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GLOBALISATION, TRANSITION AND RESTRUCTURING: EVIDENCE FROM THE POLISH DAIRY SECTOR

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ABSTRACT

In the early 1990s the Polish economy was opened up to global forces, increasing competitive pressure, raising standards, and inducing an inflow of foreign products and investment. This paper studies the impact on the dairy sector in Poland. We combine statistical data with evidence from interviews with company managers and household survey results to identify the impact of these forces, both on processing companies and on their suppliers. Our analysis shows that the globalisation process, through a complex interaction of public and private incentives, has contributed to important increases in company investment and product quality, and in enhanced access to credit and technology for local suppliers. The associated restructuring process caused a shift towards somewhat larger suppliers and significant cuts in employment. However, the increase in size is modest and the vast majority of suppliers are still relatively small family farms.

Keywords: Globalisation, Transition, EU integration, Poland, dairy sector

GLOBALISATION, TRANSITION AND RESTRUCTURING: EVIDENCE FROM THE POLISH DAIRY SECTOR

1. INTRODUCTION

The recent mass demonstrations against globalisation and the worldwide success of the anti-globalisation movement in attracting support from various groups in societies reflect a growing concern of the negative impacts of globalisation on sustainable development, poverty, and welfare of poor countries and the weaker groups in society. Yet others point out that the forces behind globalisation are powerful factors that could importantly contribute to reducing poverty, stimulating growth in developing countries and sustainable development in general. The polarisation of the debate seems to have grown as ideology replaced scientific evidence as a basis of the discussion.

Recently, a number of studies have emerged that try to empirically assess the impact of various forces, which are often considered as part of this broad concept of “globalisation”. The present paper wants to contribute to this. More specifically, the paper looks at how the opening of the Polish economy, both for trade and for inflows of foreign capital, know-how, and technology is affecting the Polish dairy sector. The Polish dairy sector was selected for several reasons. First, Poland is a relatively large country by European standards. Yet, it is a small economy in the world market. Second, agriculture is a very important sector in the Polish economy, and is characterised by unfavourable (very small) farm structures and low incomes. Third, dairy plays an important role in Polish – and rural – areas since many of the small farms have at least some milk production. Fourth, the dairy processing sector and the farms are in need of substantial restructuring in order to be competitive on the international market. All these characteristics suggest, *ex ante*, that

the impact of globalisation on the Polish dairy sector could have very significant repercussions for the sector, and for rural welfare and development more generally, both positive and negative depending on which effects would dominate.

Moreover, the study explicitly considers these effects in a broader framework, as the opening of the Polish economy to global forces occurred with the shift from a communist state to a market-based democratic society in transforming the economy and institutions.

Furthermore, the opening of the Polish economy interacts with a broader process of European integration, which will intensify in the next years and lead to Polish accession to the European Union in the course of this decade.

The paper will discuss how these various factors have affected the Polish dairy sector. First, we look at the changes in the Polish dairy sector since the start of transition. The second part reviews how the opening of the Polish economy both to trade and FDI, and the simultaneous European integration process are affecting the sector. These issues are discussed in further detail in the next section where we give evidence based on a case-study of six dairy companies and their suppliers. The final section summarises our findings and draws conclusions.

2. TRANSITION AND RESTRUCTURING OF THE POLISH DAIRY SECTOR

Like in all transition economies of Central and Eastern Europe and the former Soviet Union, economic and institutional reforms had important impacts on the Polish dairy sector. In this first section we give a brief overview of the structure of the sector and changes that occurred in the sector during the past decade.

The transition countries account for a significant share of world dairy markets. The Central and Eastern European countries (CEEC-10) that have signed association agreements with the European Union (EU) produce somewhat more than 30 million tons of milk, 7% of

total world production (see table 1). Poland is by far the most important producer of milk in the CEEC-10, producing almost half of total CEEC-10 milk output and having a 3% share in world production. With the current EU-15 production level at 124 million tons of milk, the accession of Poland alone would increase total milk output in the EU with 10%.

However, current production levels are much less than the pre-transition levels of production. Milk production and the dairy sector have been severely affected by the political and economic reforms over the past ten years. Figure 1 shows that production fell by almost 30% between 1989 and 1995. The output decline in the first half of the 1990s was mostly due to a dramatic decline in cattle stock: the number of dairy cows declined by 30% between 1989 and 1996. While it stabilized in 1996-1998, the number of cattle declined by another 10% between 1998 and 2000.

Important causes of the initial output decline in Eastern European agriculture are declining relative prices following liberalization and disruptions from privatisation and farm restructuring (Macours and Swinnen, 2000), as well as contracting problems in the absence of enforcement mechanisms and the disruption of traditional exchange relationships between farms and up- and downstream companies (Gow and Swinnen, 1998).

Production and consumption were heavily subsidised in most Communist countries, through both direct and indirect subsidy policies. This was especially the case for animal products, including dairy products. As a consequence, the liberalization of prices and trade and the cut of subsidies during economic reforms had strong effects on consumption and on profitability and output of the dairy farms. Figure 2 shows the impact of reforms on prices for milk producers. The terms of trade for milk producers, measured by the ratio of milk prices to the index of agricultural input prices declined by almost 90% between 1989 and 1992. Since then, relative prices have more or less stabilized.

A comparison with figure 1 shows that the strong decline in production occurred during this initial period of major price adjustment. Furthermore, figure 1 indicates that yields have turned around since 1992 and are since 1997 above their pre-reform level. Yield increases have resulted among other things from improved access to inputs and correction of contracting problems in the second half of the 1990s. However, figure 3 shows that not only were Polish average milk yields (3500 kg/cow) still about 40% below EU-15 average yields (5500 kg/cow) in 1998, the yield gap had not diminished over the 1992-1998 period. The reason is that EU yields have been increasing during the same period as well.

Figure 3 shows on the other hand that the price gap for milk between the EU and Poland has been decreasing almost continuously since 1990. This is caused by several factors, including an appreciation of the Polish currency and a renewed increase in protection measures for milk in Poland. However, the price gap remains significant compared to some other agricultural products for which Polish prices are converging with price levels in the EU or for which prices are already higher in Poland. Reasons for the remaining price gap are the high and supported milk prices in the EU and the lower average quality of milk deliveries in Poland. Figure 4 shows that a radical reduction in government support during market liberalization in the first half of the 1990s caused government support, as measured by the producer subsidy equivalent (PSEs) calculated by OECD, to fall dramatically in Poland. However protection increased again during the second half of the 1990s due to a renewed increase in government intervention and support. This increase in support for milk in 1998 was equivalent to more than 20% of output value in Poland. While increasing, it was still considerable below EU-levels (PSE at 58%).

