INTERNATIONAL FARM MANAGEMENT CONGRESS 2003
FARMING AT THE EDGE

MANAGING COMPETITIVENESS IN FOOD PRODUCTION TOWARDS EU ACCESSION (Hungarian case study)

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Abstract:
Hungarian companies in the food sector operate in an increasingly competitive domestic and international environment. These competitive forces will gather strength upon Hungary's integration into the European Union. Increasing management performance, quality enhancement, cost cutting and timely response to signals of a booming market are elemental interests of each Hungarian agri-business that wishes to be successful.

The competitiveness of Hungarian food production is decisive factor of the agricultural policy. The competitiveness of food processing depends heavily on the level of development of raw material production. Food processing requires a solid agricultural base capable of producing high volumes of top quality raw material. The reverse side of this influence is also at play. High quality and efficient food processing capable of producing goods that meet world market requirements is a major driving force in the improvement of the competitiveness of agriculture. The position of agricultural producers and conditions of their operation are basically determined by the processing industry

The future of Hungarian food production and specially of the three livestock (meat, poultry and dairy) branches studied depends on attaining higher levels of competitiveness. That requires continuous improvement of the performance of these branches and the related production of raw material. Increasing competitive capacity in the marketplace hinges on the level of understanding and meeting consumer requirements, on implementing best practice solutions in production, on improving productivity and on developing innovative products and cost saving methods of processing.

Collaboration between the private sector, state agencies, and universities will be beneficial in bringing high-tech equipment and processing and marketing techniques. New products and new technology could be initiated by a stronger collaboration between state agencies, universities, research centers and the private sector. Contractual arrangement to develop new products or new packaging or new processing techniques would need multiplied.

Large chains of super and hyper-markets have emerged in the early 90s, soon after the launching of economic reforms. Entrepreneurs in the food industry already know how the demands of retail industry. The absence of trade barriers for food products between Hungary and the EU after accession will call for an even more proactive new strategy to be developed by Hungarian food processors.

The study using the methodology of the analysis is benchmarking, that is, a comparison at sector level, by taking into account the structures of the most developed EU countries and Hungary. Benchmarking is one of the means of furthering the above objectives as it aims at identifying and adopting superior business solutions that help realize competitive levels of performance. Benchmarking produces development programs and strategies that allow the application of these best practices of operation. The conclusions can drive the management decisions for agricultural enterprises.

Background

As a results of the reforms of the early 90's, the Hungarian agricultural sector now operates in a macro-economic and trade environment with direct links to the world market. Both producer and consumer price is fully liberalized and despite some distortions, reflect border prices. Producer prices are about 30 percent lower than EU domestic producer processed, but when transport is considered, should not be very far form the border prices. Consumer process is somewhat higher, around US consumer process levels, but still lower than EU domestic consumer prices.

Food consumption patterns have greatly changed over the past forty years, yielding two different trends before and after the end of 80s. On the long run the consumption of all products except cereals and potatoes, has increased. From the 50s to the late 80s the consumption of meat, dairy, fats and oils, sugar and eggs increased dramatically. The, under both an income and price effect, consumption of food either decreased rapidly (meat, dairy and eggs), continued to decrease (cereals), or stabilized (potatoes, fats and oils and sugar). In real terms, per capita income decreased by about one-fourth since 1990.

The share of food products in the average household budget has remained stable, at about 25 percent. While the share of other sectors like beverage, clothing, durable goods have slightly decreased and the share of energy and services have increased.

Food retailing has increased its activities for the highest income segments of the population, but significantly lost their clientele from low income families. This last segment of the consumer spectrum has developed its own, „unregistered channels" At the same time, small farms turned to subsistence farming and abandoned the „registered" marketing channels. This change was favored by (a) the aggressive marketing policies put in place by large food distribution chains,

geared toward the medium and high-income segments of population, with clear objective of meeting the international trends in quality and variety of products, (b) the poor development of the range of cheaper food products, and (c) the tax system that tends to favor non-registered sales from farmers. As a result, the black market appears quite active in the agricultural and food sector.

The privatization of agriculture and food industry is nearly completed. This privatization benefited from rather energic policy and has resulted in the nearly full privatization of land. Cooperative farms have been largely restructured and have tended to evolve toward service cooperatives rather than production cooperatives, state farms have been mostly privatized. Finally, in 2001, the food-processing sector is mostly private. This has been a deliberate, although debated, choice of the Government, in order to facilitate the fast introduction of foreign expertise in term of technology and marketing, while also ensuring the necessary investment and minimum availability of working capital.

