

**University of Tartu**

Faculty of Economics and Business Administration

**ACCESSION TO THE EU:  
DID IT BOOST THE EXPORT  
COMPETITIVENESS OF THE  
ESTONIAN FOOD  
PROCESSING INDUSTRY?**

Kristina Toming

**Tartu 2006**

ISSN 1406–5967  
ISBN 9949–11–512–4  
Tartu University Press  
[www.tyk.ee](http://www.tyk.ee)  
Order No. 621

# **ACCESSION TO THE EU: DID IT BOOST THE EXPORT COMPETITIVENESS OF THE ESTONIAN FOOD PROCESSING INDUSTRY?**

Kristina Toming<sup>1</sup>

## **Abstract**

This paper seeks to answer the question about whether the investments made by Estonian food processing companies to meet the EU's strict hygiene and structural requirements have enhanced their competitiveness and opened up better export opportunities to the EU-15 market. Enhanced competitiveness means not only larger export volumes, but also redirection of exports towards higher value-added products. The current study focuses on the milk, meat and fish industries, concluding that in general, food-stuffs exports to the EU-15 have increased, but only the milk processing industry has experienced a shift towards value-added consumer products. This shows that the Estonian food industry has not (yet) been able to reap the benefits of the EU market, and further investments in product development and quality, as well as in larger production volumes are necessary.

---

<sup>1</sup> PhD student and research fellow of International Economics at Faculty of Economics and Business Administration, Tartu University. Address: Narva mt. 4-A211, 51009 Tartu, Estonia; Phone: +372 7376 350; E-mail: kristina.toming@ut.ee

*Acknowledgements:* The author is very grateful to Johannes Stephan, Laura Ruud and the participants of the Doctoral Summer School in Economics of the University of Tartu and Tallinn University of Technology (Nelijärve, 30. July – 2. August 2006) as well as the participants of the EACES 9th bi-annual conference (Brighton, 7–9 September 2006) for their valuable comments on an earlier version of this paper. The remaining errors are the sole responsibility of the author.

# 1. INTRODUCTION

Since the beginning of the 1990s, the Estonian food industry has been operating in rather exceptional and controversial economic conditions. The export possibilities of Estonian food producers were often limited because their trading partners protected their markets with import tariffs and quotas. On the domestic market, as a result of Estonia's highly liberal trade policy, Estonian food producers have had to face fierce competition from importers. Also, due to subsidies, imports were often more price-competitive, whereas the Estonian Government did not support its domestic food industry. The choice of a liberal trade policy was part of the general economic stabilisation policy after re-gaining independence; however, it imposed a 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 managed to create an efficient food processing industry in Estonia.

However, neither the economic policy prevailing in Estonia before its accession to the EU nor the trade policies implemented by its main trade partners fostered the Estonian food processing industry's competitiveness in, either export markets or the home market. A solution to this problem was expected to be accession to the EU and the accompanying change in the competition environment created by the economic policy. With accession to the EU in 2004, the Estonian food processing industry gained full access to the Single Market of the EU. For an industry with a small domestic market, this was of crucial importance. However, apart from leading to the abolition of all trade barriers on exports to the EU, the accession also imposed a heavy financial burden on Estonian food processing enterprises in the form of requirements to meet the strict EU hygiene and structural standards. Only those production units that met these standards were entitled to export to the EU and thereby reap the benefits of a large wealthy market.

The aim of this paper is to study whether the investments in the strict hygiene and structural requirements made by the Estonian food processing industry have led to their better export opportunities to the large EU market and resulted in enhanced competitive-

ness. Enhanced competitiveness means not only larger export volumes, but also redirection of exports towards higher value-added products, ensuring higher income (profits) to firms operating in the food processing industry. The study focuses on three sub-sectors of the food processing industry — milk processing, meat processing and fish industry —, comparing which of these and for what reasons have been more (or less) successful in coping with the economic policy changes. The study uses detailed trade data from 1999–2005.

So far, the discussions about the impact of EU accession on Estonian economic sectors have been held mainly at a political rather than academic level. Earlier studies on the impact of EU integration have considered only ex-ante effects of accession. This paper is the first attempt to analyse the changes in export performance and the corresponding implications on the competitiveness of the Estonian food processing industry after the country's EU accession, taking into account the actual immediate impact of EU membership. The ex-post evaluation of the impact of EU integration on the competitiveness of the Estonian food processing industry is, however, a challenging task for several reasons. Firstly, the period of analysis is too short to allow researchers to fully and thoroughly evaluate the impact of integration, as Estonia joined the EU only in May 2004. Therefore, much of the necessary statistical information is not available yet. Furthermore, the impact of EU accession can only be fully observed after a longer time period since many integration-associated effects occur in the long run. This is especially the case with dynamic non-price effects of integration related to investments in product quality and innovation. Secondly, integration into the EU has been a very complex process, spanning many years and different stages of trade liberalisation, which should, ideally, all be taken into consideration. Thirdly, the period of integration into the EU has partly coincided with transformation from the Soviet command economy to a market economy. This fact refers to the difficulty in deciding which effects are related to Estonia's EU accession and which to its transition from one economic system to another. Fourthly, the division of exports into low and high value-added products is 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 the EU countries are now based on statistical reports (Intrastat) which only include enterprises with a large trade turnover. Total trade volumes are estimated using statistical methods. For these reasons, the current study should be seen as a partial, preliminary, and highly tentative exercise.

The rest of the paper is structured as follows. The next chapter introduces the concept of industry competitiveness. Chapter 3 gives an overview of the changes in policies affecting the access of Estonian food exports to the EU market after accession and the conformity of the Estonian food processing industry to the EU requirements. Chapter 4 describes the general developments in export patterns during Estonia's integration into the EU. Chapter 5 reports the changes in the value-added level of exports to the EU, while chapter 6 compares Estonia's developments with the other new member states of the EU. Chapter 7 discusses the problems and challenges related to penetration of the EU markets, and chapter 8 concludes.

## **2. THE CONCEPT OF AN INDUSTRY'S COMPETITIVENESS**

The concept of competitiveness is widely used in literature, yet no general agreement has been reached on how to define competitiveness, and the concept itself is somewhat ambiguous. There is disagreement not only about its correct definition, but also about its measurement, about the indices to be used in this measurement, as well as about the interpretation of the results that would emerge from the measurement.

The multiplicity of definitions and ambiguity of competitiveness are partly due to the fact that competitiveness is a broad concept and can be considered at different levels, such as the country (i.e., macro) level; the industry, or sector, or firm level (these constitute

the micro level); and the 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 one has to keep in mind when analysing competitiveness. First, competitiveness is a relative term and must therefore be assessed vis-à-vis 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 is a 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 competitiveness studies 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 the 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 to achieve a short-term competitive advantage. According to Ezeala-Harrison (1999), competitive advantage refers to the relative advantage that a country's firms and industries have in terms of 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 to be synonymous with a firm's long-run profit performance. Boyle (2004), on the other hand, approaches competitiveness from its counterpart, arguing that failure in the sense of the inability to penetrate markets or the occurrence of



large-scale unemployment can be attributed to 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” when defining competitiveness; however, instead of using the 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 with caution, since it relates the size of market to 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 the total market)(Ash, Brink 1994). This is especially true about the export competitiveness of a small country like Estonia, whose industry’s shares in world trade, or even in the EU market are minor, and any change in other countries’ output can affect the market share of Estonian industries considerably. Furthermore, as emphasised 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 cuts which could have a negative effect on profitability and long-term performance. Therefore, when 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, being directly related to the performance of an industry’s firms on both the domestic and foreign markets, irrespective of 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, to measure profitability is often a difficult task. Martin et al. (1991) suggest value added as a proper, though indirect measure of profits for an agribusiness industry that buys raw materials, processes them, and resells them in different forms. Their approach is adopted by many other authors.

However, profits and market size are only indicators of competitiveness; competitiveness itself depends 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, there are some caveats to this approach. First of all, it is a question which prices/costs should be considered as the measure of competitiveness. Second, the importance of prices as determinants of export performance has decreased, and the role of non-price factors such as product quality has increased. For instance, concerning product competition in home markets, Swann and Taghavi (1992) argue that consumers buy imported goods mainly because of some aspect of their quality that is superior to domestic products, rather than because imports are cheaper.<sup>2</sup> Sachwald (1994) defines the non-price aspect as structural competitiveness, this term summarising all the non-price characteristics attached to the product, such as quality, the degree of novelty or innovativeness, design, distribution networks and after-sales service. Chen et al. (1999) also include the 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, attempts have been made 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

---

<sup>2</sup> See Swann and Taghavi (1992) for the list of the earlier studies emphasising the non-price aspects of competitiveness.

attributes, with the actual price of products. The product is considered competitive if its expected price exceeds its actual price. Boyle (2004), on the other hand, divides competitiveness into quantitative and qualitative indicators. The former refers mainly to prices and costs, while the latter takes into account the reliability of supply, the 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 prices of goods, while in the case of the latter, there is not enough empirical evidence. He concludes that price and non-price factors are the results, not causes, of a nation's international competitiveness, as often assumed.

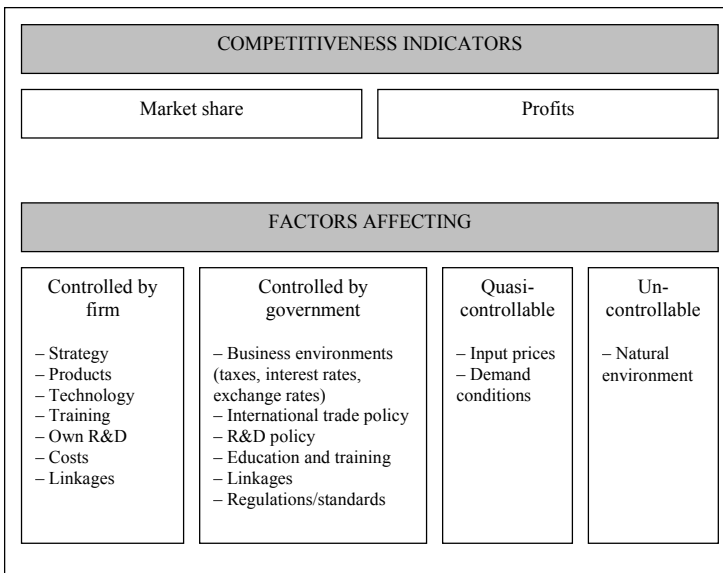
Demand for foodstuffs is characterised by low income and price elasticity (Ezeala-Harrison 1999). This seems to affirm that low prices, and hence price competitiveness, cannot be the key to a long-run success of a food processing industry. The products of food processing industries can be divided into three broad categories — (low value-added) raw materials, semi-processed products, and high value-added processed products which are mostly directed towards end-consumers. In the case of bulk products, the 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.<sup>3</sup> Their demand enjoys higher income and price elasticities and can thus lead to sustainable long-run competitiveness. Increased exports of processed products

---

<sup>3</sup> Nevertheless, even niche products are very close substitutes for the products of other countries.

increase firms' value added and income, and provide jobs in manufacturing (Reed 1994).