Milk production in Poland was organized mostly on small scale private family farms even under the Communist regime. Table 2 shows the share of farms in different size

classes (on the basis of herd size) in the total number of dairy farms. In 2000 more than 85% of Polish dairy farms had less than 5 cows. The agricultural census in 1996 showed that, out of approximately 1.3 million dairy farms, almost 1 million farms had only 1 to 3 cows. They produced about 25% of Poland's milk and 50% was produced by farms with 3 to 9 cows. Less than 60% of total milk production is delivered to dairies; the rest is used for self-consumption or directly sold on the local market.

The small family farms typically use labour intensive production techniques. This creates specific investments problems for upgrading milk quality. The fragmented farm structure also poses specific problems for investors in the dairy processing sector, in terms of transaction costs of milk collection and for on-farm investment.

However, there is evidence of significant restructuring going on in Polish dairy. First, the data in table 2 suggest a gradual development towards a dual structure. The number of farms with 2-4 cows decreased, while both the farms with one cow, presumably for personal consumption, and those with more than 5 cows grow. Within the latter group it is especially the farms with 10-19 cows that have grown significantly. Furthermore, looking at the number of cows in the various classes would reinforce this story.

Second, in 1994 about 800,000 milk producers delivered 6.15 million tons of milk to dairies. In 1999 about 500,000 milk producers delivered 6.49 million tons of milk to dairies. These figures indicate that the number of farms delivering milk fell by almost 40% since 1994, while total deliveries rose slightly. Today still only 50% of total milk production is up to EU standards. However, also this situation is improving – and quite rapidly so. Out of the 450,000 producers delivering milk to dairies in 2000, 160,000 delivered exclusively milk of highest quality. This is a remarkable increase from 1999, when only 90,000 producers delivered exclusively highest quality milk (Swedish Board of Agriculture, 2001)

Table 3 shows how the structure of the dairy sector has changed since 1993 for companies with more than 50 employees. The total number of dairies has decreased with more than 20% between 1993 and 1999. This decrease was mainly caused by a decrease in the number of cooperatives, while the share of private companies has increased over the same period. In 1994 more than 80% of the total market for dairy products belonged to cooperatives. In 1999 dairy cooperatives still controlled 70% of the market. Twenty of the privately owned dairies were owned (mainly) by foreign investors.

The market for UHT milk and yoghurts is highly concentrated. In 1999 more than 55% of the UHT is in the hands of 3 domestic cooperatives (OSM Grajewo, OSM Lowicz, and OSM Zambrow). The yoghurt market is controlled by three companies in 1999: Danone (29%), Zott (27%), and Bakoma (26%). The biggest firm on the malted cheese market is Hochland, with a share that increased from 25% in 1996 to 44% in 1999. The cream market is dominated by three firms: OSM Grajewo, (16.2%); Danone, (12.5%); and OSM Lowicz, (12.4%). The markets for butter, ripening cheeses and quark have much lower concentration and lack separated brands (Majewski and Dalton, 2000).

3. EUROPEAN INTEGRATION, TRADE AND FDI IN THE DAIRY SECTOR

Trade. The liberalisation of the Polish trade system opened the Polish dairy sector to increased competition from abroad, but also allowed Polish exporters to search for new markets. However, as in many countries elsewhere, dairy product trade soon became subject to new regulations. For example trade with other Central European countries was regulated under the CEFTA agreement. Unlike the name suggests, the Central European Free Trade Association (CEFTA) created anything but free trade in dairy products. As for other so-called “sensitive” agricultural products, trade in dairy was highly regulated under the CEFTA agreement.

Trade with the EU first became regulated under the so-called Association Agreement (AA) in 1992. Later this AA was adjusted as part of a stronger integration strategy with the EU, which ultimately is to lead to full accession to the EU. The AAs and more recent agreements impose both quantitative restrictions and tariffs, and also product requirements regarding quality and hygiene standards. For example, only licensed dairies are allowed to export their products to the EU. Currently, only 25 out of the approximately 400 dairy processing companies have obtained such an export license. However, although in numbers these firms make up only 6% of the sector, in terms of output they account for almost 35% of total value of Polish dairy products.

Figure 5 shows that Poland is a net exporter of dairy products. Exports increased significantly from 1992 to 1995. Since 1998 the trade balance for dairy products deteriorated due to the economic crisis in the markets of the states of the former Soviet Union (FSU). While in 1992 exports of Polish dairy products went mainly to the EU, by 1998 the share of exports to the EU had decreased by two thirds and the main buyers of Polish dairy products in 1998 were the FSU (table 4). Due to the Russian crisis in 1998, the share of Polish dairy exports going to Russia decreased from 18% in 1998 to only 7% in 1999. Important constraints to increased dairy exports to the EU are EU quality standards and the Association Agreements, which regulated bilateral trade between the EU and the Central and Eastern European countries.

Imports of dairy products in Poland mainly originate from the EU. Although the total value of imports was halved between 1992 and 1998, the share of imports from the EU has increased. While Poland exported mostly lower value products to the EU, it imported mostly higher value cheese and other products (see table 4). For example, in 1999, 59% of all imports were yoghurts and almost 100% of these yoghurts were imported from Germany.

The opening of the market and trade regulations not only affected trade but also foreign investment. For example, the rise in imported yoghurts induced the Polish government to increase custom duties on medium-fat desserts. In a first reaction to this policy change the main German exporter of yoghurts to Poland (Zott) increased the share of yoghurts with a lower fat content in exports to Poland to nearly 100%. In a second step, to overcome the increased obstacles to access the Polish market, Zott purchased a dairy plant in Opole in Poland at the end of 1999 and started producing yoghurts for the Polish market locally (Agrafood East Europe, 1999).

Foreign direct investment (FDI) has resulted from several company strategies: to serve the local market when trade constraints limit imports, to use the Polish economy advantages for exporting to the home market or to third markets, etc. Several studies have analysed determinants of FDI. Key factors are market size, relative labour costs, interest rates, import protection, exchange rates, export orientation, market structure, geographical distance, political stability, and cultural similarity (Walkenhorst, 2001). Poland performed well in FDI inflows because of its stable political and institutional system, advanced reform strategy, and cheap but relatively well educated labour force.

The EU accession process has further stimulated FDI because it reinforced the institutional and economic stability, the prospect of a large single market, growth in Polish incomes and food demand, and – in some cases – expectations of EU subsidies. Further, FDI has resulted in the inflow of capital, technology, and know-how in the dairy sector, as well as the introduction of higher quality standards.

There has been a total inflow of 4.6 billion USD of foreign investments into the Polish agri-food sector (table 5). More than 70% of agri-food FDI has gone into “Confectionary, Beverages and Tobacco”. 227 million USD has gone to the dairy sector, or 5% of total FDI in the agri-food sector.

Foreign investment in the dairy sector has gone mostly to processing and input supplying companies, such as milking equipment.¹ While such FDI obviously has important impacts on the companies themselves, important spill over effects may also occur at the farm level (Gow and Swinnen, 1998).