Inputs are supplied by well-established private firms, but there is a scope for faster technology transfer to agricultural producers. The chain of private technology transfer to agricultural producers through wholesalers and retailers appears to be getting stronger. Over the past ten years, policy and regulatory changes have allowed a large number of private foreign and domestic input companies to enter the market and introduce new technology such as seeds of new cultivates, new pesticides, new genetics for livestock, etc. Consumption of fertilizers has changed drastically and stabilized at much lower level than before the economic reforms.

Hungarian companies in the food processing sector operate in an increasingly competitive domestic and international environment. These competitive forces will gather strength upon Hungary's integration into the European Union. Increasing performance, quality enhancement, cost cutting and timely response to signals of a booming market are elemental interests of each Hungarian business that wishes to be successful.

The competitiveness of Hungarian food production is decisive factor of the agricultural policy. The competitiveness of food processing depends heavily on the level of development of raw material production. Food processing requires a solid agricultural base capable of producing high volumes of top quality raw material. The reverse side of this influence is also at play. High quality and efficient food processing capable of producing goods that meet world market requirements is a major driving force in the improvement of the competitiveness of agriculture. The position of agricultural producers and conditions of their operation are basically determined by the processing industry
The future of Hungarian food processing and of the three branches studied depends on attaining higher levels of competitiveness. That requires continuous improvement of the performance of these branches and the related production of raw material. Increasing competitive capacity in the marketplace hinges on the level of understanding and meeting

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Methodology

The future of Hungarian food processing and the three branches studied depends on attaining higher levels of competitiveness. That requires continuous improvement of the performance of these branches and related production of raw material. Increasing competitive capacity in the market place hinges on the level of understanding and meeting consumer requirements, on implementing best practice solutions in production, on improving productivity and on developing innovative products and cost saving methods.

The methodology of the analysis is benchmarking, that is, a comparison at sectorial level, by taking into account the structures of the most developed EU countries and Hungary. Benchmarking is one of the means of furthering the above objectives as it aims at identifying and adopting superior business solutions that help realize competitive levels of performance. Benchmarking produces development programs and strategies that allow the application of these best practices of operation.

The depth of the benchmarking analysis of the three branches of the food sector was limited in that the necessary information was not readily available in some of the branches and it was sometimes even impossible to obtain data. When benchmarking the sector I worked with trends rather than static reference points of existing performance ratios and processes and shifted the emphasis to comparative analysis.

Results and Facts

The Meat Sector

Determined by natural and economic circumstances, the production and processing of fattened pigs in Hungary is heavily export-oriented. About a quarter or a third of Hungary's total pork production is still sold at various levels of processing in foreign markets.

The drop in demand for beef in foreign markets and the quality of beef cattle (the high ratio of dairy animals) determine the foreign trading positions of Hungarian exports. Western European product surpluses and the sell-off of those surpluses at inferior prices reduced Hungarian export shipments in addition to exerting adverse influence on the domestic market of the country.

Most of beef exports is targeted at markets in EU member countries. Hungary exported to that region 86% of 9.3 thousand tons in 1999,. hind quarters made up 60% of total exports.

Year-on-year changes of sheep stock have caused a major contraction of the basis of exportation. The shortage of exportable goods drove Hungary out of export markets in the Middle East in the early 1990s. Exports are practically limited to European countries. Italy is traditionally the largest partner and takes up the majority of Hungarian exports. Italy being almost the only export market for Hungarian mutton in the mid-1990s and their current share of about 90% signify the importance of the Italian market.

Currently available information, regarded to be complete, suggests that there are 833 registered businesses, organizations or units operated in meat processing. The large scale operations that have survived from the former structure of the meat sector are typically engaged in a variety of lines (principle of combining), whilst small and medium sized plants pursue two operations (normally slaughtering and processing pigs) with the smallest ones specializing in one activity. 57.4% of all enterprises in meat processing slaughter pigs and have widely differing capacities.

The capacity available in Hungary for slaughtering pigs is suitable for 10 million animals. Operated in a single shift (5 days a week, 8 hours a day), the 478 pig slaughterhouses have the capacity to slaughter 8,879,310 pigs. 2.5% of all the slaughterhouses (12 plants) have the capacity to slaughter 5,293,000 pigs among hygienic conditions conforming to EU requirements.

Cattle slaughtering capacities are of two categories: small and large scale. Small scale plants have the capacity to slaughter 1000 animals a year, those with higher capacity are large scale operations. 250 plants are engaged in slaughtering cattle with only 15 pursuing this activity as its sole business. The annual capacity for slaughtering cattle is 408,300 animals with the 10 EU conform plants (representing 64 % of total capacity) capable of slaughtering 261,500 animals.

