Finance, Investments, and Restructuring in Polish Agriculture

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Working paper 2002/1

www.prgleuven.be

The authors thank Hamish Gow for discussions on the issues addressed here and for collaboration in part of the data collection. We thank participants in the Middlebury conference for useful comments, and we are grateful to Mr. Klekoska, Ewa Maciag, Jadwiga Ziolkowska, Dr. Uminski, Maja Grabkowska and students from the University of Gdansk for their help with the survey. This project was financially supported by the Fonds voor Wetenschappelijk Onderzoek (FWO project G.0288.99 (A3463)).

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Introduction

Agricultural credit and rural finance problems are important constraints on restructuring, investment, and thus on recovery and growth in transition countries. The problems are due to a combination of "normal" imperfections of rural credit and risk markets and specific transition problems such as macroeconomic instability, institutional reforms of the financial system, low profitability in agriculture, accumulated debts, high risk and uncertainty, and general contract enforcement problems (OECD, 1999, 2001).

Financing can come both from own resources and from (formal or informal) loans. Transition has constrained both sources of credit. Own financial resources are constrained because hyperinflation wiped out many savings in early transition, and low profitability and cash flow problems have complicated building up own resources during transition. Access to external credit has suffered from the same, and other, problems. Financial institutions are less likely to lend to enterprises with low profitability, outstanding debts, and cash flow problems. In addition, institutional problems such as ongoing reforms of the banking systems and the farms, a lack of credit history, high monitoring costs, etc. contribute to these problems (Swinnen and Gow, 1999).

While early discussions of the finance problems focused mostly on the institutional problems, later studies emphasize profitability and cash flow problems. For example, Pederson *et al.* (1997) emphasize the importance of profitability and cash flow problems in the perceived "excessive debt burden" of Russian farms. Another example is a 1998 Romanian survey, where farmers identify insufficient income as the key reason for their loan application being rejected - 52% of the cases, much more than lack of collateral (18%) or outstanding debts (11%) (Davis *et al*. 1998).

An important factor in the cash flow and profitability problems are contract enforcement problems throughout the agri-food chain (Gow and Swinnen, 1998, 2001). A widespread effect is delayed payments for product deliveries. A survey of food companies in Central Europe identified payment delays as their constraint number one for growth (Gorton *et al.* 2000). Data from Slovakian farms show that payment delays are strongly correlated with profitability problems (Slovak Ministry of Agriculture, 1996). A survey of Hungarian agricultural enterprises shows that for 61% of the farms contract breaches under the form of delayed payments are an important impediment to expanding profits (Cungu and Swinnen, 2002).

These finance problems have induced political pressure for governments to intervene. In many transition countries, governments have reacted by introducing credit subsidies and loan guarantee programs. The impact of these programs varies considerably (Swinnen and Gow, 1999). However, more importantly, progress in macro-economic and institutional reforms has reduced some of the institutional constraints and, especially in the more advanced transition countries, farm access to finance has gradually improved during transition. Yet, important imperfections and constraints remain.

Not only policy reforms but also private company restructuring has contributed to overcoming finance constraints. Agribusiness restructuring and investments up- and

downstream from the farms have contributed to reducing farm finance constraints (Gow and Swinnen 2001). Typically following a significant restructuring of the agribusiness companies, and often following foreign investment, companies have initiated programs to assist farms with accessing inputs and to provide trade credit and other financial assistance. While case studies suggest that the impact of these programs has been significant in some cases, there is little evidence to measure their relative importance.

In this paper we study agricultural investments and financing in Polish agriculture, with emphasis on the dairy sector. Agriculture, predominantly on small farms, remains a dominant sector in Polish rural areas. Dairy plays an important role since many of the small farms have at least some milk production. In this paper, we combine insights from other studies with conclusions from a study on financing and investment in the Polish dairy sector. Specifically, we surveyed dairy farms and dairy companies in northern Poland to analyze who has made investments and to what extent their investments have been financed by loans from banks or via trade credit from dairy companies.

The paper first reviews reforms and changes in the Polish financial sector and its implications for rural credit. We then present information from our survey and the final section draws general conclusions.

Agricultural Credit and Rural Finance in Poland

Prior to 1989, credit was distributed through the fully state controlled banking system in accordance to a State central plan. For agriculture and the food sector this was done through the co-operative state-owned Bank for Food Economy (Bank Gospodarki Zywnosciowej S.A. "BGZ"). It was the Polish government's instrument to implement its agricultural policy, mainly by extending subsidized loans to farmers and co-operatives, both state-owned and private.