Hence, for an industry in a small country with a 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 on non-price factors (such as product quality and reputation), on the other. However, not all factors determining firms' success, and hence the competitiveness of an industry comprising those firms are controlled by the firms themselves (i.e., 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)

For a small or less developed country, the role of foreign countries' policies is often decisive in determining its possible access to the 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 the 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 the agri-food industry in less developed countries. Another example of foreign countries' policies obstructing exports is the requirement by the EU that imports of processed foodstuffs have to comply with high hygiene and structural standards, which severely affected the food processing industries in both the new member states and the current candidate countries. The next chapter elaborates on the conformity of the Estonian food processing industry to the EU requirements in the course of EU integration and the challenges emerging from accession.

### **3. CONFORMITY OF THE ESTONIAN FOOD PROCESSING INDUSTRY TO THE EU REQUIREMENTS**

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

The Estonian food processing industry's trade relations with the EU have developed in rather different circumstances compared to those of other economic sectors. Formal trade relations between Estonia and the EU started on 1 January 1995, when Estonia and the EU concluded the Association Agreement (aka the Europe Agreement)

which 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. At the same time, the Estonian Government did not apply tariffs or other trade barriers against imports from EU countries 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 milk products).

Frohberg and Hartmann (1997b) studied the causes behind the lack of success of the Association Agreements for the CEECs that in many cases also hold for Estonia, concluding that, compared to the agricultural imports from the EU, the poor performance of the CEECs' exports of agricultural products and foodstuffs to 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, while favouring imports, made the exports of the CEECs relatively expensive and uncompetitive on the world market; 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, thereby reducing the relative advantage that the CEECs had been enjoying under their bilateral agreements with the EU. One of the reasons for the underutilisation of preferential quotas was 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, which 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 can be partly the reason why the preference quotas were underutilised. The annual quotas allocated to the CEECs' imports of foodstuffs were spread evenly over four quarters of the year, whereas unfulfilled quotas could not be compensated for 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, in order to be issued a licence, which was only valid for a specified period, the importers were required to pay a certain deposit. If nothing was imported during that period, the right to import expired and the importer lost the deposit. This shows the riskiness of importing in the conditions of 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 well established yet, and indicates the high bureaucratic cost of importing from the CEECs. Furthermore, the system of quotas was especially obstructive for exports of high value-added consumer products due to their short shelf life.

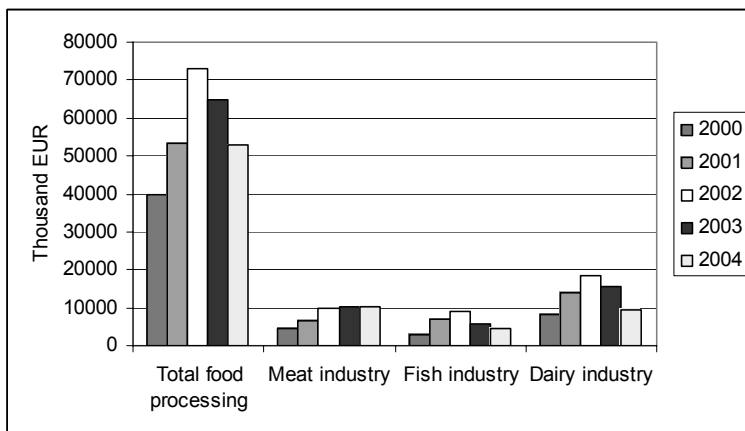
With Estonia's accession to the EU on 1 May 2004, the last remaining formal barriers on Estonia's exports to EU countries were abolished. In addition, accession to the EU also reduced the burden of bureaucratic barriers. This means that besides formal trade barriers, i.e., tariffs and quotas, also non-tariff 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 abolition of tariffs and quantitative restrictions, can have a highly significant impact on the competitiveness of the Estonian food industry in the markets of the old EU member countries. Moreover, the removal of NTBs in the form of border checks also improved access to the markets of other new member states of the EU.<sup>4</sup>

However, the opening up of the EU market was not without costs for the Estonian food processing industry. The accession was accompanied by the requirement to comply with the EU's strict hygiene and structural standards. According to the Food Act, a law

---

<sup>4</sup> With Estonia's accession to the EU, significant changes also occurred in the trade regime with third countries. The most important of these for the Estonian food processing industry were definitely the removal of double tariffs on exports to Russia and the cancellation of the free trade agreement with Ukraine. Although these policy developments too had a significant impact on trade patterns, these effects are beyond the scope of the present paper.

that was passed in 1999 and took effect in 2000, to make Estonia's legislation conform to the *acquis communautaire* of the EU, the enterprises engaged in the production and processing of foodstuffs had to bring themselves into conformity to the structural and hygiene requirements laid down by the above Act by 1 January 2003. This resulted in large investments by the food processing industry; however, the low number of enterprises who had fulfilled 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 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%). By far the biggest investments in absolute value were undertaken by the dairy industry, followed by the meat industry.



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

Table 1 gives the ratio of investments into tangible assets compared to net sales. It can be seen that on average, the meat industry has invested relatively more than the fish and dairy industries,



whereas the investments made in the meat processing units have lagged behind the fish and dairy industries. In the latter two industries, the investments culminated in 2002.

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

	<b>Total food processing</b>	<b>Meat industry</b>	<b>Fish industry</b>	<b>Dairy industry</b>
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; the author's 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) in 1998–2004. The fall in the total number of firms has been partly the effect of the harmonisation of Estonia's 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 either comply with the Food Act by 2003 or exit the business. As a result, concentration in the 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, no meat processing units in Estonia fully met the EU requirements and were therefore not permitted to export to the EU). The firms approved by the Food Act but not confirmed by the EU were only allowed to sell their products on the domestic market. Throughout the whole period, the fish industry led by having the largest number of enterprises possessing the right to export to the EU.

**Table 2.** Conformity to the structural and hygiene requirements in the Estonian food processing industry, 1998–2004

	1998	1999	2000	2001	2002	2003	2004
<b>Total No of enterprises</b>							
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
<b>Approved by The Food Act (from 2001)<sup>a</sup></b>							
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
<b>Confirming to the EU requirements</b>							
Meat industry	0	0	0	0	0	2	16
Dairy industry	2	4	7	11	14	15	15
Fish industry <sup>b</sup>	14	18 (10)	25 (13)	27 (13)	36 (14)	41 (10)	50 (11)

Source: Ministry of Agriculture of Estonia, various yearbooks.

Notes: <sup>a</sup> 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 into conformity during the year 2003.

<sup>b</sup> The numbers in brackets refer to vessels that meet the EU requirements.

Even though the fulfilling of the requirements laid down in the Food Act and by the EU put a heavy burden on the 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 the Estonian food processing industry. The largest share of that was allocated to the meat industry (41%), followed by the fish industry (31%) and the dairy industry (27%) (see Table 3). From that amount, 75% was paid by the EU and 25% by the national budget. So far, however, only a few investments associated with environmental regulations have been made. With Estonia's accession to the EU, the SAPARD investment support was replaced by the National Development Plan (NDP). From the latter, the food processing industry was preassigned 11.4 million EUR as investment support during 2004–2006.

**Table 3.** SAPARD investment support to the Estonian food processing industry, 2002–2005 (million EUR)

	2002	2003	2004	2005 <sup>a</sup>	Total 2002– 2005	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.

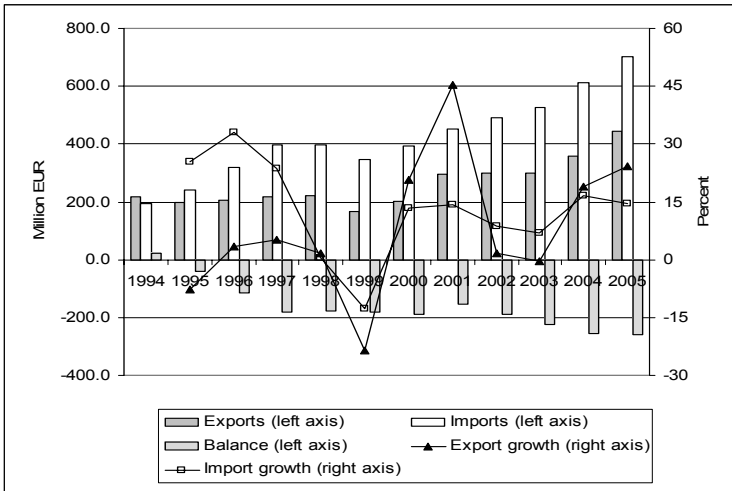
Notes: <sup>a</sup> During 2004–2005, no applications for support were accepted; only facilities were paid out.

Strict hygiene, structural and product safety standards will result in firms' higher short-run production costs. This, however, does not (necessarily) reduce the respective industry's competitiveness. On the contrary, investments into the abovementioned standards will enhance competitiveness in the long run due to improvements in product quality and safety. Similarly, we can ask whether these significant investments into stricter hygiene and product standards that raised firms' costs and compelled many smaller firms to exit business have been compensated for by better export opportunities to the large EU market and result in enhanced competitiveness of the Estonian food processing industry. To answer this question, we will not only look at the changes in trade values, but will also assess the changes in trade structure according to the value added (or processing) level of exports. In the following, we will 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 the Estonian food processing industry's competitiveness by securing long-term profitability and providing more jobs. Furthermore, in the case of bulk products, the Estonian food sector is competing 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 cost of production, which clearly refers to the inability of the Estonian

food sector to compete (based on cost advantages) in the long term with developing countries in 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 firms to gain markets despite increasing production costs.

## 4. GENERAL EXPORT PATTERNS

Since 1995, Estonia's trade in agricultural products and foodstuffs has been in deficit, and the deficit has been deepening over years (see Figure 3).<sup>5</sup> This has been, largely, the result of the trade policy pursued in Estonia which opened domestic markets to subsidised imports from abroad, leaving the domestic industry without any

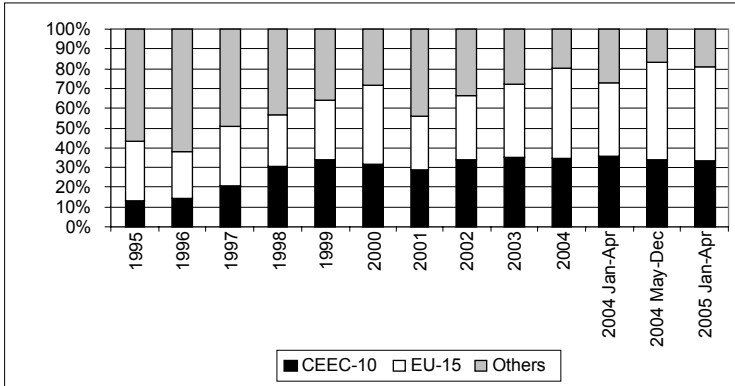


**Figure 3.** Trade in agricultural products and foodstuffs 1994–2005, absolute values and annual growth rates (Source: Statistical Office of Estonia; the author's calculations).

<sup>5</sup> Due to the divergence in the classification of trade and industry data, the Harmonised System (HS) trade categories 01–24 are considered here, constituting agricultural products and foodstuffs.

protection. Only in 2000–2001, exports grew faster than imports, partly as a result of the introduction of tariffs on agricultural imports in 2000 and partly as a result of the re-direction of exports away from Eastern markets towards Western markets after the 1998 Russian crisis. The accession to the EU in 2004 boosted both Estonian exports and imports of foodstuffs, but the growth of exports exceeded that 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 the retail sector increased only in 4 product groups, while it decreased in 19 product groups (Ministry of Agriculture 2004). This indicates stronger competitive pressure from imports as a result of the accession to the EU.