Foreign investments in the dairy sector can affect dairy farmers in several ways: (1) through the facilitation of adopting new technologies, the provision of working capital, and through solving contract enforcement problems (Gow and Swinnen, 2001; Key and Runsten, 1999); (2) through the imposition of higher grades and standards for the supplied product (Reardon et al., 2001; Farina and Reardon, 2000; Henson et al., 2000; Dolan and Humphrey, 2000); (3) through a possible preference of the foreign investor for large suppliers to minimise transaction costs (Runsten and Key, 1996; Key and Runsten, 1999; Winters, 2000; Dolan and Humphrey, 2000; Holloway et al., 2000).

Because of a combination of these effects, foreign direct investment has contributed importantly to growth in productivity and yields throughout the food chain in Central and Eastern Europe, including in the dairy sector (Swinnen, Dries and Gow, 2001). The continuous increase in milk yields in Poland since 1992 is due to a combination of domestic economic and institutional reforms and the inflow of know-how, technology, finance and contracting innovations with foreign investments. To analyse in detail the mechanisms and effects of this FDI on the Polish dairy sector, including spill-over effects on the farms, we studied six dairy companies in the North-East of Poland, with varying degrees of foreign investment or affiliation.

The FDI effects cannot be studied independently from the process of European integration and of the economic and institutional reforms in Poland. There is an important

¹ In Poland there has also been an inflow of West European farmers and investment into dairy farming; however, there are no good data on the importance of this phenomenon.

interaction between both. On the one hand, FDI may be driven by the prospect of enlargement. On the other hand, changes in Polish government policies, either as a consequence of economic and institutional reforms or as a step towards compliance with EU regulations, may affect the foreign investor's strategies. To the extent possible we have tried to disentangle the various effects. The collected information is based on a series of interviews with the management of the dairy companies, farmers, and input suppliers, and on results from a survey among households that had at least some dairy production.

4. CASE-STUDY OF SIX DAIRY COMPANIES

The six dairy companies are located in, or near to, the Warminsko-Mazurskie region in the North-East of Poland. The Warminsko-Mazurskie is an interesting region for this analysis because it has a mixture of large scale and small-scale farms – unlike some other regions in Poland. At the start of transition large-scale farms (state farms, because cooperatives were almost non-existent in the Polish agricultural sector) farmed on average between 30 and 50% of total agricultural land in the region.² The existence of this mixture of farm structures allows to draw conclusions which may be more generally valid for other CEECs, most of which have such combination of farm types.

The six selected companies provide an interesting mix. Four are medium size companies (50-70 million litres of milk) with one large (420 million litres) and one small (2.5 million litres). Three are cooperatives, two private, and one a joint venture of a cooperative and a private company. In terms of foreign investment, two are majority foreign owned, and two have important links to foreign companies. Table 6 summarizes information on the six selected companies.

² Estimate on the basis of data on old voivodship classifications (Wies I Rolnictwo, 1999)

- ‘Mlekpól’ is one of the largest dairy cooperatives in Poland and currently receives milk from 14000 dairy farmers. It produces a wide variety of products.
- ‘Mleczarnia’, in contrast, is a small domestically owned private company. Its main production consists of yoghurts. The Polish yoghurt market is highly concentrated, with 70% of the market dominated by only 3 companies: Danone (French); Zott (German); Bakoma (Polish). A lack of marketing means, makes that ‘Mleczarnia’ can only sell its products to local shops in the region.
- ‘Kurpie’ is a middle sized domestic cooperative. In 2000, Hochland (German, French) opened a dairy production plant next to the dairy cooperative. ‘Kurpie’ is the sole supplier of cheese to Hochland, who produce secondary level processed cheeses.
- ‘Mazowsze’ is also a middle sized Polish dairy cooperative. Since 1993 they started supplying pasteurised milk to Kraft, who had bought the cooperative’s debts from the bank and thus acquired part of the cooperative’s buildings. In 1998, Kraft was bought by Bel (French). Bel still buys milk from ‘Mazowsze’.
- ‘ICC Paslek’ was founded in 1994 when Land O’ Lakes (USA) entered into a 50-50 joint venture with the local dairy cooperative in Paslek. Through consecutive capital injections, Land O’ Lakes currently has a 70% ownership share in ‘ICC Paslek’.
- ‘Warmia Dairy’ started also as a joint venture between a foreign investor (Hoogwegt, Netherlands) and a local dairy cooperative in 1995. Since 1997 Hoogwegt has acquired 100% ownership.

We will discuss now some of the preliminary conclusions from this study.

- *Product quality has increased dramatically over the past five years.*

Figure 6 shows how in almost all cases, the share of highest quality milk (Extra class) has increased around 100% over the past five years. The share of delivered milk in second and third class is at this moment not more than 10% in any of the interviewed dairies. Five years ago, Mazowsze still had 50% of its milk supplies in second or third class, while since three years ago this share has gone down to only 10%. ICC Paslek has decreased the share of its two lowest classes of milk quality from almost 30% to only 2% in the past five years. Also Warmia Dairy and Mlekpól have less than 5% of their milk deliveries in second or third class, coming from over 30% three years ago.

- *Foreign companies have played a role by providing an example in quality improvement strategy.*

When Land O' Lakes invested in ICC Paslek in 1994 milk quality of its supplying farms – as everywhere in the region – was poor. From the start, ICC Paslek set out a clear strategy to increase the quality of delivered milk. One of their requirements was that the cooperative – from which they lease collection stations – should install cooling tanks in these collection points. Furthermore, they invested in agricultural extension to raise farmers' awareness of the importance of milk quality and to improve quality through basic hygienic rules for farmers handling the milk. From the beginning, ICC Paslek also required germ count and cell count tests (in accordance with EU standard tests for milk quality classification). Farmers were also allowed to have their milk tested for antibiotic residues free of charge in the dairy's laboratory. This was especially helpful for farmers who had had a cow disease in their farm and who needed to make sure that no antibiotics residue was left in the milk.

Local dairy companies quickly learned about the change in company policies implemented by foreign owners. Soon after Land O' Lakes set up its quality improvement programs, local dairies started to copy these practices and by doing so have created an

important spill over effect as shown by the dramatic milk quality improvement throughout the region in the last five years.

- *Quality improvements were primarily driven by export strategies of the dairy companies, rather than by domestic/foreign ownership*

Not all foreign investors have required high quality standards from the start. Warmia Dairy was initially primarily interested in exporting skimmed milk powder to Asia and Northern Africa. Only in more recent years it has become Warmia's goal to become EU certificated in the near future. Therefore it is only now shifting its company strategy from increasing quantity towards increasing quality of delivered milk.

