	96173475	121189288	131178224	165501080	167772627	26.2	1.4	27.9
Share (%)	Primary products	0.1	1.9	2.3	1.7	1.8	3.6	8.8			
	Processed intermediate products	68.3	60.0	56.7	55.7	41.3	49.3	49.5			
	Processed products for household consumption	31.6	38.2	41.0	42.6	56.9	47.1	42.5			

Source: Prodcom; own calculations.

For further insights, the main export product groups (in value terms) belonging to dairy, meat and fish processing industries were considered. Figure 5 depicts the changes in export values to the EU-15. It can be seen that in the case of dairy industry, concentrated milk and cream (milk powder) (HS code 0403) dominate the exports to the EU. Exports of butter (0405) increased in 2004, but fell in 2005 to the level 22% lower than in 2003. From the considered product groups, cheese (0406) and ice cream (2105) are the products with highest processing level and value-added. Although in 2004 compared to 2003, the value of cheese exports fell, it increased again in 2005. Exports of ice-cream, however, increased by 17 times during 2003-2004. In 2005, Estonia exported even 37 times more ice-cream to the EU-15 than in 2003. This clearly shows the opening-up of EU market to high value-added dairy products.

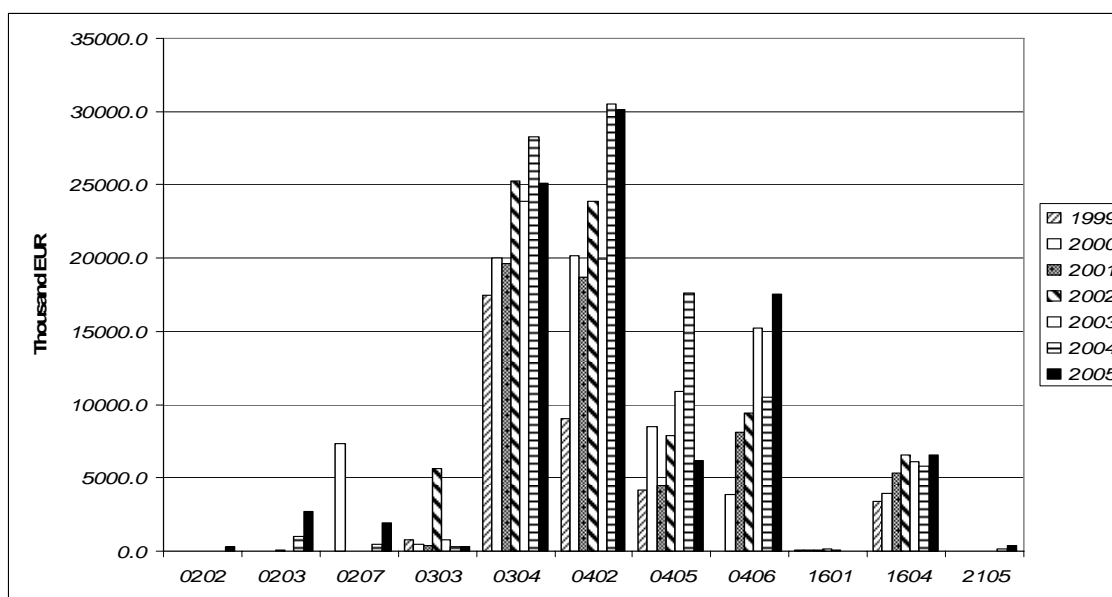


Figure 5. The development of export values of selected product groups to the EU-15, 1999-2005 (Source: Estonian Ministry of Agriculture).

Notes: 0202 - beef, 0203 - pork, 0207 - poultry, 0303 - frozen fish, 0304 - fish file, 0402 - concentrated milk and cream, 0405 - butter, 0406 - cheese and curds, 1601 - sausages, 1604 - prepared and preserved fish, 2105 - ice cream.

For fish processing industry, on the other hand, the accession did not bring along a significant increase in exports, except for fish file (0304), which is mainly exported to the EU-15. Its exports in 2005, however, fell by 11% compared to 2004. Exports of frozen fish (0303) dropped both in 2004 and 2005, whereas the importance of the EU-15 as an export market decreased to less than 2%. Exports of highly processed (tinned) fish products (1604) fell somewhat in 2004, but returned to the pre-accession level in 2005. However, no considerable increase in exports to the EU-15 after accession can be marked and fish file remained sector's most important export article to the EU-15. For meat processing industry, the accession to the EU led to a considerable increase in exports of unprocessed meat (0202, 0203, 0207), compared to the almost non-existent exports before 2004. In accordance with the non-conformity of Estonian meat processors to the EU hygiene and product standards during the pre-accession period, the volume of meat products exported to the EU was very low and most of it was exported

to CEECs. High value-added products in case of meat industry can be found in product groups 1601 (sausages) and 1602 (prepared and preserved meat, incl. hams). The latter group is excluded from the figure because of its very small export value. Opposite to unprocessed meat products, exports of sausages to the EU dropped (by 51% and 28% compared to previous year, respectively in 2004 and 2005). Exports of ham, however, increased to the level in 2005 more than 5 times higher than in 1999. Nevertheless, exports of prepared meat products remained insignificant.