The formal accession to the EU on 1 May 2004 also had a significant effect on trade structure, although trade patterns had changed already during the integration process. The role of the old EU 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, 30% of Estonian agri-food exports went to the EU-15, and in 2003 this share increased to 37%. Shortly before the accession, in 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, reaching 50% (May-December 2004). This indicates that although the formal trade barriers to exports to the EU-15 were abolished already during the integration process, the NTBs existed until the actual membership. Also, the CEECs' role 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 Estonia's agricultural products and foodstuff exports. The share of other, non-EU countries, 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 the abolition 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; the author’s calculations).

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

Also, the composition of agri-food trade has changed over time, providing some (indirect) insights into the non-price or quality competitiveness of the Estonian food industry. Table 4 presents the shares of raw products and processed products in Estonian exports of agricultural products and foodstuffs with selected partners. Overall, the processing level of Estonian exports has slightly risen — 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, by comparison with 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 dropped from more than 90% during 2000–2003 to 76% in 2004, their share 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 a lower processing level — the share of raw products 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 increased more than fourfold during 1999–2004, being 61% in 2004. Again, here the most remarkable shifts in product composition occurred in 2004 compared to 2003, being associated with the abolition of double tariffs and the imposition of the 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 on equal terms with exports from other EU countries).

**Table 4.** The share of products at different processing levels in Estonia's agricultural exports to selected partners, 1999–2004 <sup>a</sup>

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 <sup>b</sup>	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.

*Notes:* <sup>a</sup> The shares of raw products and processed products do not always add up to 100 due to the existence of confidential trade.

<sup>b</sup> New member states of the EU from 1 May 2004.

However, according to the Eurostat classification, the production of the dairy, meat and fish processing industries is categorised under raw materials; hence Table 4 gives no further insights into the level of value added in the exports of these industries. Therefore, next we will 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 changes in the level of value added in exports is to consider the changes in export values of products at different processing levels. However, this is not a perfect measure since the available trade data is usually not sufficiently detailed, which does not allow distinguishing between products at clearly low or high processing levels. Furthermore, there are many possible ways to classify agricultural products and foodstuffs according to their value-added content.<sup>6</sup> 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. However, a very different approach was chosen by Winger et al. (2003). In their analysis of the level of “added-value” products in New Zealand’s food exports, representatives of the food industry were asked to define HS (Harmonised System) 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 a product group as incorporating both value-added products and commodities, a financial value analysis 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 for all markets was considered as a value-added market. In the opposite case, the market was seen as a 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,

---

<sup>6</sup> The way how Eurostat classifies agricultural products and foodstuffs according to their processing levels was shortly introduced in the last chapter.



value added is not viewed in terms of products' processing levels or distance to consumers, but rather in terms of shareholder value. According to the authors, this ensures that the value-creating technology incorporated into minimally processed food is taken into account. However, the direct adoption of the above method poses many caveats, such as the ambiguity around the definition of value added, the questionable value of the criterion for value-added markets in case of different countries' differing purchasing power levels 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 the Estonian case.

However, assuming that a higher level of processing and proximity to end-consumers generally indicate 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 abovementioned approach to the HS codes, the main product groups (at 4-digit level) in Estonian exports of foodstuffs according to their levels of processing are presented in Table 5.<sup>7</sup> Although milk, meat and fish are considered as primary products mainly for household consumption, it is clear that the largest part of Estonia's exports of these products do not reach households directly but are processed by local processors before reaching the end-users. Concentrated milk (mainly in the form of milk powder), butter and whey are considered as processed products mainly for industrial use, while sausages, ham, yoghurt, cheese, ice-cream and prepared or preserved (tinned) fish belong to the group of processed products mainly directed to end-consumers. However, this division must be considered with caution since products belonging to the latter group do not, in reality, directly reach the end-consumers. For example, Estonian cheese is mostly sold to the EU-15 countries as a commodity, which will be either used in catering establishments (such as restaurants and pizzerias) or repacked and sold under importers' brand names (or private-label). However, the available statistics do not reflect this issue.

**Table 5.** The classification of products by their processing level<sup>a, b</sup>

	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, 0405,	0403, 0406, 2105
Fish processing	0302, 0303, 0304			1604

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

Notes: <sup>a</sup>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, 0207 — poultry, 0302 — fresh or chilled fish, 0303 — frozen fish, 0304 — fish fillet, 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. ham), 1604 — prepared and preserved fish, 2105 — ice cream. <sup>b</sup>The original table did not include fish products.

Yet, the product groups given in Table 5 each embody many different products that can be of different processing levels. Therefore, to get reliable conclusions, data for exports of the industry sectors involved was analysed on HS 6-digit level. The data was obtained from the Eurostat foreign trade dataset DS-016893 (EU25 Trade Since 1995 By HS6), available online (detailed data on the division of product codes according to their processing level and the export values to the EU-15 are given in Appendixes A1-A3).

However, there is a serious problem related to 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 a large trade turnover. Total trade volumes are estimated using statistical

methods, and the difference between the total estimated export values and the collected export values are given at the 2-digit chapter level only. Following consultations with the experts from the Statistical Office of Estonia, these differences between the estimated and collected values were proportionally divided between 6-digit product groups.

The results of the analysis are given in Table 6. The figures clearly indicate that Estonia's EU accession remarkably eased access to the EU-15 market for the meat industry; however, after accession a shift towards unprocessed, low value-added exports occurred. This was a result of the significant (by 700% during 2003–2005) increase in the exports of unprocessed meat and a 70% fall (during 2003–2005) in exports of processed meat products (before accession, however, the level of meat exports to the EU-15 had been negligible). Compared to the years before accession, also the share of processed products in fish exports dropped, accompanied by a considerable increase in total exports of fish and fish products to the EU-15 (an increase by 51% during 2003–2005). However, in absolute value, also the exports of processed fish products increased (by nearly 40% during 2003–2005). In case of milk exports, the role of processed products mainly for household consumption decreased a lot during 2004/2003 but increased in 2005 and remained higher than it had been during the pre-accession years (34.8% and 34.5% in 2005 and 2003, respectively). The share of processed intermediate products mainly for industrial use, on the other hand, increased in 2004 by comparison to 2003, but fell in 2005 to a lower level than prior to accession. Nevertheless, processed products mainly for industrial use still form the largest (however, decreasing) share in total milk exports to the EU-15. The accession remarkably facilitated access to the EU market for primary dairy products (non-concentrated milk and cream), whose export increased more than 6 times in 2005 compared to 2003, and whose share in total dairy exports increased from less than 2% to nearly 9% in 2005. Contrary to the case of the meat-processing industries, the exports of high-value consumer products in the milk-processing industry increased also in absolute terms (by 38% during 2003–2005). Also the value of exports of processed intermediate products to the EU increased, although this

was mainly due to increased exports in 2004 after accession to the EU.<sup>7</sup>

Consequently, the actual accession to the EU reinforced the importance of the EU-15 countries in Estonian agri-food exports, although this development had already started during the pre-accession period. The analysis shows that the accession to the EU has especially boosted Estonian exports of meat and fish products to the old member states of the EU. In total, meat exports increased by nearly 8 times (from basically non-existent levels before accession) and fish exports by 51% during 2003–2005, whereas milk exports grew relatively less — by 37%. However, in case of the meat processing industry, the increase in exports has been accompanied by a shift towards lower value-added products. Hence we can conclude that in this case, the accession has not (yet) facilitated the access to the EU-15 markets for high value-added products and enabled the Estonian industry to reap the benefits of the wealthy consumer market, or the growth of exports of high value-added products has been slower than the growth of exports of a lower value-added level. However, milk and fish processing industries have been more successful in finding markets for their high value-added consumer products in the old member states of the EU. Milk products are also the only product group in which trade has been constantly in surplus for Estonia.

---

<sup>7</sup> Changes in export values certainly also include pure price changes, which should be, in ideal case, eliminated, resulting in the changes in physical export volumes. However, taking into account that unit values also indicate added value to shareholders, the pure price effects are neglected here.

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

	Exports to the EU-15 (euros)							Change (%)		
	1999	2000	2001	2002	2003	2004	2005	2004 /2003	2005 /2004	2005 /2003
<b>Meat and meat products</b>										
Value	99 627	95 303	98 876	139 535	82 1742	2 160 697	6 572 591	162.9	204.2	699.8
(in	119 105	63 149	130 562	356 683	356 604	132 240	108 834	-62.9	-17.9	-69.5
euros)	218 732	158 452	229 438	496 218	1 178 346	2 292 937	6 681 425	94.6	191.4	467.0
Total										
Unprocessed meat	45.5	60.1	43.1	28.1	69.7	94.2	98.4			
Processed meat products	54.5	39.9	56.9	71.9	30.3	5.8	1.6			
<b>Milk and milk products</b>										
Primary products	7 237	615 657	744 904	725 860	867 428	2 232 445	5 331 466	157.4	138.8	514.6
Processed intermediate										
products	13 138 657	28 697 645	23 149 635	31 960 075	30 869 619	48 272 086	37 939 594	56.4	-21.4	22.9
Processed products for HH										
consumption	29 857	4 324 920	9 091 337	10 533 163	16 685 571	12 925 511	23 052 998	-22.5	78.4	38.2
Total	13 175 751	33 638 222	32 985 876	43 219 098	48 422 618	63 430 041	66 324 058	31.0	4.6	37.0
Primary products	0.1	1.9	2.3	1.7	1.8	3.6	8.7			
Processed intermediate										
products	99.7	85.3	70.2	73.9	63.8	76.1	57.2			
Processed products for HH										
consumption	0.2	12.9	27.6	24.4	34.5	20.4	34.8			
<b>Fish and fish products</b>										
Unprocessed fish	22 325 359	26 711 191	23 737 833	26 482 301	25 919 985	33 016 110	39 882 118	27.4	20.8	53.9
Processed fish products	3 811 674	4 641 108	6 232 151	7 770 271	7 232 354	7 225 810	10 105 151	-0.1	39.8	39.7
Total	26 137 033	31 352 299	29 969 984	34 252 572	33 152 339	40 241 920	49 987 269	21.4	24.2	50.8
Unprocessed fish	85.4	85.2	79.2	77.3	78.2	82.0	79.8			
Processed fish products	14.6	14.8	20.8	22.7	21.8	18.0	20.2			

Source: Dataset DS-016893; the author's calculations.