In contrast both ICC Paslek and Kraft/Bel's clear focus towards increasing milk quality followed directly from their objective to prepare production for export to the EU. As with ICC Paslek, Kraft required Mazowsze to conduct cell count and germ count tests since they started their operations in 1995. Furthermore, Mazowsze had to refocus their farmers' programs towards increasing milk quality in order to meet Kraft's higher quality standards. At this moment, Mazowsze produces pasteurized milk for Bel and since Bel exports to the EU it can only accept extra class milk. Therefore, Mazowsze delivers only its highest class milk to the foreign investor. It is however evident from figure 6 that other Mazowsze products are not sold on the EU market because the percentage milk in the highest quality class is only 60% at this moment.

Also other domestic dairies have increased quality requirements early on as a consequence of their export orientation. For example, Mlekpól, which is now EU certificated for export to the EU, also started implementing strict quality measures early on, including EU standard tests for milk quality classification. Kurpie indicated that they

started to emphasize milk quality in their programs since five years ago, as they want to prepare their farmers for implementation of EU standards.

- *Public regulations also had an important impact on quality*

The importance of government regulations was clear from new regulations introduced in 1999 and 2000. Since 1999, Poland has implemented the EU classification system of milk quality grading and as a consequence has obliged dairies to do specific tests (e.g. germ count, cell count etc.) to classify their supplied milk in Extra (highest), First, Second, and Third (lowest) class milk. It was only at this moment that Warmia Dairy, Kurpie and Mleczarnia also started implementing this grading system. In January 2000, a Polish law was passed which specified that second class milk is the minimum milk quality that may be used by dairies for further processing. All dairies still accepted third class milk at the moment the law was passed which excluded third class milk from the processing sector.

Accession to the EU will require the implementation of the *Acquis Communautaire* in all accession countries. Among others, this will impose increased regulations on hygienic and food safety standards in the agri-food sector. The change in Polish regulations concerning grades and standards in the dairy sector is a first step in the preparation of the Polish dairy sector to comply with EU regulations. It can therefore be expected that Polish regulations on milk quality standards will increase even more in the near future. Although most interviewed dairies foresee the abolishment of second class milk from the system in the coming years as well, the companies in our sample indicate that they will probably keep on accepting this milk until the law forbids it. As a result, future increases in national – or EU – requirements on quality will have an impact on the dairy sector, because they will impose the rejection of milk supplies from a certain share of dairy farmers with low quality milk.

- *Vertical spill-over effects are stimulated by dairies both demanding higher quality and providing supportive programs*

Almost all dairies in the sample have special farmers' programs that assist their supplying farms in investing (credit and loan guarantee programs) and in accessing inputs and services. Farmers get inputs and service assistance with trade credit provided by dairies, to be repaid with milk deliveries. Investment assistance takes the form of leasing of equipment and cows, also with payments deducted from future payments for milk deliveries. Alternatively, or in addition, dairies provide bank loan guarantees for loans to farmers.

According to Westfalia, one of the two largest suppliers of milking equipment in Poland, most of their equipment is sold to farmers that use preferential bank loans to finance their investment. Preferential loans have subsidized interest rates (interest rates around 5%) and as a consequence are much cheaper than commercial loans (interest rates often above 20%). In order to obtain such a loan, the farmer needs collateral. However, in many cases land or buildings are not accepted as a bank guarantee. Therefore, most interviewed dairies are providing an additional service to their suppliers by co-signing the bank loan. In this way the dairy puts in the bank loan guarantee and facilitates its farmers' access to bank credits and hence increases their investment possibilities.

For instance, in 1995 ICC Paslek introduced a credit program through which farmers were able to buy new or second hand cooling and milking equipment. The loans were repaid from the farmers' milk checks. ICC Paslek also assisted in the procurement of second hand equipment from the US and Western Europe. Furthermore, the company provides access to inputs, such as feed or seeds and fertilizers for on-farm feed production, that farmers purchase through the agricultural input supply shop that is run by the dairy

cooperative in Paslek. Again these inputs are paid directly from the milk checks. Also technical assistance and support is provided through the company's extension agents. These specialists assist farmers with crop production, animal nutrition and health, animal genetics, breeding, selection and more recently they also assist farmers who want to expand their herds to find suitable cows for purchase both in Poland and in Western Europe.³

Other dairies have implemented similar programs. In addition, Warmia Dairy made a special feed mixer available at the dairy for its suppliers. Farmers were taught how to prepare high quality feed for their animals, and are allowed to use the equipment to prepare their own feed mix. Furthermore, Warmia Dairy's agricultural extension program had a large impact on delivered milk quality because Dutch experts visited the individual dairy farmers and showed them some simple hygienic and sanitary rules when handling the milk on the farm.

- *Horizontal spill-over effects are very important*

As with the quality improvement strategies (see above) domestic companies copied assistance programs after they were first introduced by FDI affiliates. These horizontal spill-over effects were very important. In our sample, all dairies provide similar services to their farmers. Only the small dairy 'Mleczarnia' did not provide a credit program or agricultural extension services to its suppliers, probably because it did not have sufficient means (or size). Table 7 shows results from a survey among 290 dairy farm households, in the same region as where the interviewed dairy companies are located. By 2001, there is no significant difference of assistance programs provided by foreign owned companies and

³ Most highly yielding cows used to be bought in the Netherlands but since the BSE scare, Poland's border is closed for the import of Dutch cows.

domestic dairies, except for the loan guarantee programs that were more extensively provided by the foreign dairies.

- *Companies (providing for EU market) first try to upgrade quality, and then adjust programs to increase supply base.*

ICC Paslek has stopped providing credit to farmers to buy cooling tanks and other agricultural equipment – it seems most farmers have already invested in this technology adoption in the past five years. However, they continue to provide financial help to their suppliers if they want to buy more cows. Interestingly, ICC management explained that it was their aim to increase production, not by trying to attract more suppliers but rather by increasing production on the farms that are supplying to them at this moment.

Also Hochland is following a similar strategy. Since they invested in facilities next to Kurpie in 2000 they are the main contributors to the credit program of ‘Kurpie’. The credit program is mainly used to buy cows nowadays since also Hochland is hoping to increase its production in the coming years. Figure 7 shows how milk deliveries to Kurpie have increased dramatically. Monthly milk deliveries were 30% higher on average in the first 6 months of 2001 as compared to the same months in the previous year.

- *The introduction of higher quality standards has caused a shift towards (somewhat) larger and better equipped farms*

Five years ago almost all farms delivered their milk to collection points. Since then, several farms have invested, with dairy company support, in cooling tanks on their farms.