Hence, the actual accession to the EU reinforced the importance of EU-15 countries in Estonian agri-food exports, although this development already started during the pre-accession period. The analysis shows that the accession to the EU has especially boosted exports of meat and milk products to the old member states of the EU. In total, meat exports increased by more than 4 times (from basically non-existent levels before accession) and milk exports by nearly by 30% during 2003-2005, whereas fish exports only grew by 14%. However, the increase in exports has been accompanied by a shift towards lower value-added products. Consequently, we can conclude that the accession has not (yet) facilitated the access to the EU-15 markets for high value-added products and hence, has not enabled Estonian food processing industry to reap the benefits of the wealthy consumer market, or the growth of exports of high value-added consumer products has been slower than the growth of exports of lower value-added level.

6. Unit values of exports

Another approach for studying the intertemporal development of quality and value-added composition of Estonian food exports is the comparison of price differences assuming a positive relationship between quality and prices, as suggested by Hoen and van Leeuwen (1991). From trade statistics, unit values can be calculated; however, the approximation of price levels by unit values is not without problems. In trade statistics, the commodity groups consist of composite goods, and therefore, changes in unit values can result both from price changes as well as from structural changes, i.e. changes in the composition of commodity group. Hence, the unit values can be biased. Furthermore, in interpreting changes in unit values as changes in quality levels or levels of value-added, the influence of pure price changes should be eliminated (Hoen, Leeuwen 1991). The changes in Estonian export prices are directly dependent on the development of world market prices and EU prices, as Estonian food processors are price-takers on Western markets.⁸ Hence, the fluctuations in world market prices as well as the changes in EU administrative prices for some agri-food products (e.g., beef, skimmed milk powder, butter) should be ideally separated from the impact on the value-added level of exports. Elimination of price fluctuations and inflation effect is, however, complicated, given the absence of price indexes calculated for individual products (or product groups) and the possibility that application of any broad-based price index would result in inaccurate estimates of unit values. Therefore, the effect of pure price changes is neglected here.

Similar approach was taken by Winger et al. (2003), however, value-added was seen in the sense of shareholder value and not as related to the processing level of products. Given the shortcomings related to the linking of unit values with value-added level,

⁸ The fact that Estonian food processing companies are price takers on the EU market allows us to consider the domestic inflation effect as less important.

their idea seems to be more appropriate as products with higher unit values create more income/value to the owners.

Figure 6 depicts the changes in unit values of exports to the EU-15 for some of the main export product groups (at HS 4-digit level) during 1999-2005. The main source of interest here is the changes in unit values of exports in 2004 compared to 2003 (immediate effect), and in 2005 compared to 2004 and 1999 (longer-term effect). We would expect the opening-up of the large and wealthy EU-15 market to expand the perspectives of Estonian food producers to sell products with higher value-added content instead of low-value bulk goods. The figure indicates that the immediate accession effect has been positive in the case of all selected product groups belonging to dairy industry. The unit values of exports of concentrated milk and cream, butter and cheese to the EU-15 grew by 20, 24 and 12%, respectively. For these products, the EU is also the main destination (the Netherlands, Germany and France as the main export markets). Also the unit values of exported frozen fish and fish filet grew by 23 and 21%, respectively; however, the unit value of tinned fish fell by 13%. The significance of the increases in unit values of fish filet can be illustrated with the fact that the EU forms the largest export market for this product group (nearly 70%); however, the importance of the EU-15 in the case of frozen fish and tinned fish is marginal. For meat sector, the accession to the EU has not had a clearly positive immediate effect – the unit values of exports to the EU-15 have been falling in the case of pork and poultry, however, the unit values of frozen beef and sausages have increased. Yet, the share of the EU-15 has been marginal in meat exports, as until 2003 no meat processing units were approved to meet the EU hygiene and product standards. The accession to the EU considerably increased the share of the EU-15 in exports of beef, pork and poultry, although the main export destination remained the new members of the EU (NMS).