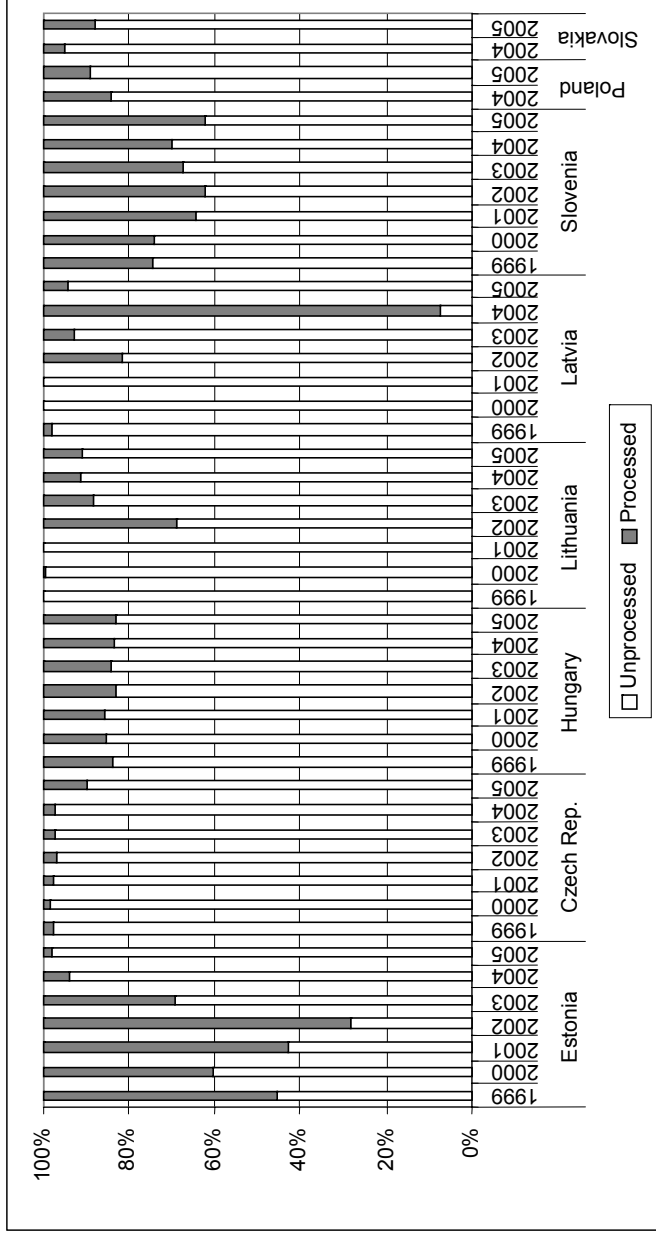
## 6. ESTONIAN FOOD EXPORTS IN INTER-COUNTRY COMPARISON

The previous chapter showed that in general, the EU accession led to a considerable increase in Estonia's exports of milk, meat and fish products. However, the question arises whether these increases were due to the high competitiveness of the Estonian food processing industry on the EU-15 market, or whether they were characteristic of integration itself. Therefore, a similar value-added analysis was undertaken in the case of the Czech Republic, Hungary, Lithuania, Latvia, Slovenia, Poland and Slovakia, and the results were compared to the developments of respective exports of Estonia. Export data of the other NMS was similarly based on Eurostat's Dataset DS-016893 (EU25 Trade Since 1995 By HS6), ensuring the best possible level of comparability. For Hungary, Lithuania and Latvia, a proportional division of the difference between the estimated total exports and the gathered export data reported as trade broken down at 2-digit chapter level only was undertaken similarly to the case of Estonia. Other countries did not report any trade broken down at chapter level only. Hungary and Slovakia reported confidential trade broken down at chapter level; this was, however, neglected in the analysis for simplicity reasons.

Figure 5 depicts the changes in the composition of meat exports in ten NMSs. As noted above, the share of processed meat products in Estonia's exports to the EU-15 dropped from relatively high levels (for example, 72% in 2002 and 30% in 2003) to less than 2 per cent after Estonia joined the EU. Rating it against the developments in other NMSs suggests that a fall in the importance of processed products characterised all the Baltic countries (with only Latvia experiencing a sharp but only temporary increase in the share of processed meat products in 2004), whereas in the Czech Republic, Hungary and Slovenia, the share of processed products in meat exports increased after their accession to the EU.<sup>8</sup> In 2005, processed products formed the smallest share in the total meat exports of Estonia, while the highest shares were attained in the case of Slovenia (37.5%) and Hungary (16.7%).

---

<sup>8</sup> Due to the unavailability of data, no further conclusions can be drawn about Poland and Slovakia.



**Figure 5.** The shares of processed and unprocessed products in meat exports to the EU-15 in selected new member states, 1999–2005 (Dataset DS-016893; the author’s calculations).

However, total meat exports to the EU-15 increased most in the Baltic countries including Estonia (see Table 7). Estonia was the only country whose exports of processed meat products actually fell in absolute value after accession, whereas Latvia's exports of processed meat products increased more than 200 times between 2003 and 2005, and those of the Czech Republic and Lithuania by 7.4 and 7 times, respectively.<sup>9</sup>

**Table 7.** Changes in the value of meat and fish exports to the EU-15, %

		Meat exports			Fish exports		
		2004/ 2003	2005/ 2004	2005/ 2003	2004/ 2003	2005/ 2004	2005/ 2003
Estonia	Total	94.6	191.4	467.0	21.4	24.2	50.8
	Unprocessed	162.9	204.2	699.8	27.4	20.8	53.9
	Processed	-62.9	-17.9	-69.5	-0.1	39.8	39.7
Czech Republic	Total	130.5	-16.1	93.4	5.4	4.5	10.2
	Unprocessed	130.9	-22.7	78.6	1.9	3.6	5.5
	Processed	115.3	245.0	643.0	164.6	21.4	221.3
Hungary	Total	3.6	2.4	6.1	-20.2	241.1	172.4
	Unprocessed	2.5	2.0	4.6	-15.8	362.9	289.9
	Processed	9.4	4.4	14.3	-26.8	27.7	-6.6
Lithuania	Total	226.4	185.9	833.1	48.9	35.7	102.0
	Unprocessed	237.4	184.8	861.1	84.4	25.0	130.5
	Processed	140.8	197.2	615.7	26.5	45.5	84.0
Latvia	Total	653.4	3 210.8	24 842.0	25.9	17.6	48.0
	Unprocessed	-43.5	44 710.1	25 208.6	28.9	8.4	39.7
	Processed	9 923.0	100.2	19 964.6	5.2	94.1	104.2
Poland	Total	...	51.1	...	...	40.2	...
	Unprocessed	...	60.3	...	...	39.6	...
	Processed	...	1.2	...	...	41.6	...
Slovenia	Total	14.1	39.0	58.6	124.7	256.1	700.1
	Unprocessed	18.3	23.9	46.6	1562.4	414.2	8 448.5
	Processed	5.4	74.3	83.7	0.3	29.7	30.1
Slovakia	Total	...	61.1	...	...	10.2	...
	Unprocessed	...	49.3	...	...	54.1	...
	Processed	...	298.0	...	...	-99.9	...

Source: Dataset DS-016893; the author's calculations.

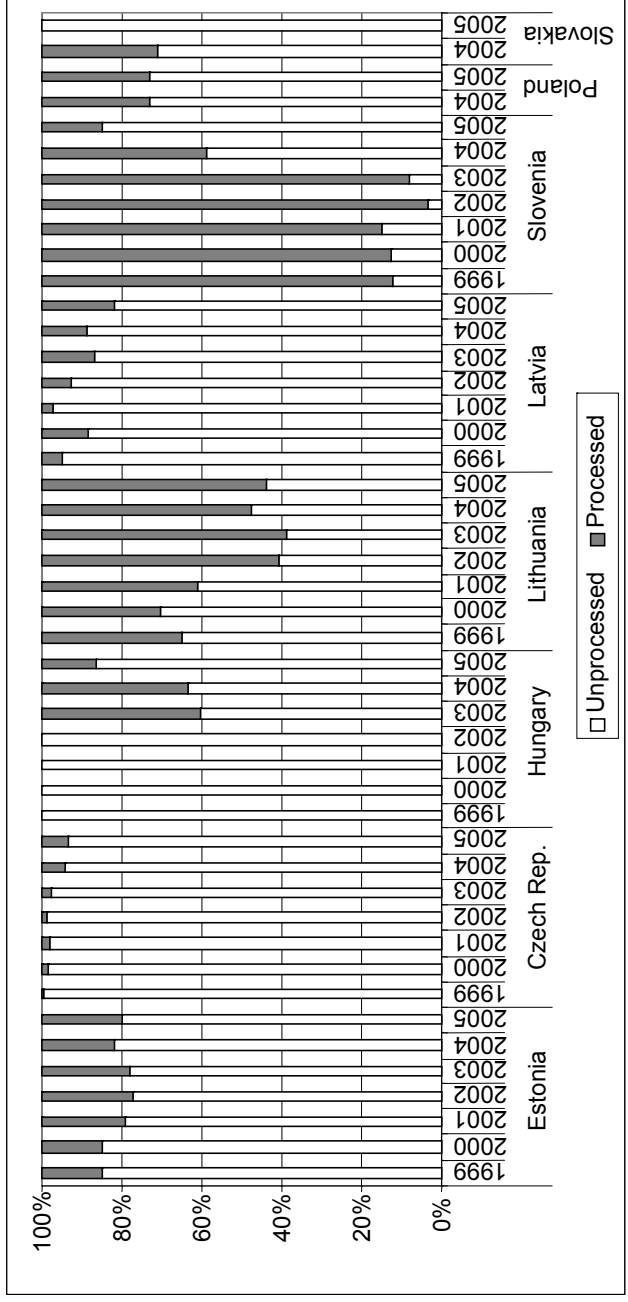
<sup>9</sup> Latvia's exports of processed meat products to the EU-15, however, were marginal before 2004, which explains the unusually high increase in exports after accession.



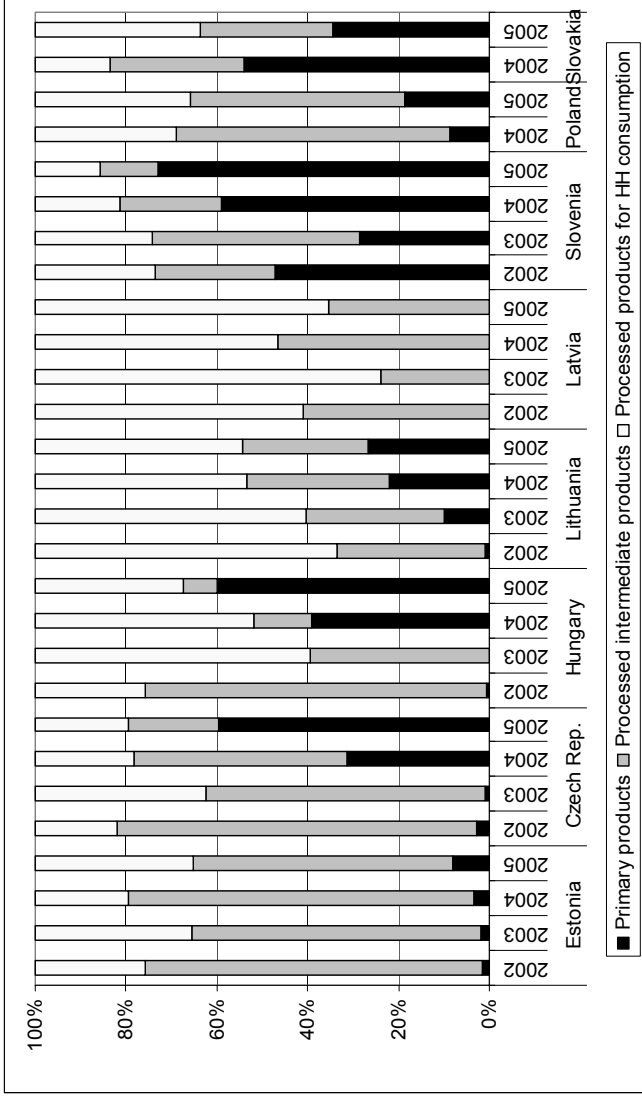
Regarding the fish processing industry (see Figure 6), Estonia has a relatively moderate share of processed products in total fish exports, and this has remained relatively stable after accession to the EU (although at a 1.6 percentage point lower level in 2005 compared to 2003). This seems a relatively good result against the sharp decrease in the shares of processed fish products in Hungary, Lithuania and Slovenia (from 40%, 61% and 92% in 2003 to 14%, 56% and 15% in 2005, respectively). However, countries like the Czech Republic and Latvia have experienced relative increases in their processed fish exports, although the shares still remain relatively low. Also, the changes in the absolute level of fish exports (see Table 7) suggest that although Estonia has been able to increase its fish exports to the EU, other NMSs have often experienced much higher increases in their fish exports.