There are major slaughterhouses in Hungary for sheep. Both of them ship export goods first of all. In addition, there are several slaughterhouses with smaller capacity, which are suited to slaughtering sheep and the owners hold the required license, yet the plants are not involved in slaughtering sheep on a continuous basis. Most of these plants focus mainly on and are suitable for slaughtering pigs and will, as a complementary line, take orders for slaughtering sheep. Located in the various regions of the country, there are 106 such slaughterhouses in the registers in Hungary. They would typically operate in regions with a high population of sheep.

Some of the regions suffer from the lack of harmony between raising animals for slaughtering and the regional distribution of slaughtering capacity. In some of the regions, EU conform capacities fall short of the volume of animals raised for slaughtering, whilst in others seem to be too secure.

Farming businesses are the major source of raw materials for large scale operations both in terms of volume and ratio. Output volumes vary in this segment too. 1996, when output reached nearly 2.2 million animals, was followed by two years when supply dropped by about 400,000 animals. In 1999, the volume sold to large scale operations rebound to 2 million. Cooperatives have been subject to a similar tendency of changes. Small private farms do not form a stable basis of production. Supply is extremely flexible in the sector, however, this flexibility is frequently shaped by pressure rather than reason.

In 1999 total stock data suggest that small private farms raised 56% of the total population of pigs and 49% of sows. The stock concentration of private farms has increased in recent years as stock expansion topped the number of pig raising farms. Even so, the number of farms raising a few pigs only is very high. That makes it very difficult to calculate output precisely. Whenever there is surplus supply, this is the source of mainly poor quality pigs for slaughter that could (and will) disturb the market.

Inferring from the total number of beef cattle raised and the total number of exported live beef cattle, 170 thousand beef cattle must have been slaughtered in Hungary in late nineties. The capacity utilization of slaughterhouses was 40%.The available slaughtering capacity would be sufficient for all the beef cattle raised in Hungary, and even the EU conform capacity has excesses over domestic production.

A few cooperative farms that raise cattle give up animal husbandry and part of their stock is transferred to corporate farms. Both the number of entities raising cattle and those raising cows and cows in first calf dropped by 7% between December1999 and December 2000. The number of corporate farms raising cattle increased by 17%, whilst 14% of the cooperatives and 7% of small private farms left off cattle raising. Animal concentration reduced in corporate farms but even so, these organizations raise more than 900 cattle and 440 cows on average. The average number of cattle and cows was 610 and 290, respectively, in cooperative farms in 2000. Small private farms kept 4.5 cows and 7.6 cattle on average, despite the increasing stock size. CSO data (of March 31, 2000) show a reduction of cow raising farms from 879 to 451, and a corresponding drop in cattle raising corporate farms from 1018 to 579.

The ewe population counted 984,841 in 1999. The majority – 85-90% – of sheep for slaughter from these ewes is sold and processed abroad. The market meets the modest consumer demand by fresh products and processed meat, some of which is imported. CSO data indicate that 190 corporate farms, 90 cooperatives and 23,000 small private farms raise sheep. (The figures are higher than the number of sheep raising farms registered with the Sheep Product Board.)

The transformation that occurred in Western Europe and brought with it the concentration of initial processing (slaughtering) and the high level specialization of processing units left the domestic meat sector intact. 526 of the 833 operations pursue a single line of business. The former figure includes plants operated in commercial, educational and welfare institutions and 32 businesses engaged in other activities. Almost all of the large companies pursue multiple operations (except for 1 cattle slaughtering and 6-8 processing units) and some of them are EU conform. Large scale corporations were typically organized using the "principle of combining", which causes multiple problems with hygiene, plant organization and material handling.

Except for 2 plants, the 12 pig slaughterhouses accepted for exporting to the EU were modernized in the mid 1980s, and have since been maintained at the average of the EU standard through the replacement of machinery.

Meat processing plants can be divided into three categories based on the level of technical and technological development:

- modern processing units in large export plants and new processing units constructed in recent years,
- more or less modernized plants that embarked on machine replacements, and modernization projects including the addition of new lines (packaging) and diversifying into new products (products made through accelerated aging, rapid curing, drying),
- old plants with mostly obsolete machines.

Except for the first category, meat processing units – regardless of their size – typically lack homogeneity and tend to operate assets that are at different levels of development. Large scale plants engaged in exports have modern organ removal lines, but the rate of utilization is market dependent. These plants boast the most modern organ removal lines, cutting and meat processing equipment. The small plants are the most controversial. Cutting edge equipment complements 25-30 year-old machines (e.g. 35 year-old cutter and computer controlled heat treatment). The lack of homogeneity caused by obsolete buildings and where technological processes intersect is typical of almost all the small operations.