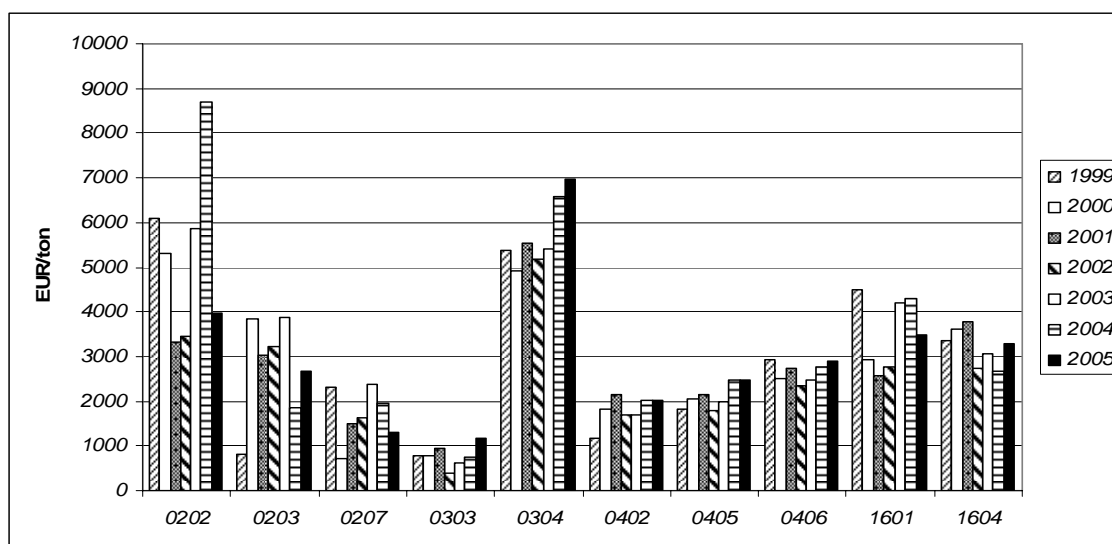


Figure 6. The unit values of Estonian exports of selected foodstuffs, 1999-2005 (Source: Estonian Ministry of Agriculture).

Notes: 0202 - beef, 0203 - pork, 0207 – poultry, 0303 – frozen fish, 0304 – fish filet, 0402 – concentrated milk and cream, 0405 – butter, 0406 – cheese and curds, 1601 – sausages, 1604 – prepared and preserved fish.

Looking at the longer term effects of integration with the EU, i.e. the changes in unit values of exports in 2005 compared to 1999, increases in unit values of dairy products (73 and 35% for concentrated milk and butter, respectively) and fish products (45 and 30% for frozen fish and fish filet, respectively) stand out. In the case of meat products, the unit values have been behaving more heterogeneously – the unit values of exported beef, poultry and sausages have decreased over time by 15, 44 and 22%, respectively; while the unit value of pork has increased by 225%. The unit values of cheese and prepared fish were in 2005 at the same level as in 1999.

Table 7 summarizes the changes in volumes and unit values of exports to the EU-15. It can be concluded that in cases of all considered dairy products and of most fish products, the unit values of exports to the EU increased. At the same time, the volume of exports of some fish products fell. In case of dairy products, the fall in cheese exports in 2004 were compensated by increase in exports in 2005. The exports of butter, however, fell in 2005. The results for meat sector were less positive. Although by 2004, there were 16 meat processing enterprises allowed to sell their products on EU markets, meat products are mostly exported to new Member States and the export markets in old EU member countries are hard to win because of the low processing level of Estonian meat products as well as the difficulty to sell finished products in foreign markets under domestic trademarks. In conclusion, most of the product groups that unit values fell (mostly meat products) in 2004 and 2005, are not extensively exported to the EU. Hence, the comparison of unit values of exports can be considered as a sign of increased competitiveness with respect to the EU-15 market in dairy industry and in fish processing sector. However, these results do not completely conform to the outcomes of the analysis of value-added level of exports, presented in the previous chapter. This clearly indicates that different methods used for assessing export patterns can result in very different outcomes and the conclusions need to be drawn prudently.

Table 7. The summary of the changes in unit values and volumes of exports to the EU-15 ^a

		Changes in unit value of exports 2004/2003				
		Increase >20%	Increase 11-19%	Remained the same (change <10%)	Decrease 11-19%	Decrease >20%
Changes in volume of exports 2004/2003	Increase >20%	Condensed milk and cream, butter			Poultry	Pork
	Increase 11-19%	Frozen beef				
	Remained the same (change <10%)	Fish filet			Tinned fish	
	Decrease 11-19%					
	Decrease >20%	Frozen fish	Cheese	Sausages		

		Changes in unit value of exports 2005/2004				
		Increase >20%	Increase 11-19%	Remained the same (change <10%)	Decrease 11-19%	Decrease >20%
Changes in volume of exports 2005/2004	Increase >20%	Pork		Cheese		Frozen beef, poultry
	Increase 11-19%					
	Remained the same (change <10%)	Tinned fish		Condensed milk and cream	Sausages	
	Decrease 11-19%			Fish filet		
	Decrease >20%	Frozen fish		Butter		

Source: Estonian Ministry of Agriculture; own calculations.

Note: ^a The colours indicate the branch of food industry where the considered products belong to: yellow – dairy processing; blue – meat processing; red – fish processing.

7. Problems and challenges in gaining EU markets

Winning export markets in Western countries is, however, a difficult task. In terms of volume, the EU food market is mature and demand for food grows only moderately (CIAA 2006). In addition, brands are particularly important for food industry. Although price also remains an important determinant of food purchase decisions, other non-price factors such as quality, pleasure and convenience are increasingly gaining importance (CIAA 2006). Hence, the role of investments into R&D is increasing. Besides upgrading of product quality and investments into production processes and new product development, improvements in the organisation and marketing are crucial. The level of R&D investments has been however so far relatively modest in Estonian food processing firms. According to the Confederation of the Food and Drink Industries of the EU (CIAA), the average ratio of R&D investments to net sales in EU-15 food and drink industry was 1.7% in 2004 (CIAA 2006). The respective figure for Estonia in 2003 was, however, only slightly above 0.1%, which is 17 times less than the EU average (Statistical Office of Estonia 2006). Although the food industry in general is less innovation oriented compared to the average of manufacturing industries, these figures clearly show the lagging behind of Estonian food industry.⁹ Furthermore, the 2003 figure shows the absolute peak in R&D intensity that Estonian food processing industry has reached during 1998-2004, whereas in 2004, R&D ratio to sales dropped in to only 0.04%.