As regards the milk processing industry, Estonia was the only country that after its accession to the EU experienced an increase in the export share of processed products mainly for household consumption, and this share was relatively high (higher only in Latvia and Lithuania)(see Figure 7).

Estonia was also the only country whose exports of high value-added consumer goods fell in absolute value in 2004 (see Table 8). Furthermore, a comparison of the export values in 2005 and 2003 suggests that all the other NMSs (except Poland and Slovakia, for which no sufficient data is available) have experienced much higher increases in their total milk exports and in their exports of high value-added consumer products (the only exception being Hungary).



**Figure 6.** The shares of processed and unprocessed products in fish exports to the EU-15 in selected new member states, 1999–2005 (Dataset DS-016893; the author’s calculations).



**Figure 7.** The shares of processed and unprocessed products in milk exports to the EU-15 in selected new member states, 1999–2005 (Dataset DS-016893; the author’s calculations).

**Table 8.** Changes in the value of milk exports to the EU-15, %

		2004 /2003	2005 /2004	2005 /2003
Estonia	Total	31.0	4.6	37.0
	Primary products	157.4	138.8	514.6
	Total processed intermediate products	56.4	-21.4	22.9
	Total processed products for HH cons.	-22.5	78.4	38.2
Czech Rep.	Total	175.5	52.5	320.2
	Primary products	8 327.6	190.2	24352.7
	Total processed intermediate products	110.5	-35.6	35.5
	Total processed products for HH cons.	59.1	43.4	128.1
Hungary	Total	31.7	54.8	103.8
	Primary products	29 0617.8	136.3	68 6958.3
	Total processed intermediate products	-58.1	-9.4	-62.0
	Total processed products for HH cons.	4.9	5.1	10.3
Lithuania	Total	236.8	7.1	260.6
	Primary products	636.7	29.6	855.2
	Total processed intermediate products	251.6	-6.3	229.6
	Total processed products for HH cons.	162.1	5.5	176.4
Latvia	Total	74.9	44.6	152.8
	Primary products	72.6	-73.7	-54.5
	Total processed intermediate products	240.8	10.0	274.9
	Total processed products for HH cons.	22.9	74.8	115.0
Poland	Total	...	82.4	...
	Primary products	...	295.0	...
	Total processed intermediate products	...	42.7	...
	Total processed products for HH cons.	...	101.0	...
Slovenia	Total	49.2	140.6	259.1
	Primary products	207.9	198.5	819.0
	Total processed intermediate products	-27.0	36.1	-0.6
	Total processed products for HH cons.	8.2	83.1	98.1
Slovakia	Total	...	143.3	...
	Primary products	...	55.1	...
	Total processed intermediate products	...	138.8	...
	Total processed products for HH cons.	...	442.3	...

Source: Dataset DS-016893; the author's calculations.

Hence, the inter-country comparisons show that in many cases the pre-accession situation of the Estonian food processing industry in terms of value-added exports to the EU-15 has been relatively good; however, the other NMSs have often been able to take better advantage of the opening-up of the EU market. This is especially so in the case of the meat processing industry, which invested the most in terms of net sales; however, it is largely home market oriented, and the role of the EU market is marginal.

The reasons behind different export developments in the NMSs, though, need a thorough further analysis. Nevertheless, we can

assume that relative production and marketing costs and distance to EU-15 markets, at least partly, explain why countries have experienced different trade patterns. By lowering trade barriers, regional integration may either enhance or impede international competitiveness of industries and firms. As trade barriers are lower, transportation costs become relatively more important in production and marketing of goods. Countries, whose firms have access to larger/nearer markets, can take advantage of lower marketing costs (Ezeala-Harrison 1999, p. 149). This aspect suggests that different countries can experience very different outcomes of regional integration. For example, when we compare a small initially liberal peripheral country such as Estonia and a big rather protective country close to the core markets such as Poland, we would expect that Poland would gain relatively more from the same type of integration. In addition, the relative closeness to main consumer markets can affect the decisions of successful international food manufacturers to enter the market of a particular country. For example, the leading French food manufacturer Danone set up a milk-processing production unit in Poland. Furthermore, we can assume that the differences in the agricultural and foreign trade policies pursued by the countries are some of the key determinants of the diverse developments in exports patterns. Finally, the export figures can be distorted by the fact that accession to the EU induced producers and traders to accumulate large stock reserves, which were, in the case of milk processing industry, probably most significant in Estonia (Saron 2006). The concrete factors behind the different export pattern in the NMSs and the question whether Estonia's decision to follow, contrary to the majority of the other new EU member states, a highly liberal economic policy with no domestic support or import restrictions was a justified strategy remains, however, beyond the scope of this paper.

## **7. PROBLEMS AND CHALLENGES IN PENETRATING EU MARKETS**

Winning export markets in Western countries is no doubt 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). Therefore the role of investment in R&D is increasing. Besides product quality upgrades as well as investment in production processes and new product development, improvements in the organisation and marketing are crucial. Regrettably, so far Estonian food processing firms have invested relatively modestly in R&D. According to the Confederation of the Food and Drink Industries of the EU (CIAA), the average ratio of R&D investments in net sales in the EU-15 food and drink industry was 1.7% in 2004 (CIAA 2006), whereas the respective figure for Estonia in 2003 was 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 than the manufacturing industries on average, these figures clearly indicate that the Estonian food industry is lagging behind.<sup>10</sup> Moreover, the 2003 figure shows the absolute peak in R&D intensity that the Estonian food processing industry reached in 1998–2004, while in 2004, the R&D ratio to sales dropped to a mere 0.04%.

In addition, advertising expenses and brand loyalty are some of the main determinants in explaining the demand for high-processed

---

<sup>10</sup> The backwardness of the Estonian food processing industry in terms of R&D intensity can be further emphasised by the fact that the most innovative EU food producers are themselves lagging behind the food companies of other developed countries. While in Norway and Japan, the ratio of investments in R&D to total food and drink industry output reached almost 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)

foodstuffs (Reed 1994). Even though formal trade barriers between Estonia and the EU have been dismantled, national preferences and prejudices remain, for instance the negative attitude of Western consumers towards foodstuffs from the former Eastern bloc countries, or the enhanced 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 actual potential. Nevertheless, Estonian food processing companies are becoming more and more successful in winning procurements and tenders by Western EU food companies and retail chains, although the possibilities to market their products under importers' brand names (or private-label) can be sometimes complicated due to small production volumes that do not fulfil the orders of destination country for generic production. Furthermore, in tenders for private-label products, the main determinant is the price, which often gives a competitive advantage to food producers from other countries (e.g., Lithuania and Poland), whose production costs are lower. In addition, Estonia's relatively remote location renders difficult to export fast perishable consumer products to the core markets of the EU. Hence, in the EU-15, the only possible export markets for many high value-added products remain the nearest markets such as Finland and, to a lesser extent, Sweden. Finland, with similar consumer taste and some familiarity with Estonian products, is the main Western export market also for Estonian private brand products. However, there have been cases of strong resistance from the local food producers in Finland towards food imports from Estonia.

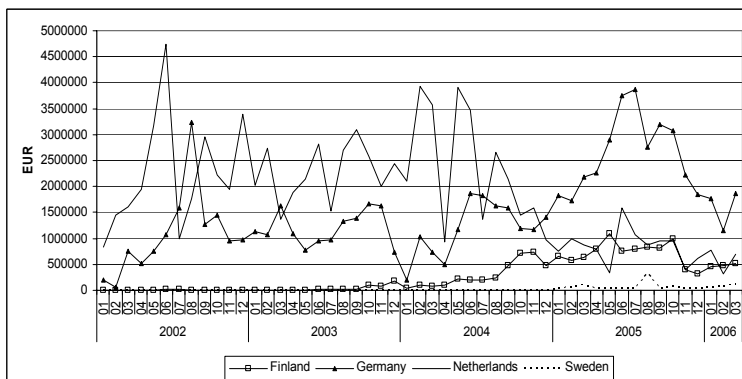
Consequently, in spite of the fact that integration to the EU removed all formal trade barriers, some invisible obstacles have remained on Estonian foodstuffs exports to the EU-15. Moreover, as the marketing manager of one of the ice-cream producers in Estonia put it: although accession opened up the EU market, exporting to the old member states requires long-time efforts and good business relations, and the opening-up of the market was only a precondition to start this work (Kõvask 2006).

The situation is somewhat better for food processing companies based on multinational capital that already have an advantage in competing in the EU market, as they both belong to the marketing network of their parent companies and share their experience and advanced product development activities (Estonian Ministry of Agriculture 2004). Also the presence of foreign (EU) retail chains in the Estonian market can improve the chances of Estonian food processing companies to enter EU markets with high value-added products directed to end-consumers. To illustrate this point, Figure 8 demonstrates the development of Estonian exports of dairy products to the main destination countries between 2002 and 2006. Although the main markets throughout this period were Germany and the Netherlands, since 2004, the importance of Finland has been growing. Finland and the Netherlands are also two biggest foreign investors in the Estonian dairy industry, owning two and one milk processing company, respectively. Furthermore, Finland and Sweden are the parent countries for some biggest retail chains operating in Estonia. Until 2005, The Netherlands was the main destination for Estonian milk powder, butter and cheese; however, the unit values of exports to the Netherlands are somewhat lower than to Finland, for example (being in 2004 for cheese 2 689 EUR/t and 3 097 EUR/t, and in 2005 for butter 2 178 EUR/t and 2 940 EUR/t, respectively). The share of the Netherlands has decreased considerably since 2004, indicating a fall in the relatively lower value-added shipments.<sup>11</sup> However, in reality, milk processing companies based on solely Estonian capital seem to be more successful in entering the EU-15 markets with high value-added products such as yoghurt and curds (sold under private label). Having a parent company in the EU-15 country can rather reduce incentives to enter the EU markets with high value-added products for end-consumers, because of the parent company's strategy to protect its production companies in the home country from any imports, including from the other companies abroad belonging to the same group (Saron 2006).

---

<sup>11</sup> The importance of exports to Germany has, however, grown, with milk powder as the main export article.



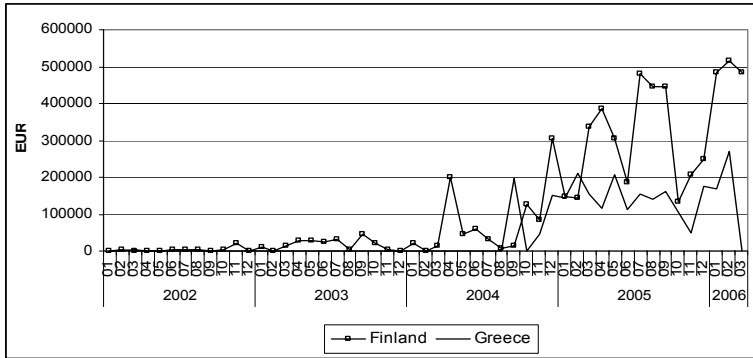


**Figure 8.** The export values of dairy products (HS 04) to the main destinations in the EU-15, 2002–2006 (Source: Statistical Office of Estonia).