Annual average prices were HUF 4.74/kg higher than the cost of production in the pig-to-pork sector in 1999. The annual amount of specific support for quality moved around HUF 14.70/kg of live body mass in the E, U and R quality categories. Income plus subsidies per HUF 100 of production costs hardly reached HUF 10. Our calculations suggest that sales prices fell short of production costs in the first half of 2000. Quality subsidies granted for intervention purposes in categories E, U and R were used to finance this cost element, which is not recognized in prices.

The cost and income relations of beef cattle production are not uniform, either. A unit of beef cattle is sometimes produced above average and at other times below average cost. Data from corporate farms show that the average cost of raising one kilogram of beef cattle was HUF 248 in 1999. The top ten per cent including lowest cost producers spent HUF 179, whilst the bottom ten per cent including high cost producers spent HUF 336 on raising one kg of live body mass of beef cattle. These extremes became less harsh in last years.

An analysis of the development of capital expenditures and subsidies reveals the handicap of the processing sector and the inappropriate bundling of vertical effects. Raw material production and processing are separated stages, which indicates that the concept of structural stabilization in the market is not effective as yet. Despite higher subsidies, the shortage in product bases causes cyclical economic problems, particularly in high quality categories eligible for exports. The recipients of subsidies are not necessarily the same entities that stand up for concentration and specialization in the marketplace. Subsidies are by nature product subsidies granted to a stage in the chain of production, which is why there is no uniform vertical approach to the product chain.

The meat sector is one of the most important branches of the food sector in Hungary and as such, is the major market for animals for slaughter. The meat sector employs the largest number of people in food processing with more than 700 operations pursuing meat processing as their core business.

The number of plants with USDA and EU export certificates is substantial in the Hungarian meat sector. These plants comply in all respects with international requirements of hygiene. More than two thirds of both pig and cattle slaughtering capacities are licensed to export to the EU. About half of the plants are certified under ISO and/or HACCP.

In contrast with the aforementioned factors that boost competitiveness, there is a cluster disadvantages burdening the Hungarian meat sector in the face of Western European competition. The sector suffers from low capacity utilization, which drives high the ratio of fixed costs to total production costs. The utilization of slaughtering capacity is especially disadvantageous and capacity utilization below 80% even in manufacturing. Plant concentration and specialization is more significant in EU countries that are considered more competitive in terms of benchmarking and they are capable of utilizing the advantages of economies of scale more efficiently.

The plants sold to foreign owners have implemented large-scale development projects in Hungary. Nevertheless, the technical and technological level of Hungarian meat processing plants falls short of that of the competition in Western Europe. The low profitability of meat processing disallows major capital expenditure.

Hungarian exports are typically goods with low added value, whilst the products manufactured for the domestic market are made using old recipes and contain decreasing amounts of meat, which epitomizes outdated modes of food consumption. Although innovative and successful products are few and far between there are some signs of improvement triggered by intensifying competition. In contrast, the export portfolio of competitors in Western Europe is dominated by higher added value products obviously sold at higher export prices.

The competitiveness of the Hungarian meat sector suffers from inferior productivity ratios in raising pigs in contrast with those in developed countries. The majority of large pig farms meet Western European standards. Small and medium sized plants show vast differences in terms of weight gain and feed conversion. The ratios of small private farms are even worse. Meat yield ratios are also poorer than in developed countries. Improving the technology of raising is a fundamental interest in the pig and cattle for beef sectors as well as in rearing sheep so as to be able to improve competitiveness.
Cattle herd is specific in terms of dairy production, the meat production is yet not so important. Meat specialized cattle herd constitutes a very low proportion in the national herd. The beef production is lagging behind the EU average figures in efficiency, with specific respect to the climatic conditions, feed production and yields.

The progeny in sheep farming is low, which is a consequence of the fragmented nature of the stock of animals and the general reduction of the level of professional know-how.

Poultry Sector

Hungary's poultry production is export-oriented, the level of self-sufficiency varies between 140% and 170%. Exports are significant in chicken production and also decisive in other birds (turkey, geese, ducks). The majority of processed poultry meat is sold in the member states of the European Union. As a special feature of the Hungarian poultry sector, the range of processed products is particularly wide even by international standards. The overwhelming majority of processing plants slaughter two or more types of poultry, which is again special to Hungary.

Domestic sales are dominated by chicken legs representing more than 16% of the total volume and showing an uninterrupted increase. Other popular products among Hungarian consumers are chicken breasts, turkey legs and turkey breasts. In addition to primary poultry products, processed poultry products also play an increasing role in domestic sales ranging from inexpensive sausages and cold cuts to the more expensive gourmet products such as cutlets in breadcrumbs filled with ham and cheese, ready-to-serve and canned products. The same companies and plants dominate the domestic market and account for the majority of exports.