Major policy reforms started in 1988 in Poland, including macro-economic policy changes. In 1989 the banking sector was reformed, allowing all banks to operate in all sectors, credit ceilings were removed and interest rate policy was gradually liberalized. These reforms had major impacts on prices of products and finance. Inflation jumped to 600% by 1990, but fell rapidly in 1991 and 1992 (see figure 1). Interest rates were at 60% in 1990, but have since come down consistently; in 2002 they fell to less than 10% (figure 2). The reforms affected rural finance in other ways as well: by the induced restructuring of the rural banking sector, and by the restructuring of the agro-food sector, and the attraction of foreign capital sources through foreign investment.

The main structural reform of Polish rural finance was the reform of BGZ. BGZ ceased to serve as the central union for the co-operative banks. However most co-operative banks signed association agreements with BGZ. Initially, there existed 1663 small, local co-operative banks that provided services mainly to the population of villages and small towns. In 1994, BGZ was transformed into a joint stock company with the passing of the Act on Rural Banking Restructuring. This act also formed 9 regional co-operative banks out of the previous co-operative banking system, all supervised by the central co-operative bank, the BGZ. After restructuring and consolidation between 1993 and 2000, the number of co-operative banks decreased from 1653 to 660. In 2002 BGZ shareholders approved a new

strategy which would transform the bank into a universal bank. At the end of 2001, agriculture and agribusiness related loans still represented over 50% of BGZ's total corporate loan portfolio (EBRD, 2002; National Bank of Poland, 2001)

The current Polish rural banking system can be divided into four groups (World Bank 2000). The cooperative group, as described above, includes the Bank for Food Economy (BGZ), several regional cooperative banks, and the local cooperative banks. The cooperative group is the most important part of the banking system for rural people. BGZ has several programs that target agriculture. The second major institution in rural Polish lending is ARMA (Agency for Restructuring and Modernization of Agriculture) – a government agency that offers loan subsidies for rural lending undertaken by commercial banks. The commercial banks advance credits at their own risk while ARMA provides the interest subsidy. A third important institution is the Polish State Savings Bank (PKO BP). PKO BP is charged with lending for household purposes. Finally, there are commercial banks and private non-bank entities that provide credit to their suppliers or consumers. Commercial banks appear to be increasingly involved in making loans to large agricultural enterprises and rural agri-businesses. Other credit sources are large firms, both input suppliers and downstream companies (including supermarkets) that provide credit as part of a larger business relationship.

A 1999 World Bank study surveyed 2835 households in four voivodships. Rural Polish households report low levels of involvement with financial institutions. Less than 25% of the households had any financial savings in a bank; and only 30% of households had applied for a cash loan in 1999, and only 30% had at least one member with outstanding cash credit. The main reasons for not applying for a loan were: 'Do not need a loan, prefer to work with own resources' (33%); 'High interest rates' (23%); 'Credit is risky because of unstable income' (21%).

Local cooperative banks are by far the largest provider of cash loans, but their loans are, on average, much smaller than the loans disbursed by the BGZ (8,300 PLZ and 21,800 PLZ resp.) Loans from both types of banks are relatively well collateralized, i.e. between 85% and 90% of loans are guaranteed by collateral. For loans from other banks this share is in the range of 60% to 65%. Furthermore, a high share of loans from the BGZ and local cooperatives have a subsidized interest rate (65% and 73% resp.), while this is much lower for loans from other banks (on average 25%)

The World Bank study concluded that trade credit is important in Polish agriculture, but that it is primarily targeted to larger farms. Very large companies, both input suppliers and downstream companies (including supermarkets), provide credit as part of a larger business relationship and this appears to be a very important source of credit for the largest 12% of farms in Poland (reference ?). These findings appear consistent with studies from other countries which suggest that vertical contracting and support is mostly with larger farms as processing companies, especially foreign investors, prefer large suppliers to minimize transaction costs (Key and Runsten, 1999; Dolan and Humphrey, 2000).

However, our own findings, as explained in the next section, suggest that also for small farms such trade credit is very important, and that most farms use a combination of bank loans and dairy financing, with the source of financing strongly determined by the type of investment.