Similar patterns can be seen in the case of meat products (see Figure 9). 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 the case of pork and poultry). Finland is the main source country of foreign investments to the Estonian meat processing sector, owning two of the largest meat processing enterprises and the only poultry producer in Estonia. However, the aspect of parent company’s reluctance to allow affiliated company in Estonia to export to the home country of parent company has also been emphasized by the chairman of the board of the two Estonian meat processing companies owned by Finnish consolidated company — Rakvere Lihakombinaat and Tallegg (Kruusmaa 2006).

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 observe the developments in the taste of sophisticated European consumers. For gaining markets in the EU, two broad directions stand out: specialising in niche products that differ from competitors’ products by some special value to the consumers, or 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 economies of scale.



**Figure 9.** The export values of meat products (HS 02) to the main destinations in the EU-15, 2002–2006 (Source: Statistical Office of Estonia).

## 8. CONCLUSIONS

This paper attempted to assess the impact of EU accession on the competitiveness of the Estonian food processing industry by asking whether the investments into strict sanitary and hygiene standards undertaken by the 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 thereby resulted in higher profitability of the food processing industry. Three food processing industry subsectors were considered: the dairy, meat and fish processing industries. Taking into account the ambiguity around the concept of competitiveness and value added level, different aspects of added value were analysed.

The study showed that in general Estonia's accession to the EU has boosted the country's agri-food exports to the EU-15. The export values have increased for all the industry sectors considered; however, compared to the other new EU member countries,

Estonia has experienced relatively smaller export growth. Furthermore, only the milk processing industry has experienced an increase in the exports of high value-added foodstuffs to the EU-15. The share of value-added consumer products was relatively high there already before the accession. In the case of the meat processing industry, the absolute value of high value-added processed products even fell after accession, which also clearly stood out as an exception in comparison with the other new members. As a result, the importance of processed products in meat exports slipped to a nearly non-existent level; however, the exports to the EU-15 were marginal already before the accession and most exports were directed towards the NMSs of the EU. The meat processing sector was also the slowest sector to invest into the EU structural requirements, although the investments into tangible assets were relatively higher there than in the other industries considered (*vis-à-vis* to net sales). For the fish processing industry, the share of processed products in exports to the EU-15 fell, despite the success of fish processing companies in meeting the EU hygiene and sanitary requirements at a relatively early stage of integration. Yet the EU's importance as an export market has increased for the fish industry. These developments suggest that the Estonian food processing industry has not (yet) been able to gain full access to the EU-15 markets for high value-added products and thereby reap the benefits of the wealthy consumer market, *i.e.*, the growth of exports of high value-added products has been slower than the growth of exports on a lower value-added level. Furthermore, many other new member countries seem to have been more successful in gaining markets in the EU-15. This can be explained by many factors, among others the distance from the main EU-15 markets, relative production and marketing costs, as well as government policies pursued by the different NMSs. Nevertheless, the history of being a member of the EU single market has been quite short and therefore, the results of this study only indicate the immediate or short-term effect of the accession.

In order to succeed in the EU market, however, the 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 relatively low,

partly due to the large investments into the hygiene and structural requirements which left inadequate resources for product development. At the same time, due to the extensive product selection and the small size of the domestic market, further expansion of the product mix and simultaneous increase in production seem economically unfeasible. Therefore, in order to succeed in the EU markets, the food processing firms have to find new ways to gain customers, for example, by specialising in niche products that differ from their competitors' products by some special value to the consumers (for example, by some special taste or quality characteristics, or some other originality), or by specialising in core products in order to be able to fulfil shipment orders and exploit economies of scale.

## REFERENCES

- Ash, K.; Brink, L. 'Assessing the Role of Competitiveness in Shaping Policy Choices: A Canadian Perspective', in Bredahl M.E.; Abbott, P.C.; Reed, M.R. (eds) *Competitiveness in International Food Markets* (Westview Press, Boulder, San Francisco, Oxford 1994) pp. 261–278.
- Buckley, P.J.; Pass, C.L.; Prescott, K. 'Measures of International Competitiveness: A Critical Survey', *Journal of Marketing Management*, Vol. 4, No. 2, 1988, pp. 175–200.
- Chen, K.; Xu, L.; Duan, Y. 'Ex-post Competitiveness of China's Export in Agri-food Products: 1980–96', Conference Proceedings: China's Role in World Food Markets, Washington State University, February 1999, pp. 149–163. [<http://www.china.wsu.edu/conference/pdf-98/chen-7.pdf>], 20/04/06.
- Cho, D.-S. 'A dynamic approach to international competitiveness: The case of Korea', *Journal of Far Eastern Business*, Vol. 1, No. 1, 1994, pp. 17–36.
- CIAA benchmarking report 2006. The competitiveness of EU food and drink industry [[http://www.ciaa.be/documents/brochures/Benchmarking\\_Report\\_FINAL.pdf](http://www.ciaa.be/documents/brochures/Benchmarking_Report_FINAL.pdf)].
- Boyle, G. 'Competitiveness Concerns at the Production and Processing Level: The Example of the Dairy Sector', Paper presented at the Workshop on Enhancing Competitiveness in the Agro-food Sector: Making Policies Work, Vilnius, 16–17 June 2004.
- Dataset DS-016893 - EU25 Trade Since 1995 By HS6. Eurostat online database, [[http://epp.eurostat.ec.europa.eu/portal/page?\\_pageid=0,1136195,0\\_45572097&\\_dad=portal&\\_schema=PORTAL](http://epp.eurostat.ec.europa.eu/portal/page?_pageid=0,1136195,0_45572097&_dad=portal&_schema=PORTAL)].
- Estonian Ministry of Agriculture. *Agriculture and the development of rural life. Overview 2004/2005*, Yearbook, 2004 [<http://www.agri.ee>].
- Estonian Ministry of Agriculture. Various Yearbooks, 1998–2003, [<http://www.agri.ee>].
- Eurostat — Agricultural Trade Statistics 2004, [[http://ec.europa.eu/comm/agriculture/agrista/tradestats/index\\_en.htm](http://ec.europa.eu/comm/agriculture/agrista/tradestats/index_en.htm)].
- Ezeala-Harrison, F. 'Theory and Policy of International Competitiveness' (Praeger, Westport, Connecticut, London 1999).
- Frohberg, K.; Hartmann, M. 'Comparing Measures of Competitiveness', *IAMO* — Discussion Paper No. 2, 1997a.

- Frohberg, K.; Hartmann, M. 'Promoting CEA Agricultural Exports through Association Agreements with the EU — Why It Is Not Working' *IAMO* — Discussion Paper No. 1, 1997b.
- Hoën, H. W.; van Leeuwen, E.H. 'Upgrading and Relative Competitiveness in Manufacturing Trade: Eastern Europe versus the Newly Industrializing Economies', *Review of World Economics, Weltwirtschaftliches Archiv*, Band 127, 1991, pp. 368–379.
- Kruusmaa, S. 'Olle Horn: lihatööstus tegutseb nagu autovargad', *Äripäev*, 21/09/2006, [http://www.ap3.ee/Default.aspx], 30/10/06.
- Kõvask, K. (Tallinn Cold Store Ltd., marketing manager). Author's interview. Tallinn, 03 November 2006.
- Martin, L.; Westgren, R.; van Duren, E. 'Agribusiness Competitiveness across National Boundaries', *American Journal of Agricultural Economics*, Vol. 73, No. 5, 1991, pp. 1456–1646.
- Miner, W.M. 'Assessing the Competitiveness of the Canadian Food Sector', in Bredahl M.E.; Abbott, P.C.; Reed, M.R. (eds) *Competitiveness in International Food Markets* (Westview Press, Boulder, San Francisco, Oxford 1994) pp. 231–240.
- O'Donnell, R. 'The Competitive Advantage of Peripheral Regions: Conceptual Issues and Research Approaches', in: Fynes, B.; Ennis, S. (eds) *Competing from the Periphery. Core Issues in International Business* (The Dryden Press 1997) pp. 47–82.
- PRIA webpage 2006, [www.pria.ee].
- Reed, M.R. 'Importance of Non-price Factors to Competitiveness in International Food Trade', in Bredahl M.E.; Abbott, P.C.; Reed, M.R. (eds) *Competitiveness in International Food Markets* (Westview Press, Boulder, San Francisco, Oxford 1994) pp. 83–102.
- Sachwald, F. 'Competitiveness and Competition: which Theory of the Firm?', in Sachwald, F. (ed) *European Integration and Competitiveness. Acquisitions and Alliances in Industry* (Aldershot and Brookfield, Edward Elgar 1994) pp. 31–55.
- Saron, T. (Estonian Dairy Association, executive director). Author's interview. Tallinn, 26 September 2006.
- Siggel, E. 'Concepts and Measurements of Competitiveness and Comparative Advantage: Towards an Integrated Approach', Paper presented at the International Industrial Organization Conference at Northeastern University, Boston Massachusetts, April 4–5, 2003.
- Swann, P.; Taghavi, M. 'Measuring Price and Quality Competitiveness. A Study of Eighteen British Product Markets' (Avebury Press 1992).

- Statistical Office of Estonia. Online database, 2006, [www.stat.ee].
- Toming, K. 'The Price Impact of Adopting the Common Agricultural Policy in Estonia: Estimated versus Actual Effects', *University of Tartu, Faculty of Economics and Business Administration* - Working Paper No. 45, 2006.
- Trail, B., da Silva, J.G. 'Measuring International Competitiveness: the Case of the European Food Industry', *International Business Review*, Vol. 5, No. 2, 1996, pp. 151–166.
- van Berkum, S. 'Patterns of Intra-Industry Trade and Foreign Direct Investment in Agro-Food Products: Implications for East-West Integration', *MOCT-MOST*, No. 9, 1999, pp. 255–271.
- Whitton, C.L. 'Processed Agricultural Exports Led Gains in U.S. Agricultural Exports Between 1976 and 2002', *USDA - Electronic Outlook Report FAU-85-01*, February 2004 [www.ers.usda.gov/fau/feb04/fau8501/fau8501.pdf].
- Winger, R.J.; Power, E.G.; Mawson, A.J.; Rae, A.N.; Mesiter, A.D. 'The Level of Added Value in New Zealand Food Exports', Report for New Zealand Trade and Enterprise, 21 July 2003 [http://www.nzte.govt.nz/common/files/addedvalue-fandb05.pdf].

## KOKKUVÕTE

### **Euroopa Liiduga ühinemise mõju Eesti toiduainetetööstuse konkurentsivõimele**

Käesoleva toimetise eesmärgiks oli uurida, kas Eesti toiduainetetööstuse poolt tehtud investeeringud rangetesse sanitaar- ja hügieeninõuetesse vastamaks Euroopa Liidu standarditele on taganud ligipääsu suurele ja jõukale Euroopa Liidu (vanad liikmesriigid) turule ja taganud seega nende konkurentsivõime turul. Suurenenud konkurentsivõime ei tähenda seejuures vaid suuremaid ekspordimahte, vaid ka ümberorienteerumist kõrgema lisandväärtusega tarbijatoodetele. Uurimus keskendus kolmele toiduainetetööstuse allharule — piima-, kala-, ja lihatööstustele.