In addition, advertising expenses and brand loyalty are some of the main determinants in explaining demand for high-processed foodstuffs (Reed 1994). Even though formal trade barriers between Estonia and the EU are dismantled, national preferences and

⁹ The backwardness of Estonian food processing industry in terms of R&D intensity can be further emphasized by the fact that the most innovative EU food producers are themselves lagging behind food companies in other developed countries. While in Norway and Japan, the ratio of investments into R&D to total food and drink industry output nearly reached 0.8% in 2003, the same figure for the EU was only 0.32%. For comparison, in the USA, the spending on R&D as a ratio to output was 0.4%. (CIAA 2006)

prejudices remain, such as the negative attitude of Western consumers towards foodstuffs from the Eastern countries or the increase in market power of retail chains in Western countries and their reluctance to procure foodstuffs produced abroad. Due to the inability of Estonian food processors to undertake large advertising campaigns and the difficulty of selling finished products under domestic trademarks, the exports to the EU market remain lower than the potential. Furthermore, the possibilities to market products under importers' brand names are complicated due to small production volumes that do not fulfil the orders of destination country for generic production (Estonian Ministry of Agriculture 2004). Estonian food processing enterprises are characterized by large overcapacities and low level of specialization, hampering the exploitation of their export potential.

The situation is somewhat better for food processing companies based on capital from several countries, which have already an advantage in competing in the EU market, as they are included in the marketing network of their parent companies as well as share the experience and advanced product development activities (Estonian Ministry of Agriculture 2004). Also the presence of foreign (EU) retail chains in Estonian market can improve the possibilities of Estonian food processing companies to enter EU markets with high value-added products directed to end-consumers. To illustrate this point, figure 7 demonstrates the development of Estonian exports of dairy products to the main destination countries during 2002-2006. Although the main markets through all this period have been Germany and the Netherlands, the importance of Finland has started to grow from 2004 on. Finland and the Netherlands are also the two biggest foreign investors in Estonian dairy industry, with Finland owning two and the Netherlands one milk processing company. Furthermore, Finland and Sweden are the parent countries for some biggest retail chains in Estonia. The Netherlands has been until 2005 the main destination for Estonian milk powder, butter and cheese, however, the unit values of exports to the Netherlands are somewhat lower than for example to Finland (for cheese in 2004, 2689 EUR/t and 3097 EUR/t, and for butter in 2005, 2178 EUR/t and 2940 EUR/t, respectively). The share of the Netherlands has been falling considerably since 2004, indicating a fall in the relatively lower value-added shipments. The importance of exports to Germany has, however, grown, with the mainly export article being milk powder.

Similar patterns can be seen in the case of meat products (see figure 8). Until 2004, meat exports to the EU-15 were basically non-existent. Although the role of the EU-15 is still marginal (less than 10%), meat exports to Finland and Greece have been growing since 2004 (especially in case of pork and poultry). Finland is the main source country of foreign investments to Estonian meat processing sector, owning two of the largest meat processing enterprises and the only poultry producer in Estonia.

Hence, in order to be able to gain markets in the EU for high value-added foodstuffs, Estonian food processing companies need to overcome the remaining "hidden" market barriers such as the oligopolistic retail sector and follow the developments in the taste of sophisticated European consumers. There are basically two strategies for gaining the markets: either by specialising in niche products that are differentiated by competitors' products by some special value to the consumers, or by specialising in core products sold under importers'/retailers' brand names (i.e., private label) in order to be able to fulfil shipment orders and exploit the economies of scale.

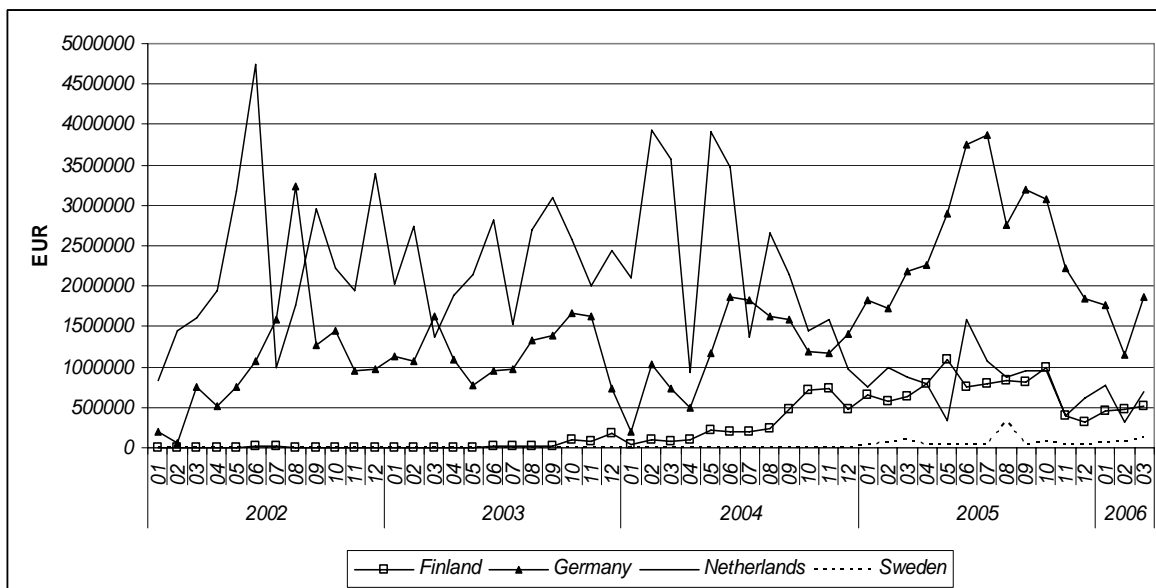


Figure 7. The export values of dairy products (HS 04) to the main destinations in the EU-15, 2002-2006 (Source: Statistical Office of Estonia).