The highest export revenues are earned from two types of birds, i.e. chicken and geese. (Feathers included, the geese sector undoubtedly ranks first.) Broiler chickens account for one third of poultry export revenues, followed by geese at 30%, turkey at 18% and ducks at 13%. The selection varies with export markets: the EU member states generally buy smaller volumes of higher value added products while Eastern markets purchase larger volumes of cheaper products. Exports of further processed products are not significant. Western countries import mostly boneless meat for further processing. Although the volumes sold in Eastern countries are higher but they represent the cheaper end of the market.

Although official statistics record imports, they are seen as insignificant in volume, especially compared to exports. Strangely enough, imports largely include lower priced products, e.g. lower chicken legs, necks, rumps and backs, unrealistically cheap upper chicken legs, turkey parts and chicken liver.

Poultry processing plants show a great diversity in terms of the types of birds processed, the variety, level and modernity of the technologies used and their market orientation. Processing capacities are mostly concentrated at former and rehabilitated large plants as well as small and medium-sized enterprises that were formed after 1990 as competition began to emerge and intensify.

There are 19 large plants, five of which are located in the Northern Great Plain and nine in the Southern Great Plain. Hence, the two regions account for the majority of poultry production and processing. Medium-sized slaughter capacities are found in five regions. In the national total they have a share of 15.3% in poultry processing, 4.1% in giant geese and

duck processing and 34.8% in young and fryer geese processing. Small plants with capacities of 12,840 chickens per hour represent 12.5% of the total national capacities. They account for 4.5% of giant turkey processing.
Seventeen plants produce higher value added products, including 15 large, one medium-sized and one small plants.

The data of the National Tax Authority indicate that 545 farms raised poultry in late 90's. The number of farms registered is higher than the total membership recorded by the poultry associations.

In the processing industry, 47 slaughterhouses and processing plants and only two plants producing higher value added products were registered. Following is their breakdown by size:

19 large plants	(more than 250 employees)
10 medium-sized plants	(50 – 250 employees)
20 small plants	(less than 50 employees)

Short of income, processing plants were unable to invest in raw material production. The technological standards of poultry growing represent the most critical area of the sector. Farms that made great efforts and borrowed from banks to improve production achieved world standards e.g. in feed conversion and mortality ratios.

In Hungary poultry slaughtering lines are in good technological condition as a result of regular maintenance and the relatively fast replacement of obsolete machinery and equipment. Technologies satisfy international requirements, large-capacity technologies are supplied by internationally well-known companies (Stork, Meyn, etc.). Medium-sized plants typically purchase most of the equipment from the same international companies but they also operate some locally manufactured machinery. Small plants mostly rely on Hungarian equipment suppliers.

The largest cost item for the Hungarian poultry processing sector is represented by raw material purchases as the industry is by definition heavily material-intensive, and live animals are rather expensive.

Investments in poultry processing showed a diverse and complex picture in the second half of the decade. It is related to changes in the ownership structure of the industry. The installation of new capacities that can quickly adjust to market opportunities led to the downfall of several small and sometimes also large plants while new plants emerged and the ownership structure was transformed.

However, certain areas still lag behind in terms of investments, such as environmental protection, the highly needed modernisation and expansion of sewage and canalisation systems, the treatment of waste and hazardous waste or the

supply of drinking water in accordance with EU requirements. On the other hand moderate progress has been made in laboratory and welfare investments.
A wide variety of business forms exist in raw material production, one of the most frequent forms is contract farming where it is difficult to determine the labour input or wage element of the operation. Families raise poultry as a full-time or mostly part-time activity in return for a flat fee paid by the integrating processing plant. The fee includes several elements such as wages, i.e. the remuneration for the labour input, the depreciation of stalls, heating, lighting, medication, veterinary expenses - just to name the most important items. Hence, the employment figures of poultry raising can only indirectly be analysed by types of birds, i.e. by analysing the structure of prime costs.

Poultry processing plants employ about 17 thousand people, 83% of which are blue-collar workers. The poultry industry is a labour intensive sector relying typically on semiskilled labour. The majority are semiskilled women workers with low qualifications.

The international competitiveness of the poultry sector is more favorable than that of the other sectors covered in this study. Hungarian agriculture is deeply interested in maintaining the competitive position of this sector after European integration. Its innumerable products, commercial relations and structural features may help the poultry sector enter the group of countries that lead the European Union in producing poultry meat. Yet, this sector also displays the symptoms of structural disorders typical of Hungarian agriculture at large.