Analüüs näitas, et üldiselt on kolme vaatluse all oleva tööstusharu eksport pärast ühinemist Euroopa Liiduga vanadesse liikmesriikides suurenenud, kuid võrreldes teiste uute liikmesriikidega on ekspordi kasv olnud mitmel juhul siiski märgatavalt tagasihoidlikum. Lisaks sellele suurenes kõrge lisandväärtusega lõpptarbijatele suunatud toodete osakaal ekspordis ainult piimatööstuses. Lihatööstuses kõrge lisandväärtusega (töödeldud) toodete eksport absoluutväärtuses koguni vähenes perioodil 2003–2005, samas kui kõikides teistes uutes liikmesriikides oli vastav näitaja positiivne. Need arengud näitavad, et Eesti toiduainetetööstus ei ole veel suutnud täies mahus võita Euroopa Liidu turge oma kõrge lisandväärtusega toodetele ja seega tagada oma pikaajaline konkurentsivõime, vaid pigem on suurenenud just madala lisandväärtusega ehk töötlemata toodete eksport. Selle põhjuseid on väga palju, kaasa arvatud vanade liikmesriikide tarbijate margitruudus ning skeptilisus uute liikmesriikide toodete suhtes, jaekettide kasvav turujõud, Eesti toiduainetetööstuse kasvavad tootmiskulud ning tootmismahude väiksus võrreldes Euroopa turuga. Siiski tuleb arvestada, et Euroopa Liidu ühisturu osaks olemise kogemus on veel väga lühike, ning käesolev uuring tõi välja vaid liitumise nii-öelda lühiajalised mõjud.

Euroopa Liidu turul edukaks toimimiseks peab Eesti toiduainetetööstus jätkuvalt leidma uusi meetmeid oma toodete atraktiivsuse



tõstmiseks. Üheks võimaluseks on spetsialiseeruda nn nišitoodetele, mis eristuvad konkurentide toodetest teatud omaduste poolest (nt maitse, kvaliteet vms). Teisest küljest, arvestades Eesti suhteliselt väikesi tootmiskahte ja suurenevaid tootmiskulusid, oleks mõtteks orienteeruda vaid teatud põhitoodetele, olemaks võimaline täitma tellimusi ja kasutama ära mastaabisäästust tulenevaid kulueeliseid.

# APPENDIX

Table A1. The value of the exports of meat and meat products to the EU-15

HS6 code	Product description	Exports to the EU-15, value in euros								Change (%)					
		1999	2000	2001	2002	2003	2004	2005	2004/ 2003	2005/ 2004	2005/ 2003				
020110	Carcasses and half-carcasses of bovines						30 631								
020120	Fresh or chilled bovine cuts, with bone	10 422	1 036	3 677	4 422		35								
020130	Fresh or chilled bovine meat, boneless	491	1 772	3 142	6 153	4 195	40 948	196 840	876.1	380.7	4592.3				
020210	Frozen bovine carcasses and half-carcasses		315												
020220	Frozen bovine cuts, with bone	2 531	2 678	10 100	207	2 041	537		-73.7	-100.0	-100.0				
020230	Frozen bovine meat, boneless	14 733	19 394	9 376	25 001	17 690	37 867	199 296	114.1	426.3	1026.6				
020311	Fresh or chilled carcasses and half-carcasses of swine	224		1 719	15 445	6 310	23 857	130	278.1	-99.5	-97.9				
020312	Fresh or chilled hams, shoulders and cuts thereof of swine, with bone	2 287	6 000	11 476	8 568	2 953	1 191	1 071	-59.7	-10.1	-63.7				
020319	Other fresh or chilled meat of swine	613	1 448	5 715	15 293	6 459	127 576	129 862	1 875.2	1.8	1 910.6				
020321	Frozen carcasses and half-carcasses of swine		481	845	181	585	543		-7.2						
020322	Frozen hams, shoulders and cuts thereof of swine, boneless	58	207	1920	334	755	1504	263	99.2	-82.5	-65.2				
020329	Other frozen meat of swine	10 629	2 944	15 009	8 513	4 409	894 414	2 324 800	20 186.1	159.9	52 628.5				
020410	Fresh or chilled lamb carcasses and half-carcasses														
020421	Fresh or chilled sheep carcasses and half-carcasses (excl. lamb)			213											
020422	Fresh or chilled cuts of sheep, with bone	86	224	482	677	313		170	-100.0		-45.7				

HS6 code	Product description	Exports to the EU-15, value in euros								Change (%)			
		1999	2000	2001	2002	2003	2004	2005	2004/2003	2005/2004	2005/2003		
020423	Fresh or chilled boneless cuts of sheep		222		365	345	241				-30.1	-100.0	-100.0
020430	Frozen lamb carcasses and half-carcasses												
020441	Frozen sheep carcasses and half-carcasses			26		674	303	332			-55.0	9.6	-50.7
020442	Frozen cuts of sheep, with bone			437	399	814	1801	656			121.3	-63.6	-19.4
020443	Frozen boneless cuts of sheep	3 478		446	142	153	97				-36.6	-100.0	-100.0
020450	Fresh, chilled or frozen meat of goats												
020610	Fresh or chilled edible offal of bovine animals	57	41	97	123	141	313	32			122.0	-89.8	-77.3
020621	Frozen edible bovine tongues	188	97	416	1616	642	680	116			5.9	-82.9	-81.9
020622	Frozen edible bovine livers			68	102	430	538	208			-61.3	-61.5	-85.1
020629	Other frozen edible bovine offal	25 467	20 903	.	28	69	15 879	43 112			22 913.0	171.5	62 381.2
020630	Fresh or chilled edible offal of swine		124	1 247	909	698	4 476	62			541.3	-98.6	-91.1
020641	Frozen edible swine livers	5 957	91	28	222	47	96	31			104.3	-67.7	-34.0
020649	Frozen edible offal of swine	21 481	31 353	10 654	125		9	12				33.3	
020680	Fresh or chilled edible offal of sheep, goats												
020690	Frozen edible offal of sheep, goats					395					-100.0		-100.0
020710	Fresh or chilled fowls of the species gallus domesticus, ducks, geese, turkeys, not cut in pieces												
020711	Fresh or chilled fowls of the species gallus domesticus, not cut in pieces	124	461	458	653	273	867	101			217.6	-88.4	-63.0
020712	Frozen fowls of the species gallus domesticus, not cut in pieces	.	569	2 196	2 780	2 704	15 449	557 985			471.3	3 511.8	20 535.5
020713	Fresh or chilled cuts and edible offal of the species gallus domesticus	696	1 781	8 366	12 301	3 178	35 556	12 276			1 018.8	-65.5	286.3
020714	Frozen cuts and edible offal of the species	27	320	1 729	1 268	1 816	418 163	1 354 592			22 926.6	223.9	74 492.1

HS6 code	Product description	Exports to the EU-15, value in euros								Change (%)					
		1999	2000	2001	2002	2003	2004	2005	2004/ 2003	2005/ 2004	2005 /2003				
	gallus domesticus														
020724	Fresh or chilled turkeys of the species domesticus, not cut in pieces				359			52						-100.0	
020725	Frozen turkeys of the species domesticus, not cut in pieces		118			61						-100.0			-100.0
020726	Fresh or chilled cuts and edible offal of the turkeys of the species domesticus	53		61	265	605	2 948					387.3		-100.0	-100.0
020727	Frozen cuts and edible offal of the turkeys of the species domesticus				80	223	48					-78.5		216.7	-31.8
020732	Fresh or chilled ducks, geese, not cut in pieces			231		65	1 505					2 215.4		-100.0	-100.0
020733	Frozen ducks, geese, not cut in pieces		77	156		293	405					38.2		-30.9	-4.4
020734	Fresh or chilled edible fatty livers of ducks or geese of the species domesticus						2 923							-100.0	
020736	Frozen cuts and edible offal of ducks and geese						6 709							-100.0	
020810	Fresh, chilled or frozen meat and edible offal of rabbits or hare		236				103							-100.0	
020890	Fresh, chilled or frozen meat and edible offal of pigeons, seal, reindeer, etc		49	62	52	564 062	324					-99.9		-100.0	-100.0
020900	Pig and poultry fat		62	23	54	61	9 330					15 195.1		-99.4	-11.5
021011	Hams, shoulders and cuts thereof of swine, salted, in brine, dried or smoked, with bone		61	167	800	429	348					-18.9		-64.1	-70.9
021012	Bellies and cuts thereof of swine, salted, in brine, dried or smoked		215	244	842	202	41					-79.7		-92.7	-98.5

HS6 code	Product description	Exports to the EU-15, value in euros								Change (%)		
		1999	2000	2001	2002	2003	2004	2005	2004/ 2003	2005/ 2004	2005 /2003	
021019	Other meat of swine, salted, in brine, dried or smoked	25	1 840	3 225	22 425	190 669	78 304	371	-58.9	-99.5	-99.8	
021020	Meat of bovine animals, salted, in brine, dried or smoked		70	4 740	8 503	6 687	33 730		404.4	-100.0	-100.0	
021090	Meat and edible offal, salted, in brine, dried or smoked (excl. bovine and swine)		46	91								
021099	Other meat and edible offal, salted, in brine, dried or smoked					188	1 370		628.7	-100.0	-100.0	
02	Trade broken down at chapter level only						369 316	1 749 787		373.8		
160100	Sausages and similar products of meat, offal or blood	104 680	50 825	94 707	143 289	58 271	51 955	12 569	-10.8	-75.8	-78.4	
160210	Homogenised prepared meat, offal or blood, as infant food or for dietetic purposes				77	610		1 097			79.8	
160220	Preparations of liver	1 327	797	1 851	386	72	829	27	1051.4	-96.7	-62.5	
160231	Meat or offal of turkeys, prepared or preserved				2 264	1 532	1 330	34	-13.2	-97.4	-97.8	
160232	Meat or offal of fowls, prepared or preserved		112	214	27 204	73 382	18 789	23 681	-74.4	26.0	-67.7	
160239	Meat or offal of ducks, geese and guinea fowl, prepared or preserved				635	141	120		-14.9			
160241	Hams and cuts thereof, prepared or preserved	352	6 443	4 920		533	195	2 798	-63.4	1 334.9	425.0	
160242	Prepared and preserved shoulders and cuts thereof, of swine		157	2 194				186				
160249	Prepared and preserved meat and offal of	31	490	4 943	149 289	208 094	39 805	27 243	-80.9	-31.6	-86.9	

HS6 code	Product description	Exports to the EU-15, value in euros								Change (%)			
		1999	2000	2001	2002	2003	2004	2005	2004/ 2003	2005/ 2004	2005 /2003		
	swine, excl. sausages, hams												
160250	Prepared and preserved meat and offal of bovine animals, excl. sausages, hams		1 789	11 664	32 203	13 903	5 106	17 515	-63.3	243.0	26.0		
160290	Other prepared and preserved meat, offal or blood	12 715	2 536	10 069	1 336	66	3 438		5 109.1				
16	Trade broken down at chapter level only						10 673	23 448					
HS02 total		99 627	95 303	98 876	139 535	821 742	2 160 697	6 572 591	162.9	204.2	699.8		
HS16 meat total		119 105	63 149	130 562	356 683	356 604	132 240	108 598	-62.9	-17.9	-69.5		
Total meat and meat products		218 732	158 452	229 438	496 218	1 178 346	1 923 621	4 931 638	63.2	156.4	318.5		

Source: Dataset DS-016893; the author's calculations.