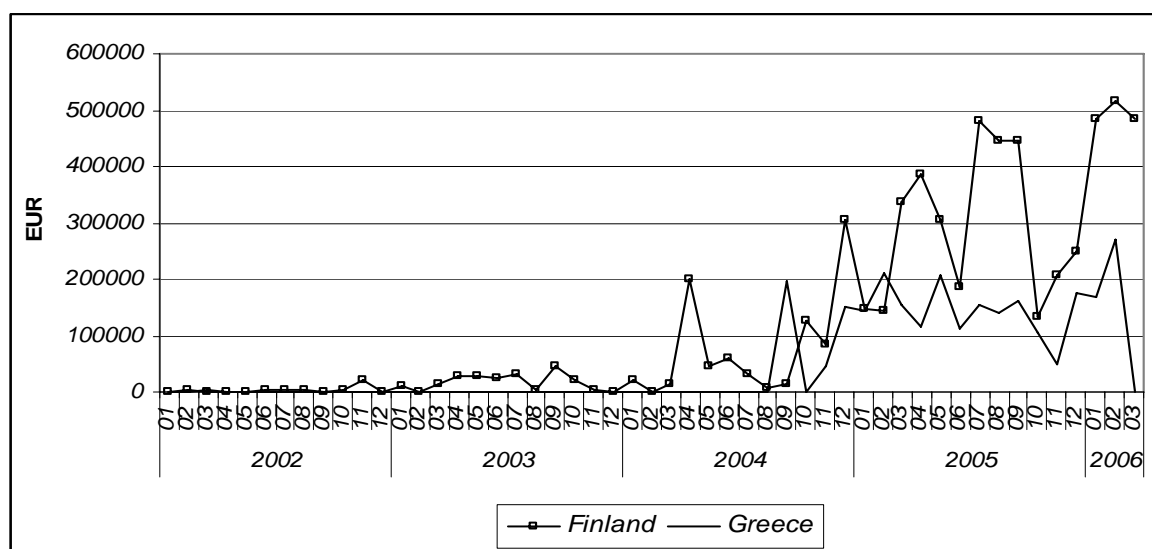


Figure 8. The export values of meat products (HS 02) to the main destinations in the EU-15, 2002-2006 (Source: Statistical Office of Estonia).

8. Impact on profitability

Another aspect directly related to improved export possibilities as a result of the removal of remaining barriers to trade between the EU and Estonia, is the development of profitability of food processing industry. For a country with a small domestic market, opening-up of a large market with high purchasing power is of vital importance. However, one must keep in mind that the adjustment to the EU rules and standards has been costly, and the main benefits from it can occur in long term.

As a proxy for profitability, price-cost margin $((p-mc)/p)$ is often used. Ezeala-Harrison (1999) relates price-cost margins (or mark-ups) directly to competitive advantage, claiming that an industry can be considered as internationally competitive if and when the firms belonging to the industry maintain a positive growth rate of aggregate competitive advantage.¹⁰ Hence, the price-cost margins themselves do not indicate competitiveness, what matters is their development over time.

There are two main definitions of price-cost mark-ups (PCM) often used in literature (European Commission 1996; Schmalensee 1989; Sleuwaegen, Yamawaki 1988):¹¹

$$PCM1 = \frac{value_added - labour_cost}{value_added} \quad (1)$$

$$PCM2 = \frac{value_added - labour_cost}{sales} \quad (2)$$

The first of these has been often used to study the link between profitability and concentration, while the other is more in conformity with the theoretical concept of profit-sales-ratio.

Figure 9 identifies two important turning points in the development of price-cost margins in Estonian food processing industry. First, after a period of highly liberal trade policy, Estonia introduced tariffs on agri-food imports in 2000, which, however, only applied to a minor share of trade partners. Nevertheless, as a result, the price margins nearly doubled. Second, after Estonia's accession to the EU, the price-cost margins fell (PCM1 by 13% and PCM2 by 25% in 2004 compared to 2003), indicating loss in profitability and, hence, competitiveness of the sector. One of the reasons behind this development is probably the fact that accession to the EU imposed increases in costs (related to both the investments into stricter hygiene and product safety standards as well as to the increase in intermediate inputs), while the price increases were limited by consumer purchasing power in domestic market. Nevertheless, the data availability only until 2004 does not allow us to draw any firm conclusions.