The genetic bases of the poultry sector are sound. Hungary has decade-long ties with international breeding organizations and hence Hungarian breeding stock is sufficient in terms of both quality and quantity as well as choice to meet market demand. Despite the good breeding stock, the efficiency of raising poultry for slaughtering purposes is by far not satisfactory. The fattening ratios of the broiler variety that represents the mainstream of raising poultry fall short of international standards of output.

Veterinary circumstances are appropriate in Hungary and are not any worse than in EU countries.

A comparative study reveals that the competitive edge Hungary used to have in the cost of broiler production and processing over countries with developed and highly efficient poultry farming sectors no longer exists.

The surplus slaughtering capacity poses a problem. The utilization of poultry slaughtering lines is a mere 63 per cent. The factors of economies of scale are hardly present in this sector either. That is why the concentration of plants should be increased so as to allow the Hungarian poultry-processing sector to face its Western European competitors.

Hungarian plants process several species, in contrast with the foreign practice of focusing on a single species, could be seen as an advantage for a number of reasons. It allows greater flexibility in accommodating the seasonal changes of market demand, it flattens the fluctuation of profit generation due to the differences of the species and to seasonal changes and it reduces unit overhead.

The purchasing price of broilers in Hungary shows no advantage in contrast with the producers that dominate the EU market, moreover, Dutch and Danish prices have remained lower in the long term than Hungarian producer prices. In certain years, even German and Belgian prices stayed below Hungarian ones.

Countries where poultry is produced for slaughter by entities in strong vertical integration among favorable climatic conditions and using inexpensive domestic feed can expect long term success in international poultry trade. The vicinity of the regions that drive the trade in poultry meat – South East Asia, North and South America – and the absence or low level of export subsidies are competitive advantages.

The competitiveness of Hungarian poultry processing seems to be favorable in this respect. Our European competitors suffer from similar drawbacks as we do, as every poultry producing country has to import protein, and their climatic conditions or transport distances are not more favorable either. However, the productivity ratios are superior in the leading poultry producing countries of the European Union than in Hungary, and the macroeconomic environment is also substantially more favorable. Hungary's price and cost advantages over western competitors have thinned away. Hence, heavy reliance on the competitive advantages described above and the elimination of drawbacks are both required for the Hungary poultry sector to compete successfully against Western European market participants in both the domestic and export markets.

Dairy Sector

Demand for dairy products fell until the mid-1990's, consumption dropped by 21 percent. The unfavorable trend resulted from rising consumer prices and deteriorating standards of living. After the mid-1990's, slow recovery was noted but the consumption of dairy products was still way behind the values recorded at the beginning of the decade. Disposable family income largely influences how much is spent on milk and dairy products. As incomes rise, relatively less is spent on liquid milk while the share of cheese in overall spending increases. Relative spending on butter shows no considerable difference in the various income groups. The income position has a significant impact on the volume of milk and dairy product consumption. The difference in the per capita consumption between the highest and the lowest income groups is 1.7-fold for liquid milk, fivefold for cheese and almost threefold for other dairy products. Only butter consumption shows similarities in the individual income groups.

The consumption of dairy products is also widely different in a regional analysis. Consumption is outstanding in the Central Hungarian region which also includes Budapest.

36 percent of the milk to be processed is sold as market milk, of which 73 percent is pasteurized and 27 percent is ultra-pasteurized. Flavored products are pasteurized and ultra-pasteurized in equal proportions of fifty-fifty percent. Two percent of the total milk volume is used for processing such products. Liquid milk is processed up to eight percent for fermented milk and creams, seven percent for cottage cheese, five percent for flavored cottage cheese, thirty percent for natural cheese, one and a half percent for butter, one percent for butter cream, seven percent for milk powder and 0.7 percent for condensed milk.

Roughly half of milk pasteurization is concentrated in the Northern Great Plain. Two large processing companies operate lines of approx. 400 thousand liters per day. Four medium-sized plants have daily capacities of 20-50 thousand liters, and one small plant produces less than 10 thousand liters per day. Another quarter of the production comes from the Southern Great Plains. Typical capacities in the individual plant categories are 400-600 thousand liters, 50-100 thousand liters and less than 10 thousand liters per day. Owing to specialization, the total capacities of individual plants are not closely correlated to plant size. The capacity data on ultra-pasteurized milk indicate a more even distribution of production. Large plants typically operate lines of 100-300 thousand liters per day compared to 40-100 thousand liters at medium-sized plants. Because of high investment and marketing costs, there are no small plants in this product group. Flavored dairy products are sold as pasteurized and ultra-pasteurized products in equal proportions of fifty percent each. About 2% of liquid milk is used for such products. For marketing reasons flavored products are only processed by large and medium-sized plants. The most typical plant capacity is 10-50 thousand liters per day, regardless of headcount categories.