Table 8 shows how the share of farmers delivering milk to a collection station (typically smaller farmers) and the share of farmers delivering milk from their own cooling tank (typically larger farmers) has changed since 5 years ago. Figure 8 shows the change in the

share of these farmers delivering to ICC Paslek between 1994 and 2001. The share of collection point suppliers has decreased in all interviewed dairies. Five years ago almost 100% of suppliers were delivering to collection stations. In 2001, this share has decreased to 80 or 70% for most cooperative dairies and Warmia Dairy has even less than 50% of its suppliers delivering to collection points. Figure 8 shows a continuous increase in the importance of farmers with their own cooling tanks in the deliveries to ICC Paslek, as the share of the smallest farmers goes down.

Furthermore, table 2 shows how the size distribution of the dairy farm sector has changed over time. The results from the dairy farm survey show that the share of the largest dairy farms, with more than 20 cows, increased significantly between 1995 and 2000. The group of farms with one or two cows has also increased. These farms are mainly producing for self-consumption and do not deliver milk to a dairy company anymore. The same evolution is observed for the whole Polish dairy sector as medium sized dairy farms have declined in favour of the smallest and largest size groups.

That said, it is important to recognise that the dairy farms which have been able to increase their herd size, are still relatively small compared to other CEE countries and also to western standards. Hence, the globalisation process has caused a modernisation and size increase but the latter has been very moderate. This process has not caused the demise of family farms, which are still very much the norm in the Polish dairy sector.

- *Domestic and cooperative dairies are more likely to keep small farms as suppliers*

As shown by table 7, the increase in share of bulk tank farmers was most severe in ICC Paslek and Warmia Dairy where their share has gone from 84% and 100% respectively in 1996, to 56% and 42% respectively in 2001. The change is particularly radical for Warmia. After it became a fully private company in 1997, it went from 98% to 42% in three years.

The shift towards larger farms coincided with a strong reduction in the number of suppliers, which was reduced by more than half in three years time.

To some extent all dairies have policies that favour large suppliers, milk supplies delivered in large quantities receive a higher price per litre and indirectly small producers are disadvantaged since costs for testing milk quality and the service of a collection point are a fixed cost per month. However, both cooperatives Mazowsze and Mlekpól state that they cannot deny any of their members access to their programs. Therefore, they are more likely to continue accepting milk from small suppliers. Table 7 also shows how Mleczarnia, the smallest dairy in the sample and a private company, still collects 90% of its milk from dairy farmers that do not own a cooling tank, the smaller size group of farmers.

5. CONCLUSIONS

There is growing concern of the negative impacts of globalisation on sustainable development, poverty, and welfare of poor countries and the weaker groups in society. On the other hand, there is evidence that the forces behind globalisation are powerful factors that could importantly contribute to reducing poverty, stimulating growth in developing countries and sustainable development in general.

Our study contributes to this discussion by looking at how the opening of the Polish economy, both for trade and for inflows of foreign capital, know-how, and technology is affecting the Polish dairy sector. The study explicitly considers these effects in a broader framework, as the opening of the Polish economy to global forces occurred with the shift from a communist state to a market-based democratic society and as it interacts with the broader process of European integration.

Globalisation has contributed to the strong increase in quality and productivity in the Polish dairy sector over the past five years. However, the mechanisms through which this

has occurred are complex, i.e. through a mixture of global and domestic forces, from private and public sources. First, foreign companies played an important role by providing an example in quality improvement strategies. However, improvements in milk quality standards by private companies were primarily driven by export strategies rather than by ownership type of the dairy companies. Second, public regulations played an important role in upgrading the (lowest) quality standards. Changes in government regulations on hygienic and food safety standards, induced by the EU integration process, had an important impact on the sector. It can be expected that with further European integration, Polish regulations on milk quality standards will be strengthened even more.

Third, our analysis also shows that dairy companies not only increased quality requirements but they also introduced institutional innovations to overcome regional factor market imperfections. For example, they introduced special programs to assist their suppliers in investing and accessing inputs, technology and services. Farmers get inputs and service assistance with trade credit provided by dairies, to be repaid with milk deliveries. Investment assistance takes the form of leasing of equipment and cows. Some of the dairies also provide bank loan guarantees for loans to farmers. Horizontal spill-over effects reinforce these benefits, and by 2001, there was no difference any longer in assistance programs provided by domestic or foreign owned dairy companies.

Finally, the increased quality requirements, and the increased level of investments have changed the structure of the dairy farm sector. The share of small dairy farms delivering to collection points has decreased while the share of larger dairy farms that own their own cooling tank, has increased. While to some extent all dairies have policies that favour large suppliers, it is more difficult for the domestic, co-operative dairy companies to refuse products from their members – whether these members deliver large or small volumes. However, it should be recognised that although there has been a shift towards

somewhat larger farms, these farms are still relatively small compared to other CEE countries or western standards. Hence, the globalisation process has caused a modernisation and size increase but the latter has been very moderate. This process has not caused the demise of family farms, which are still very much the norm in the Polish dairy sector.

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Table 1: Milk production

	<i>Milk production (mio ton)</i>		<i>Share in world milk production (%)</i>	
	<i>1990</i>	<i>1998</i>	<i>1990</i>	<i>1998</i>
Poland	15.9	12.6	3.4	2.9
Czech Rep	4.8	2.7	1.0	0.6
Hungary	2.9	2.0	0.6	0.5
Slovak Rep	2.0	1.2	0.4	0.3
Slovenia	0.6	0.6	0.1	0.1
Bulgaria	2.5	1.7	0.5	0.4
Romania	4.6	5.7	1.0	1.3
Estonia	1.3	0.8	0.3	0.2
Latvia	1.9	1.0	0.4	0.2
Lithuania	3.2	2.0	0.7	0.5
CEEC10	39.4	30.2	8.3	7.0
EU15	130.6	124.0	27.6	28.8

Source: OECD (1999a)

Table 2: Structure of private farms in the Polish dairy sector, 1996-2000

HERD SIZE (number of cows per farm)							
In Poland	Total	1	2	3-4	5-9	10-19	> 20
Number of farms (1996)	1,307,320	547,122	363,004	249,714	126,579	19,281	1620
In Poland	As a percentage of total number of farms						
1996	100	41.9	27.8	19.1	9.7	1.5	0.1
2000	100	44.6	24.6	16.9	10.0	3.4	0.5
% Change 1996-2000		+2.7	-3.2	-2.2	+0.3	+1.9	+0.4
Own survey	As a percentage of total number of farms						
1995	100	1.7	1.4	12.8	40.7	39.3	4.1
2000	100	5.1	5.9	10.3	26.9	35.9	12.4
% Change 1996-2000		+3.4	+4.5	-2.5	-13.8	-3.4	+8.3

Source: GUS (2001) and own survey results

Table 3: Structure of the dairy sector, companies with more than 50 employees, 1993-1999

	1993	1994	1995	1996	1999	Change 93-99 (%)
Total	410	332	318	321	320	-22
Cooperatives	352	309	284	280	270	-24
Public companies	30	12	-	-	-	-
Commercial law companies	28	11	34	41	50	+79