For the individual food processing sectors, the developments in PCM have been different; however, the fall was characteristic to all sectors. Figure 10 depicts the PCM2 for meat, fish and dairy industries. Price-cost margins have been growing in meat and dairy industries during 2000-2003, however, fell in 2004 (by 16 and 77%, respectively). In fish industry, the price-cost margins have fallen over time: in 2004, the PCM2 was 93% lower than in 2000. This indicates that the profitability of meat and dairy industries has been increasing until 2003, followed by fall in profitability in 2004. The profitability in fish industry which is more dependent on export markets, on the other hand, has been constantly decreasing during 2000-2004, reaching nearly zero in 2004.

¹⁰ In Industrial Organisation literature and in theory of economic integration, price-cost margins are considered as indicators of market structure and efficiency. The fall in price-cost margins as a result of competitive pressure indicates an increase in efficiency.

¹¹ The use of value-added in measuring profitability is also supported by the approach taken by Martin et al. (1991).

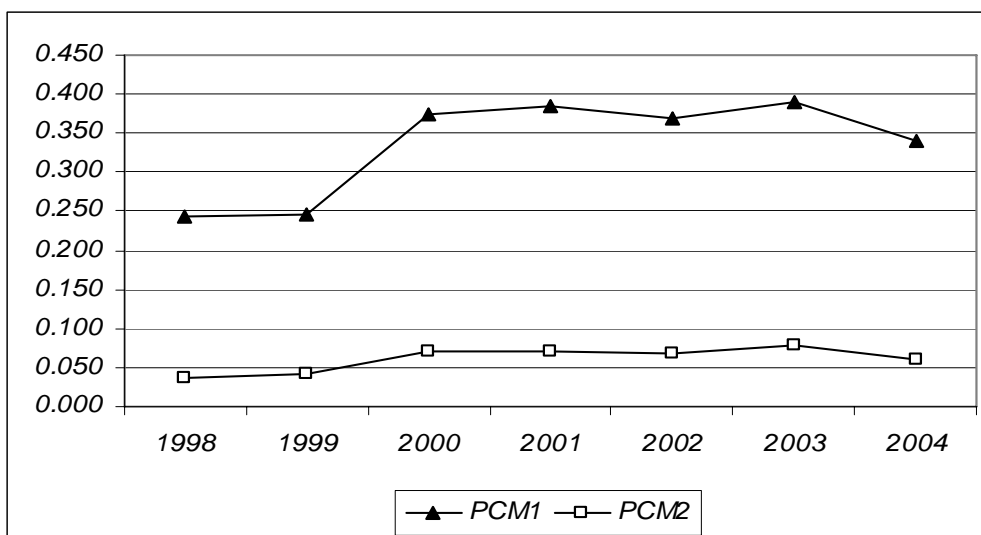


Figure 9. The development of price-cost margins in Estonian food processing industry, 1998-2004 (Statistical Office of Estonia; own calculations).

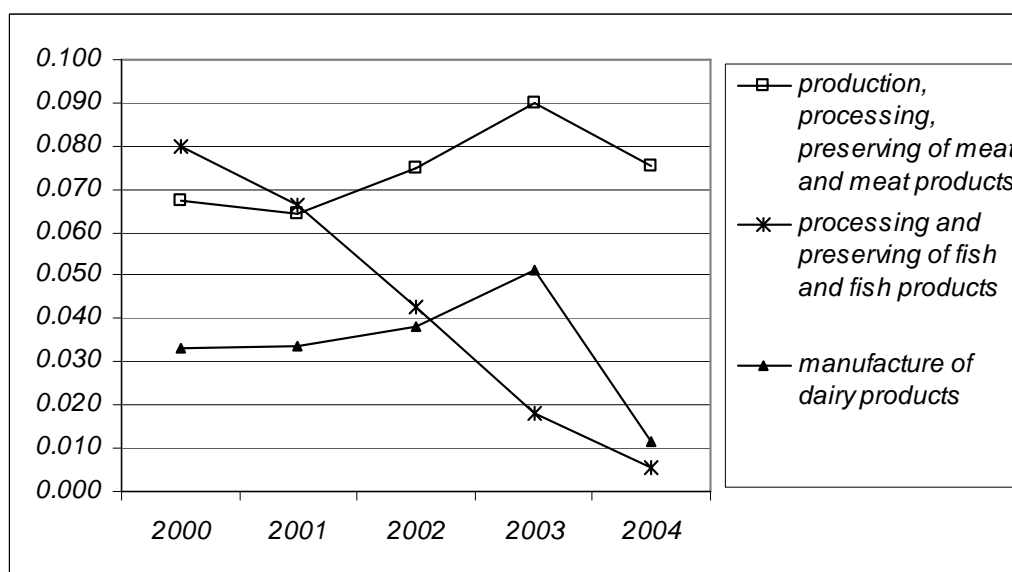


Figure 10. PCM2 for selected food industry subsectors in Estonia, 2000-2004 (Source: Statistical Office of Estonia; own calculations).