About 30% of the liquid milk or 24% of milk fat is used to process natural cheese. Large plants operate daily capacities of 15-33 tons although there are lines of only 6 tons per day as well. In the medium to small categories of plants, processing capacities are less than 10 tons per day (although one plant operates a 16-ton capacity in this category). Cheese spread processing is heavily concentrated. One company produces 68% of the overall volume on a 25-ton line per day.

Skim and whole milk powder and milk protein concentrate powder is produced from roughly 7% of liquid milk or 1.5% of milk fat. All regions except Central Hungary have powdering capacities for buffering purposes. Powdering is only performed by large plants. Typical capacities vary between 13-18 tons but one large cheese plant runs a line of 38 tons per day to powder whey.

Raw milk production fell by about 800 thousand liters during the last ten years. However, the milk yield per cow increased by almost 8 percent (from 4865 liters to 5245 liters). Still, Hungary lags behind the average milk yield of the EU 15. Three categories can be distinguished in the structure of milk production in Hungary. Farms keeping more than 10 cows sell directly to the dairy industry and are relatively small in number. Farms with 3-10 cows generally sell through milk collection halls and are relatively many. Similarly, a lot of farmers raise 1-2 cows and produce mostly for own consumption.

About 80 percent of the purchased milk is of extra high quality. In accordance with EU quality grades, only this quality will be accepted for human consumption after accession. Tests indicate that there is no significant difference in milk quality between large and small farms at the time of milking, and major differences arise in cooling, storage and transport. The regional comparison of purchased milk quality in accordance with a complex grading system shows a balanced picture: extra high quality is close to or exceeds 80 percent in all regions but the Northern Great Plain. Even though milk consumption fell, consumption and production were in equilibrium in recent years so that seasonal surpluses were exported. Based on the ratio of domestic production to consumption, self-sufficiency varied between 110 and 123 percent in the period of last ten years.

The capacity utilization of milk processing plants is 32 percent in pasteurization and 33 in ultra-pasteurization. Processing capacities are on average utilized up to 27 percent for flavored dairy products, 48 percent for fermented dairy products, 26 percent for cottage cheese, 37 percent for flavored cottage cheese, 68 percent for natural cheese, 42 percent for cheese spreads, 20 percent for butter, 72 percent for butter cream, 40 percent for powders and 31 percent for condensed milk. The national utilization rate is rather low and varies within wide extremes regionally.

The number of cattle and dairy farms is continuously declining. The regional distribution of dairy farms operating in incorporated forms is relatively even although the two regions in the Great Plain record somewhat higher numbers. Individual farmers are largely concentrated in the Great Plain. Incorporated farms keep 350 cows on average compared to 4-5 cows on family farms. In 1999, 720 incorporated farms and 32 thousand individual farmers raised cows.

Of the total dairy herd, specialized farms keep 260-270 thousand mostly Holstein-Friesian cows whose specific potential yield is comparable by international standards. 70% of the herd kept by individual farmers is the double-purpose Hungarian land race, which represents a lower genetic potential compared to Holstein-Friesians but is superior in beef quality.

Dairy farms generally have inadequate technical and technological conditions, and there are only few up-to-date operations. In particular, feed storage and distribution and silage fodder harvest leave a lot to be desired. Harvest and storage losses are especially high in silage fodder. Propagation figures are not too reassuring either - the average of 420 days between calving periods is too high.

In the last records of the National Tax Authority showed 100 milk processing companies, of which only 85 were active. The technological standards of processing were poorer than safety or hygienic standards in all product groups. The weakest point in the processing lines is information technology. Technologies and equipment represent comparable standards by and large.

The changes in milk and dairy product prices greatly influenced demand. The consumer prices of dairy products rose considerably faster than the price indices of other food products, and were much higher than the milk purchase price index. The competitiveness of the cattle sector worsened significantly in the early 1990's. However, it began to stabilize from the middle of the decade in response to the introduction of target prices and the related quality subsidy. Although production costs increased faster than prices up to 1997, operating income especially of incorporated businesses were relatively high in 1998, which in turn encouraged milk production and increased milk yields, and the herd number stopped declining.

The competitiveness of the dairy sector also shows a mixed picture in Hungary. Per capita consumption is much lower at present than the EU average, which also influences the way demand for dairy products moves. The difference is particularly striking in the area of cheese consumption. The choice of products available in Hungary is medium. There are only a few unique products with a much better potential for competitiveness upon EU integration. The technical standard of processing capacities needs further improvement. Furthermore, it would be practical to scale down some production capacities with economies of scale in mind. The existence of large-scale and efficient dairy farms capable of providing raw material of excellent quality to processing plants is considered to be a competitive advantage for the dairy sector.