Source: Majewski and Dalton (2000)

Table 4: Trade in total dairy products for Poland and its most important trading partners

	Export				Import			
	Total	o.w. EU	o.w. CAIRNS	o.w. FSU	Total	o.w. EU	o.w. NoAm	o.w. FSU
1992 (mio EURO)	158.8	91.8	19.1	7.5	66.7	46.7	13.2	1.4
Total (%)	100	100	100	100	100	100	100	100
share butter (%)	1	0	0	17	39	25	99	0
share cream (%)	87	96	96	1	3	1	1	80
share cheese (%)	5	2	0	1	48	61	0	14
share other (%)	8	2	4	81	10	13	0	6
1998 (mio EURO)	209.1	33.9	15.5	43.6	33.9	25.3	0.1	4.7
Total (%)	100	100	100	100	100	100	100	100
share butter (%)	4	0	0	14	6	7	0	0
share cream (%)	59	95	86	1	17	2	25	100
share cheese (%)	30	1	7	73	49	55	40	0
share other (%)	7	4	7	12	28	36	34	0

Source: EU Commission (2000)

Table 5: Cumulative foreign direct investment in the Polish agri-food sector, 1999

Sub-sector	FDI	
	Million USD	%
Meat	198	7.3
Fish	55	1.2
Dairy products	227	4.9
Flour & pasta	26	0.6
Bread & bakery	35	0.8
Sugar	136	3.0
Potato products	139	3.0
Fruits & vegetables	69	1.5
Vegetable oils/fats	162	3.5
Confectionary	963	21.0
Beverages	1286	28.0
Tobacco	1067	23.2
Other	90	2.0
Total food industry	4452	96.9
Animal feed	113	2.5
Agriculture	30	0.7
Total agri-food sector	4594	100.0

Source: Walkenhorst (2001)

Table 6: Fact sheet on selected Polish dairy companies

	Mlekpól	Mleczarnia	Kurpie	Mazowsze	ICC Paslek	Warmia Dairy
Location	Grajewo	Paslek	Baranowo	Chorzele	Paslek	Lidzbark-Warminski
Legal structure	Cooperative	Private company	Cooperative	Cooperative	Joint venture private and coop	Private company
Main products	Drinking milk, cream, butter, milk powder, cheese, yoghurt	Yoghurt	Cheese, butter	Drinking milk, butter, cheese, cream, milk for further processing	Cheese, butter, drinking milk, yoghurt powder, whey powder	Skimmed milk powder (85% of output)
Foreign owner	No	No	No	No	Yes	Yes
Since when?					1994	1995
Foreign share (%)					70	100
Home country					USA	NL
Supply to foreign dairy			Hochland (2000)	Bel/Kraft (1995)		
Number of employees	900	10	200	240	250	310
Annual milk supply (ltr.)	420 mio	2.5 mio	65 mio	55 mio	52.5 mio	70 mio
Does company offer the following programs?						
Credit program	Yes	No	Yes	Yes	Yes	Yes
Input supply program	Yes	Yes	Yes	Yes	Yes	Yes
Agricultural extension	Yes	No	Yes	Yes	Yes	Yes
Veterinary service	No	No	No	No	No	Yes
Bank loan guarantee	Yes	Yes	Yes	No	Yes	Yes
Since when?	1994	1992	1991	1992	1995	1995
Since when do you apply EU standard classification system?	1994	1999	1999	1995	1995	1999

**Table 7: Foreign ownership and financial assistance programmes
(% of farms delivering)**

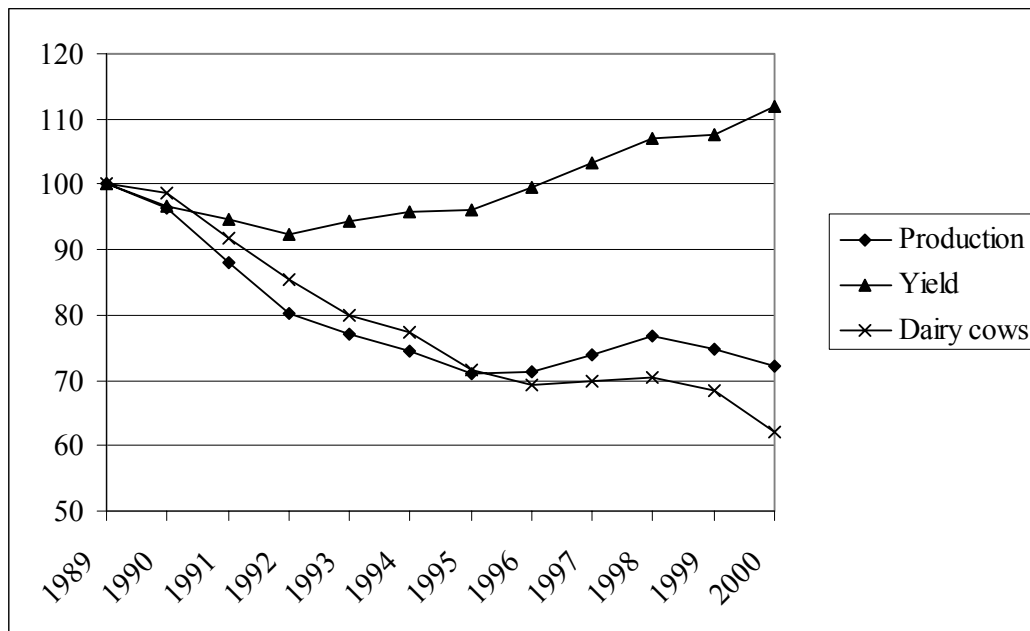
	Foreign owned	Domestic
Credit program on-farm inv	71.6	71.4
Credit program cows	73.9	70.7
Input supply program	78.9	77.5
loan guarantee program	46.2	29.8
Average	71.6	71.4