Hence, the accession to the EU suppressed the price-cost margins and the profitability of Estonian food industry. The developments in price-cost margins depend from the one hand, on prices, and from the other hand, on costs. The prices of foodstuffs not only depend on the domestic demand and competition, but also on the world market prices and opportunities to access foreign markets. The cost of inputs (raw materials and intermediates) in food industry is even more strongly influenced by world market prices and EU agricultural policy. For example, the sharp fall in PCM2 in dairy industry in 2004 is mainly the result of the increase in the purchasing price of raw milk (by 33%),

promoted by improved export possibilities after opening-up the EU market and stiffer competition among processors in procuring raw material (Estonian Ministry of Agriculture 2004). The risk that the foreign companies from the EU (especially Finland) may buy-up raw milk from Estonian farmers motivated food processors to raise the price paid to farmers. In addition, in 2004, the EU's intervention purchasing system for butter and skimmed milk powder was adopted in Estonia, ensuring a "price floor" for producer. Imports fell by 27% from 2003 to 2004, indicating lessened competitive pressure from imports. Similar developments also occurred in meat sector, where the procurement price of beef grew in 2004 to the level 30% higher than before EU-accession, while retail prices only changed little, resulting in decreased price margins for meat processors. For dairy and meat processing industry, total costs grew by 34 and 8%, respectively, during 2003-2004, while at the same time, net sales increased relatively less – by 30 and 7%, respectively. Opposite to dairy and meat processing, net sales in fish industry have been decreasing since 2001, whereas sales have been falling faster than costs, resulting in falling profitability. The respective unit costs (based on net sales) are given in figure 11. For comparison, years 1998-2002 are included.

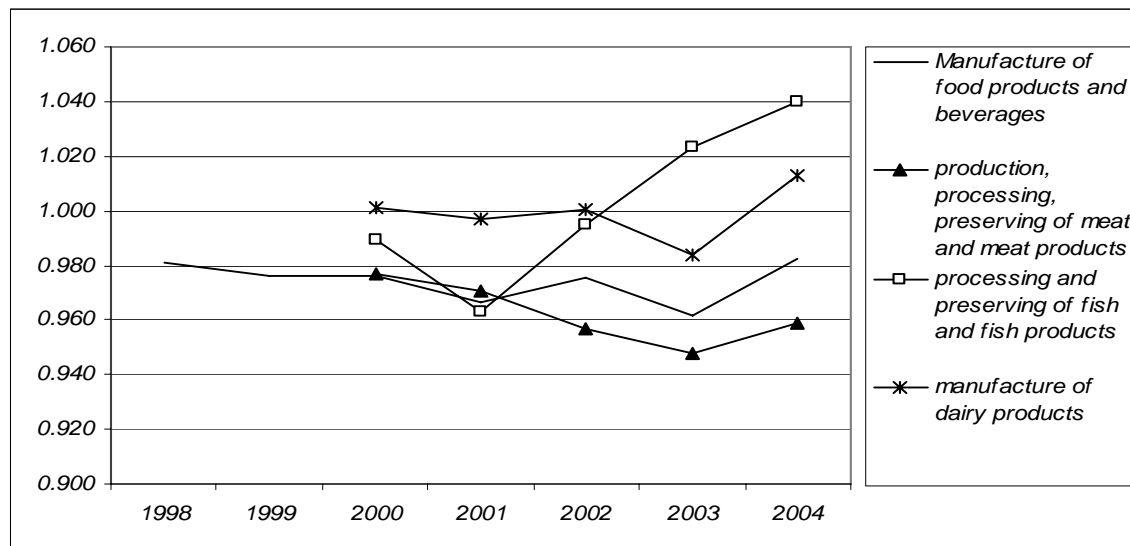


Figure 11. The development of unit costs (based on net sales) in Estonian food processing industry (Source: Statistical Office of Estonia; own calculations).

In the dairy and meat processing industries, costs on materials, supplies and intermediate goods have mainly contributed to the increases in total unit costs during 2003-2004 (increase by 48 and 13%, respectively), whereas in fish processing industry, increase in the cost on merchandise was dominating (increase by nearly 2.2 times in 2004 compared to 2003)(see figure 12). Personnel costs fell by 5% in fish industry, and increased in dairy industry and meat industry by 9 and 8%, respectively.