Note:

	Unprocessed products
	Processed products



HS6 code	Product description	Exports to the EU-15, value in euros										Change (%)		
		1999	2000	2001	2002	2003	2004	2005	2004 / 2003	2005 / 2004	2005 / 2003			
030264	Mackerel except fillet, liver, roe, fresh, chilled			162	248	223	125	162	-43.9	29.6	-27.4			
030266	Eels except fillets, livers & roes, fresh, chilled	324 555	244 835	260 200	185 717	196 801	48 306	88 402	-75.5	83.0	-55.1			
030269	Fish, nesoi, with bones, fresh or chilled	3 433 705	3 590 597	3 241 368	1 999 712	1 090 368	1 091 990	778 025	0.1	-28.8	-28.6			
030270	Fish livers and roes, fresh or chilled				374	57	3 366		5 805.3					
030310	Pacific salmon, with bones, frozen		42	34										
030311	Frozen sockeye salmon					98		136						
030319	Frozen pacific salmon													
030321	Trout (salmo trutta, salmo clarki, etc.), frozen		829	254	191	3039	73		-97.6					
030329	Salmonidae nesoi, with bones, frozen		3 682	62	27	382	53		-86.1					
030331	Halibut/greenland turbot ex fillet/liver/roe frozn		198					17						
030332	Plaice except fillets, livers and roes, frozen	88												
030333	Sole, except fillets, livers and roes, frozen		149											
030339	Flat fish nesoi except fillets, livers, roes, frz	95	29 126	2 013	31		42 842	373		-99.1				
030341	Albacore/longfinned tunas ex fillet/lvr/roe frozen				194									



HS6 code	Product description	Exports to the EU-15, value in euros										Change (%)				
		1999	2000	2001	2002	2003	2004	2005	2004 / 2003	2005 / 2004	2005 / 2003					
030344	Frozen bigeye tunas				223											
030349	Tunas nesoi, with bones, frozen				212				113							
030350	Herrings except filets, livers & roes, frozen		631			9 647			5 027				-47.9			
030360	Cod except filets, livers and roes, frozen		521		305	307			81	123 852			-73.6	152 803.7	40 242.7	
030371	Sardines except filets, livers and roes, frozen	16 559	25 484		16 070				5 464	150				-97.3		
030373	Atlantic pollock except fillet, liver & roe frozen				251	314							-100.0			-100.0
030374	Mackerel except filets, livers and roes, frozen	3281	816		126	81			83	56			2.5	-32.5	-30.9	
030376	Eels except filets, livers and roes, frozen	15472	19 384	523		17 362				10 125			-100.0			-41.7
030378	Whiting & hake, except filets, liver, roe, frozen	8430							5079					-100.0		
030379	Fish, nesoi, with bones, frozen	703 682	371 294	354 488	477 416	528 409			286 794	91 104			-45.7	-68.2	-82.8	
030380	Fish livers and roes, frozen	22 169		9 644	2 187	153			1 633				967.3	-100.0	-100.0	
030410	Fish filets & other meat, excluding fish steaks fresh/chilled	13 013 447	15 446 558	13 335 789	15 753 509	16 541 115			19 556 714	20 803 749			18.2	6.4	25.8	
030420	Fish filets, frozen	4 399 656	4 384 735	5 733 781	7 362 597	6 944 464			8 358 566	6 955 773			20.4	-16.8	0.2	
030490	Other fish meat, nesoi, except fish steaks, frozen	13 814	304 992	400 953	339 354	367 332			366 394	322 823			-0.3	-11.9	-12.1	
030520	Fish liver & roe, dried, smoked, salted or in brine		71 830	226 320	205 515	159 910			249 449	175 991			56.0	-29.4	10.1	



HS6 code	Product description	Exports to the EU-15, value in euros								Change (%)					
		1999	2000	2001	2002	2003	2004	2005	2004 / 2003	2005 / 2004	2005 / 2003				
030710	Oysters, live, fresh, chilled, frozen, etc		896					69					-100.0		
030739	Mussels, frozen, dried, salted or in brine							10						-10.0	
030741	Cuttle fish & squid, live, fresh or chilled			223	156					5 734					
030749	Cuttle fish & squid, frozen, dried, salted or in brine		43	100	753	441				561				1171.5	
030759	Octopus, frozen, dried, salted or in brine				291	113							-100.0	-100.0	
030799	Molluscs etc nesoi, frozen, dried, salted or in brine				112					80				-100.0	
03	Trade broken down at sector level only									2 657 383					
160300	Extracts and juices of meat, fish and crustaceans, molluscs and other aquatic invertebrates								719						10 989.3
160411	Prepared and preserved salmon, whole or in pieces (excl. minced)		46	90	16 357	30 497				178 689					1 521.4
160412	Prepared and preserved herrings, whole or in pieces (excl. minced)		741 592	1 380 982	2 346 972	2 626 051				1 850 437					6.1
160413	Prepared and preserved sardines and sprats, whole or in pieces (excl. minced)		1 163 165	1 673 901	2 077 136	1 568 352				1 733 054					-8.6
160414	Prepared and preserved tunas, whole or in pieces (excl. minced)		226	1 570	217	5 630				921					-97.2

HS6 code	Product description	Exports to the EU-15, value in euros								Change (%)		
		1999	2000	2001	2002	2003	2004	2005	2004 / 2003	2005 / 2004	2005 / 2003	
160415	Prepared and preserved mackerel, whole or in pieces (excl. minced)	78	138		19 004	25	1 819	1 296	7 176.0	-28.8	5 084.0	
160416	Prepared and preserved anchovies, whole or in pieces (excl. minced)				69							
160419	Other prepared and preserved fish, whole or in pieces	353 981	173 863	270 022	200 323	248 379	296 765	432 517	19.5	45.7	74.1	
160420	Other prepared and preserved fish, excl. whole or in pieces	1 133 141	711 583	769 973	1 915 996	1 820 239	1 779 704	1 350 307	-2.2	-24.1	-25.8	
160430	Caviar and caviar substitutes		754	2 906	4 402		556	16 251		2 822.8		
160510	Crab, prepared or preserved				26	34			-100.0		-100.0	
160520	Shrimps and prawns, prepared or preserved	419 717	556 498	882 127	1 189 769	931 803	795 633	1 321 510	-14.6	66.1	41.8	
160530	Lobster, prepared or preserved											
160540	Other crustaceans, prepared or preserved											
160590	Molluscs and aquatic invertebrates, prepared or preserved		143 117			625	4 981	7 400	697.0	48.6	1 084.0	
16	Trade broken down at sector level only							583 185				
HS03 total		22 325 359	26 711 191	23 737 833	26 482 301	25 919 985	33 016 110	39 882 118	27.4	20.8	53.9	
HS16 fish total		3 811 674	4 641 108	6 232 151	7 770 271	7 232 354	7 225 810	10 105 151	-0.1	39.8	39.7	
Total fish and fish products		26 137 033	31 352 299	29 969 984	34 252 572	33 152 339	40 241 920	49 987 269	21.4	24.2	50.8	

Source: Dataset DS-016893; own calculations.

Note:

	Unprocessed products
	Processed products

**Table A3.** The value of exports of milk and milk products to the EU-15

HS6 code	Product description	Exports to the EU-15, value in euros										Change (%)	
		1999	2000	2001	2002	2003	2004	2005	2004/2003	2005/2004	2005/2003		
040110	milk and cream, not concentrated or sweetened, fat <=1%	30	93		624	268	34 237	109 087	12 675.0	218.6	40 604.1		
040120	milk and cream, not concentrated or sweetened, fat 1-6%	5 215	203 432	7 877		8 582	75 134	93 046	775.5	23.8	984.2		
040130	milk and cream, not concentrated or sweetened, fat >6%	1 992	412 132	737 027	725 236	858 578	2 118 420	4 827 021	146.7	127.9	462.2		
040210	milk and cream in powder or granules, fat <=1.5%	7 871 220	15 414 681	5 113 428	12 180 411	12 180 411	18 148 703	13 730 175	49.0	-24.3	12.7		
040221	milk and cream in powder or granules, fat >1.5%, unsweetened	1 128 676	4 729 253	13 589 201	12 479 664	7 770 860	12 347 893	16 139 339	58.9	30.7	107.7		
040229	milk and cream in powder or granules, fat >1.5%, sweetened		41 057	79	526	447	628	494	40.5	-21.3	10.5		
040291	milk and cream, concentrated but unsweetened (excl. in powder or granules)		75		127	287	10 028		3394.1				
040299	milk and cream, concentrated and sweetened (excl. in powder or granules)	33	33	303	53	1 189	4 993		319.9				
040310	yoghurt	640	6 039	5 977	9 561	57 348	1 917 619	2 346 030	3 243.8	22.3	3 990.9		
040390	buttermilk, curdled milk and cream, kephir or other acidified milk	604	440 522	964 507	1 073 312	1 399 789	272 683	835730	-80.5	206.5	-40.3		

HS6 code	Product description	Exports to the EU-15, value in euros								Change (%)		
		1999	2000	2001	2002	2003	2004	2005	2004/2003	2005/2004	2005/2003	
040410	whey			3 937	141 268		19 260	56 976		195.8		
040490	products consisting of natural milk constituents				207		228	283		24.1		
40500	butter and other fats and oils derived from milk											
040510	butter (excl. dehydrated butter and ghee)	4 138 728	8 512 458	4 442 687	7 878 142	10 873 413	16 948 272	4 876 113	55.9	-71.2	-55.2	
040520	dairy spreads		88		52	112		58			-48.2	
040590	fats and oils derived from milk, dehydrated butter and ghee					42 900	691 454	984851	1511.8	42.4	2195.7	
040610	fresh cheese and curd	1 710	850 997	2 289 757	2 263 774	2 718 068	2 714 896	4 416 016	-0.1	62.7	62.5	
040620	grated and powdered cheese		54		571			61 440				
040630	processed cheese, not grated or powdered	8 952	267	929	292	648	2 864	2 163	342.0	-24.5	233.8	
040640	blue-veined cheese			398	124	26	22	106	-15.4	381.8	307.7	
040690	other cheese	17 924	3 022 926	5 820 455	7 175 675	12 499 433	7 807 777	13 644 551	-37.5	74.8	9.2	
04	trade broken down at chapter level only — primary products						4 654	302 312.377				
04	trade broken down at chapter level only — processed intermediate products						100 627	2 151 304.71				
04	trade broken down at chapter level only — processed products for HH consumption						26 933	1 303 398.14				
210500	ice-cream and other edible ice	27	4 115	9 314	9 854	10 259	177 127	376 801	1 626.6	112.7	3 572.9	

HS6 code	Product description	Exports to the EU-15, value in euros								Change (%)			
		1999	2000	2001	2002	2003	2004	2005	2004/2003	2005/2004	2005/2003		
21	trade broken down at chapter level only						5 590	66 763					
	Primary products	7 237	615 657	744 904	725 860	867 428	2 232 445	5 331 466	157.4	138.8	514.6		
	Processed intermediate products	13 138 657	28 697 645	23 149 635	31 960 075	30 869 619	48 272 086	37 939 594	56.4	-21.4	22.9		
	Processed products for HH consumption	29 857	4 324 920	9 091 337	10 533 163	16 685 571	12 925 511	23 052 998	-22.5	78.4	38.2		
	Total milk and milk products	13 175 751	33 638 222	32 985 876	43 219 098	48 422 618	63 430 041	66 324 058	31.0	4.6	37.0		

Source: Dataset DS-016893; the author's calculations.

Note:

	Primary products
	Processed (intermediate) products mainly for industrial use
	Processed products mainly for household consumption