Source: own survey results

Table 8: Estimates of the number of milk suppliers by level of technology

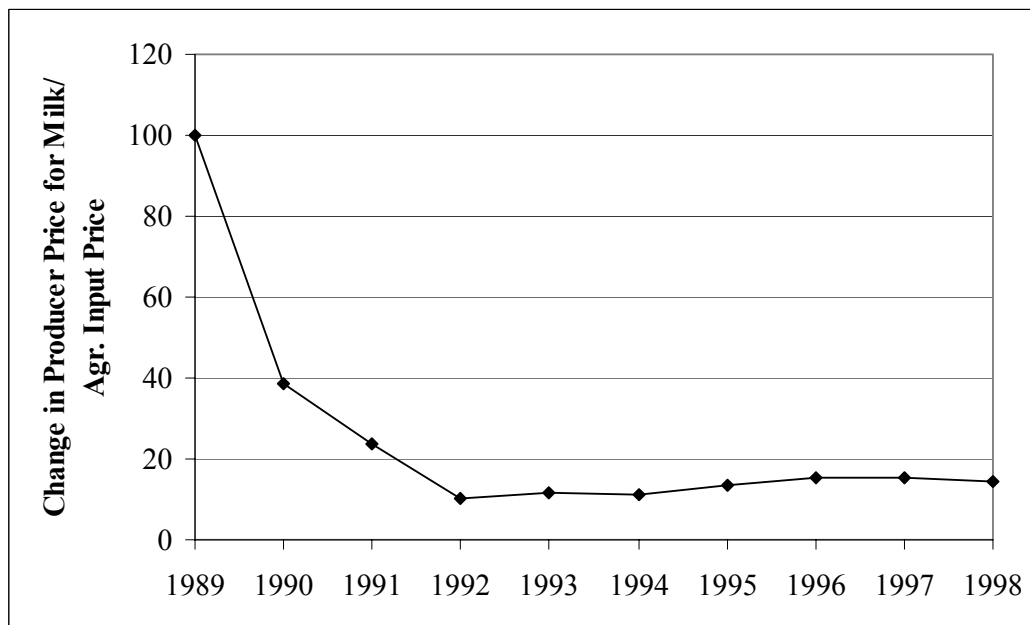
	1996	1998	2001	% Change 1996-2001
Mlekpól				
Total number of suppliers	-	-	14000	-
Collection point suppliers (%)	98	88	70	-28
Bulk tank farmers (%)	2	12	30	+28
Mleczarnia				
Total number of suppliers	130	130	130	0
Collection point suppliers (%)	96	93	90	-6
Bulk tank farmers (%)	4	7	10	+6
Kurpie				
Total number of suppliers	3750	3600	3450	-8
Collection point suppliers (%)	97	92	80	-17
Bulk tank farmers (%)	3	8	20	+17
Mazowsze				
Total number of suppliers	3750	3800	2500	-33
Collection point suppliers (%)	100	85	70	-30
Bulk tank farmers (%)	0	15	30	+30
ICC Paslek				
Total number of suppliers	667	346	400	-40
Collection point suppliers (%)	84	63	56	-28
Bulk tank farmers (%)	16	37	44	+28
Warmia Dairy				
Total number of suppliers	8000	6000	2600	-77
Collection point suppliers (%)	100	98	42	-56
Bulk tank farmers (%)	0	2	59	+56

Figure 1: Change in milk production, number of dairy cows and milk yields, 1989-1998



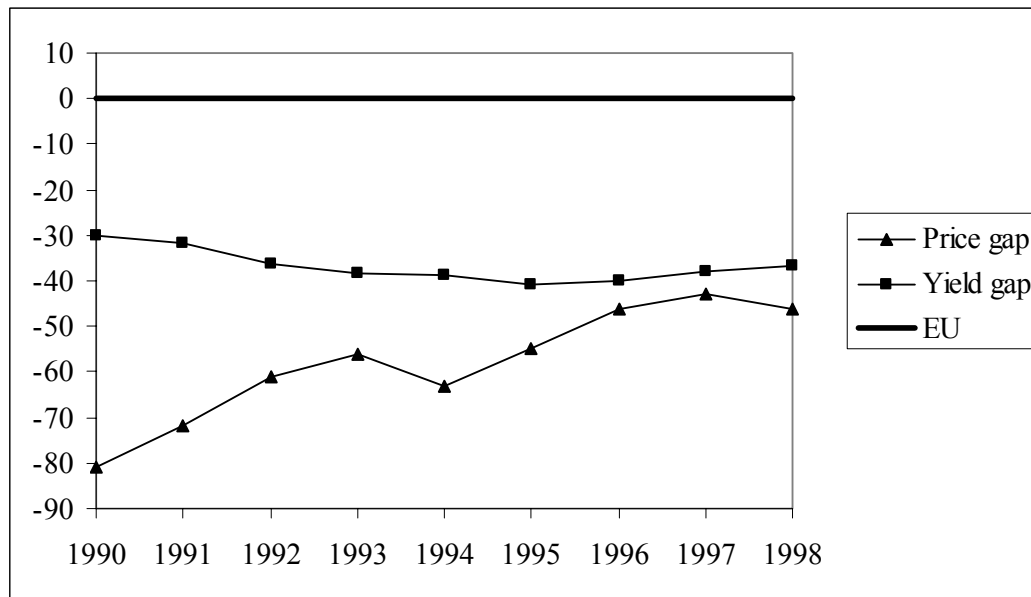
Source: ARR and IERiGZ (2001)

Figure 2: Change in producer over input prices for milk, 1989-1998



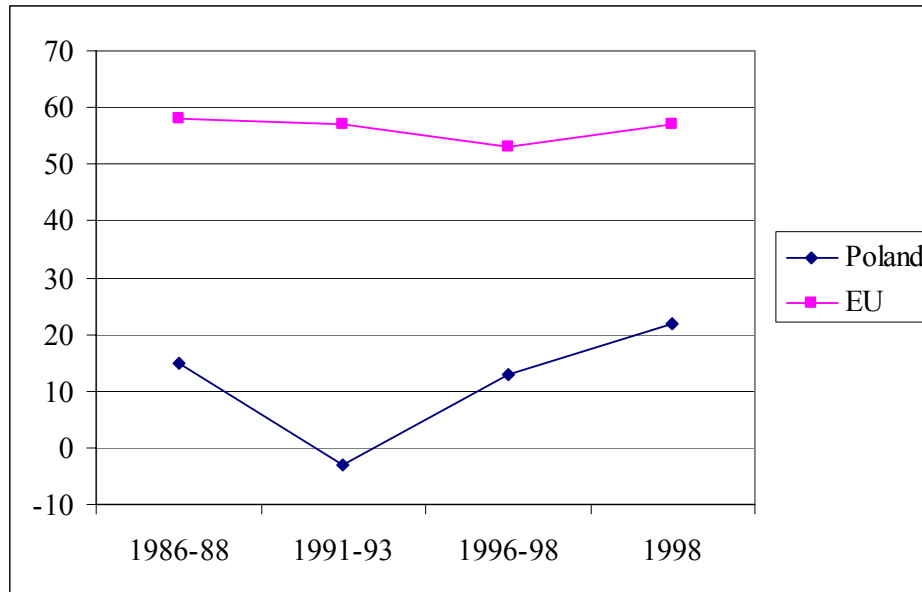
Source: OECD (1999a)