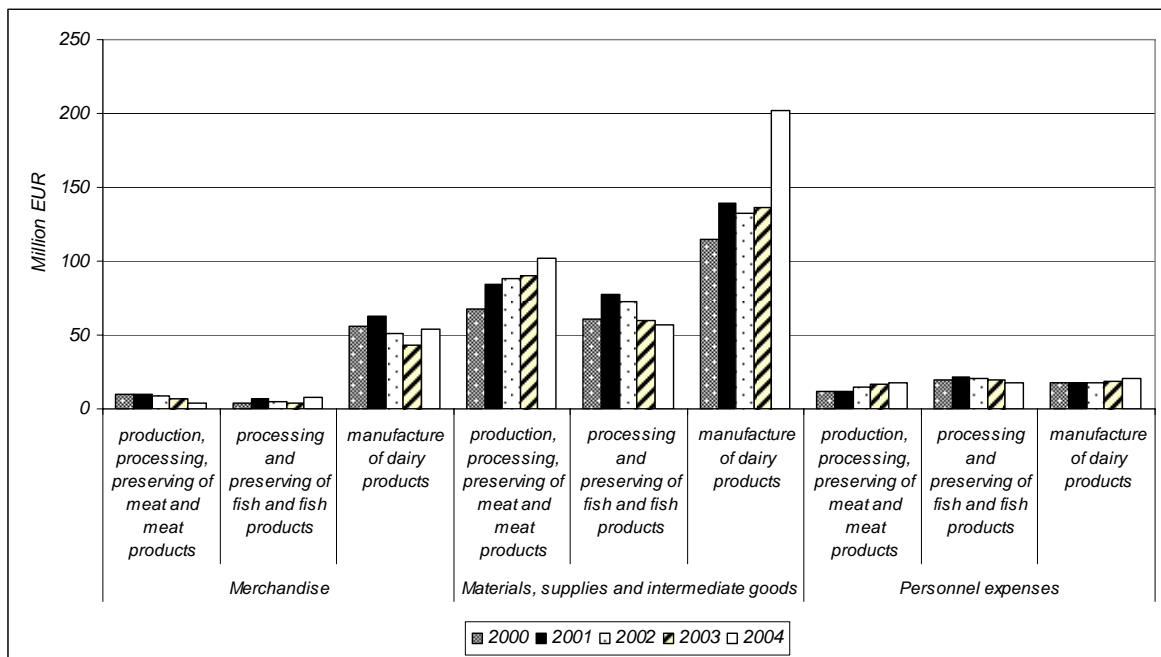


Figure 12. The main cost items in Estonian meat, fish and dairy processing industries, 2000-2004 (Source: Statistical Office of Estonia).

Hence, the analysis of price-cost margins gives a little different picture of the competitiveness of food processing industry than the application of export values or unit values of exports. According to price-cost margins, the profitability of dairy and meat industries has been increasing during 2000/2001-2003, and fell in 2004 after accession to the EU. The competitive advantage has thereby been on average the highest in meat industry (the absolute level of PCM). The profitability of fish industry, however, has been constantly decreasing, starting from relatively high levels of PCM and falling to almost zero in 2004. One of the reasons why criteria based on exports and based on profitability resulted in different outcomes can be associated with the short-run adjustment costs related to the accession to the EU, while the increased value-added level of exports indicates a long-run competitiveness potential. In addition, the profitability indicator, unlike export measures, also involves domestic sales and is, hence, influenced by import competition. Furthermore, the export performance on other markets than EU-15 influences price-cost margins. However, at least in the case of dairy processing, that exports around 30% of its production and mainly to the EU-15, export prospects in the EU-15 market play a significant role in sector's performance and future perspectives.

9. Conclusions

This paper attempted to assess the impact of EU accession on the competitiveness of Estonian food processing industry, by asking whether the investments into strict sanitary and hygiene standards undertaken by Estonian food processing industry in order to comply with the EU requirements have been able to ensure access to the large and wealthy EU market also for high value-added products and so, resulted in higher

profitability in the food processing industry. Three food processing industry subsectors were considered: dairy, meat and fish processing industry. The study showed that the accession to the EU has in general boosted Estonian agri-food exports to the EU-15. The export values have increased in case of all considered industry sectors, however, only milk processing industry, where the share of high value-added consumer products was relatively high before accession, has experienced increase in the exports of high value-added foodstuffs to the EU-15. In case of meat processing industry, the importance of processed products in exports fell to nearly non-existent level; however, the exports to the EU-15 were marginal already before accession and most exports were directed towards the NMS of the EU. Meat processing sector was also the slowest sector to invest into EU structural requirements, although the investments into tangible assets were there relatively higher than in other considered industries (relative to net sales). For fish processing industry, exports of processed products to the EU-15 fell, despite of the success of fish processing companies to meet the EU hygiene and sanitary requirements in the relatively early stage of integration. Yet, the changes here were not as remarkable as in the case of meat products and the EU importance as an export market has increased.

The unit values of exports to the “old” EU member states have increased for dairy industry and partly also for fish industry after Estonia joined the EU in May 2004; however, the results have not been as positive for meat processing industry, where the share of the EU-15 as export market is still marginal. The analysis also clearly pointed out increasing significance as export markets of countries where the main foreign investments into Estonian food processing industry and retail sector originate from, indicating that the accession to the EU and the abolishment of trade barriers has provided better access to export markets also for higher value-added foodstuffs directed to end-consumers. Nevertheless, the share of high value-added products has fallen also in dairy exports.

The analysis of profitability, however, revealed that in all considered food processing sectors, profitability, calculated as price-cost margins, has decreased in 2004 compared to 2003. Hence, the competitiveness measured as profitability fell. This was mainly the result of increased costs of intermediate inputs and merchandise, which was not compensated for by increasing export prices even for dairy industry. This result must, however, be interpreted with caution since the period of analysis is very short and the loss in profitability in short run could be compensated by increased export possibilities, and the corresponding competitiveness, in long run.

In order to succeed in EU market, however, Estonian food industry has to increase production and improve the quality of products. Hence, investments into product development (R&D) are increasingly important. These, however, have been so far relatively low, partly as a result of the large investments into the hygiene and structural requirements which left not enough resources for product development. At the same time, due to already extensive product selection and the small size of domestic market, further widening of product mix and increase in production seem economically infeasible. Therefore, food processing firms face basically two options to succeed on EU markets: either to specialise in niche products that are differentiated by competitors' products by some special value to the consumers, or to specialize in core products in order to be able to fulfil shipment orders and exploit the economies of scale.

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