Seasonal swings in milk production are greater in Hungary than in the countries with developed dairy farming in the EU. The sector could reach higher levels of competitiveness if these swings were eliminated, as seasonal changes require surplus capacities and impose limits on shipments by processing units to distributors.

Although the average yield of milk is lower in Hungary than in the countries with developed dairy farming, but the yield of top-of-the-list Hungarian producers match even the most competitive counterparts. The quota system in effect in the EU may put a cap on any significant increase in milk yields.

Recent years have brought a substantial rise in the price of milk in Hungary, but even so, the price is still much lower than in the countries of Western Europe. The increase of the price of raw milk influences the competitiveness of dairy farms favorably but works against processing operations as they can embark on fewer and fewer capital investment projects due to the flattening of profit margins. The low level of consumer income is a barrier to increasing the price of dairy products.

The quality of raw milk produced by corporate farms meets international standards both in terms of germ count and somatic cell count, whilst germ count is still too high in private farms. Small private farms should therefor exert effort to convert into hygienic and clean dairy operations.

In terms of fat content, Hungarian dairy farming ranks below the developed European standard, but protein content shown marginal deficiencies only.

The structure of Hungarian milk production deviates substantially from that in European countries. The number of cows per farm is much lower than in developed countries. However, once the stock raised by corporate farms and private farmers is separated, the economies of scale of large operations proves to be very much superior to that in the countries of the EU. It will be very practical to make good use of this competitive advantage after accession.

Milk processing in Hungary shows an abundance of operations in contrast with the number of units in EU countries. There, the level of concentration is substantially higher, although the tendency to concentrate is observable in Hungary too. The average daily turnover of milk at Hungarian processing plants is a fraction of that in large Western European operations. Hence, the ratio of fixed costs to unit cost of production is much higher in this country than with the leading processing operations of developed countries.

The efficiency of live labor (number of employees/annual amount of processed milk) is much lower in Hungary than in the EU. Major improvements are needed in this domain to reach higher levels of competitiveness.

The percentage share of dairy products from food expenditure is not at great variance with the figure typical of developed countries, yet the difference is large in absolute terms. The structure of consumption in Hungary is also slightly different from that in Western Europe. There, the consumption of cheeses is much higher, whilst the consumption of fermented products and drinking milk dominates in Hungary. The utilization of raw milk obviously follows this pattern.

The export of milk and dairy products is insignificant when compared to the dairy product exports of developed Western European countries such as Denmark, the Netherlands, Germany and France. Furthermore, Hungarian export prices are substantially lower than those realized by exporters in the countries listed. Hungary's competitiveness in this area may be improved through by promoting quality, market oriented product development and active marketing policies.

The role producing of bio-products is expected to increase in the wake of recent scandals of the cattle sector: BSE, hormone treatment, the use of illegal substances in feed. The conditions required for bio-production and processing exist in Hungary and should play a role in enhancing the international competitiveness of the country.

Conclusions

Hungarian companies in the food and trade sector are operating in an increasingly competitive domestic and international environment. These competitive forces will gather strength upon Hungary's integration into European Union. Increasing performance, quality enhancement, cost cutting and timely response to signals of booming market are elemental interest of each Hungarian business that wishes to be successful.

Several international companies have acquired stakes in the Hungarian food and commerce sectors during the privatization and have brought with them cutting edge practices of production and marketing. These companies have embarked on large-scale investment projects and their marketing function has been definitely superior to that of their Hungarian competitors.

The competitiveness of food processing depends heavily on the level of development of raw material production. Food processing requires a solid agricultural base capable of producing high volume of top quality raw material. The reverse side of this influence is also play .

In the search for new strategies, two criteria will play an even more important role they do now; the total cost along the various marketing chains from production to consumer; and the differentiation of strategies to attract consumers to specific brands or kinds of products that no other producers have developed yet. In both cases, not only will permanent search for innovative solution through research and technology development, but also through new marketing strategies be crucial for the future of Hungarian food products on the EU and non- EU markets.

The producers have to experience fundamental changes in mentality, economic policy has to provide this progress with the necessary background and regulation, such regulation elements can be following: support of Production-Sales Organizations, ensuring the stability of regulation system of the agrarian market, change of competition regulations and support of education and consultation. Hungarian agriculture will be part of EU agriculture, they will target consumers demands, they will develop new private methods to manage their risks. The role of politicians will focus on facilitating the above changes, not on managing production or trade, as the fact is that consumers are the real clients of farmers and not governments.

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