Figure 3: Gap in milk prices and milk yield between Poland and the EU



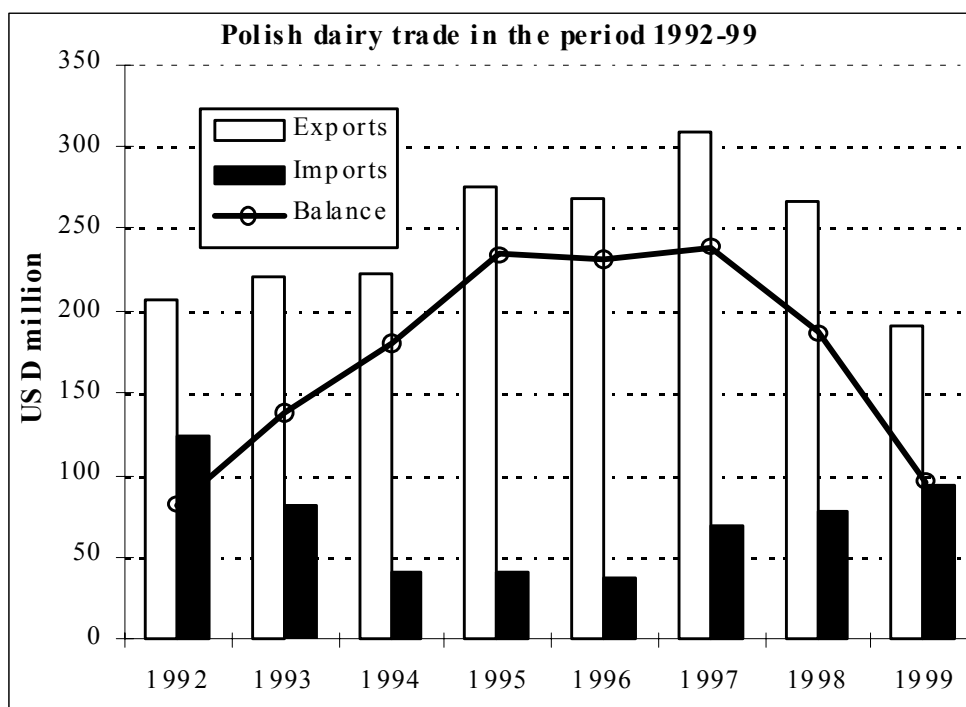
Source: Berkowitz and Münch (2000), ZMP (2000) and ARR-IERiGZ (2001)

Figure 4: Percentage PSE for milk in Poland and EU



Source: OECD (1999b)

Figure 5: Change in trade balance for Polish dairy products, 1992-1999



Source: Ministry of Agriculture, Poland (2000)

Figure 6: Change in share of highest quality class milk (Extra) in total supply to six dairy companies

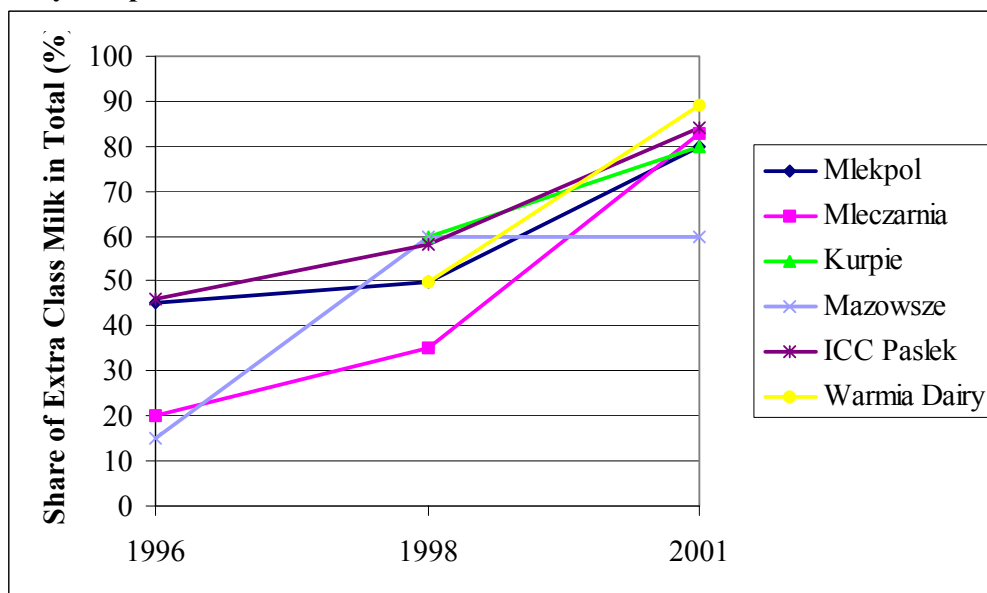


Figure 7: Milk deliveries to Kurpie, 2000-2001

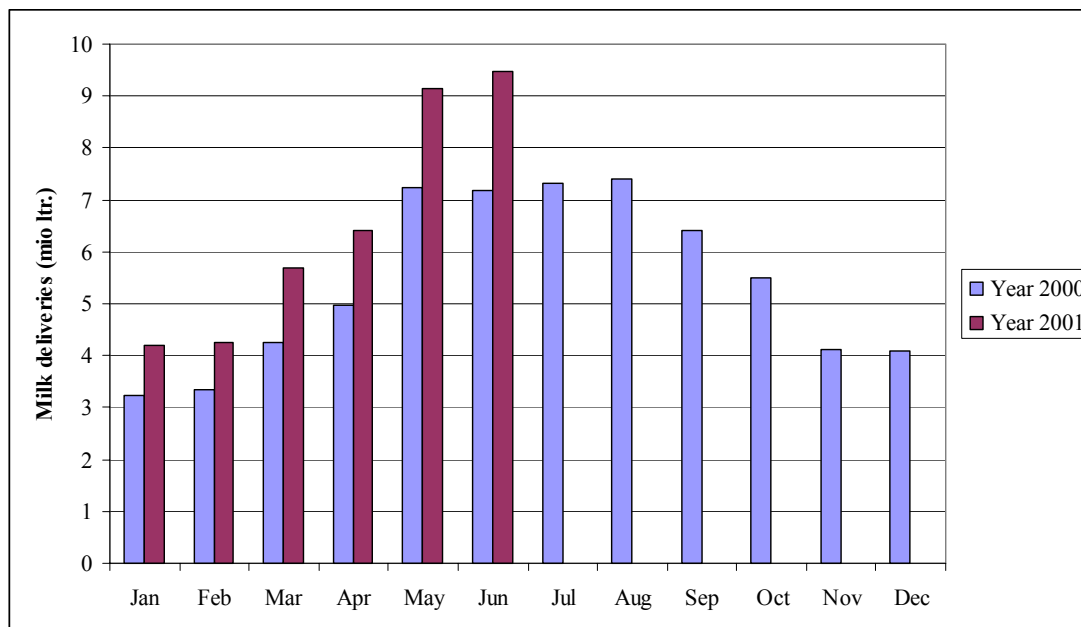


Figure 8: Change in share of different size classes of milk suppliers (ICC Paslek), 1994-2001