Empirical evidence on investments and finance from the Polish dairy sector

Poland is by far the most important dairy producing country in Central and Eastern Europe. The accession of Poland alone would increase total milk output in the EU with 10%. However, current production levels are still below pre-transition levels of production. Figure 3 shows that milk production and the number of dairy cows fell by almost 30% between 1989 and 1996. While it stabilized in 1996-1998, the number of cattle declined by another 10% between 1998 and 2000.[1] Yields have turned around since 1992 and are since 1997 above their pre-reform level.

The survey

Our empirical evidence is based on a 2001 survey of both dairy producing rural households and dairy companies in the Warminsko-Mazurskie region in the North-East of Poland, and statistical data from this region. Warminsko-Mazurskie is an important dairy region in Poland.

We interviewed 290 rural households who were involved in dairy production. The households were selected randomly within municipalities. Because one of the objectives of the analysis was to study the impact of foreign investment, and because there are relatively few foreign owned processors in the region, we over-represented municipalities in the vicinity to the three foreign owned dairies in the region (Kraft/Bel - Chorzele; ICC - Paslek; Warmia Dairy). [2] As a result, while households in the survey deliver to 24 different dairy processors, around 45% of the households deliver to foreign owned companies, and the remaining 55% to Polish dairies.

The average size of the dairy farms in the sample, in terms of herd size, was 8.8 cows in 1995, and 10.5 cows in 2000. While this seems small by East European standards, it reflects the farm structure in Poland.[3] Milk production in Poland was organized mostly on small scale private family farms even under the Communist regime. The agricultural census in 1996 showed that, out of approximately 1.3 million dairy farms, 89% had only 1 to 4 cows. Moreover, 75% of Poland's milk was produced by farms with less than 10 cows. Less than 60% of total milk production was delivered to dairies; the rest was used for self-consumption or directly sold on the local market. By 2000, 85% of Polish dairy farms still had less than 5 cows.

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[1] See Macours and Swinnen (2000) and Swinnen (2002) for an explanation of the causes of this output fall.

[2] Using a list of supplying farmers from the foreign owned dairy companies would create a selection bias since a list of current suppliers will exclude any farmers that have stopped supplying over the past years.

[3] In fact, the share of the smallest dairy farms is slightly underrepresented and the share of the largest dairy farms overrepresented in our sample, compared to the size distribution of all dairy farms in the Warminsko-Mazurskie region in 2000.

The small farms typically use labor intensive production techniques. This creates specific investment 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 (Dries and Swinnen, 2002). First, there is a 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. Further, the quality of milk deliveries has increased importantly over the past five years.

Trade credit and financial assistance programs of dairy companies

To complement the information from the household surveys we performed a series of in-depth interviews with one of the largest dairy equipment suppliers and with six of the 24 dairy companies the farmers deliver to. The structure of the dairy sector has changed over the past decade (see table 1). The total number of dairies has decreased by 22% between 1993 and 1999. This decrease was mainly caused by a decrease in the number of cooperatives, while the number of private companies has almost doubled. Yet, in 1999 dairy cooperatives still controlled 70% of the market. Twenty (40%) of the privately owned dairies had majority foreign investor ownership.

Four of the six companies we interviewed are medium size companies (50-70 million liters of milk), one large (420 million liters) and one small (2.5 million liters). 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 (see table 2).

All the interviewed dairies have programs that assist their supplying farms. All have an input (esp. feed) supply program. The companies provide access to inputs, such as feed or seeds and fertilizers for on-farm feed production. Farmers purchase the inputs through company shops and the inputs are paid from the milk checks. One company also 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.

Five out of six companies assist farms in investing through credit programs. Investment assistance takes the form of leasing of equipment and cows, also with payments deducted from future payments for milk deliveries, as well as loans for buying new or second hand cooling and milking equipment. The only dairy which did not provide credit assistance programs or agricultural extension services to its suppliers was the small dairy 'Mleczarnia', probably because it did not have sufficient means (size).

Most of the companies also provide extension services to their suppliers. 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. In some

cases these extension programs had a large impact on delivered milk quality because major improvements resulted from introducing basic hygienic and sanitary rules when handling the milk on the farm.

Finally, five of the dairies provide bank loan guarantees for bank loans to farmers. Almost all bank loans for farm investments are with preferential interest rates (subsidized interest rates around 5% compared to commercial loans with 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.

Farm investments and credit sources

More than three quarters (76%) of all households in the survey made investments in the past ten years. Of those who invested, 58% used loans, and the rest (42%) used own resources to finance the investment. (see table 3)

There are important differences in investment behavior by farm size. Only half of the farms (52%) with 1-5 cows made investment compared to 78% of the 6-10 cow farms. Almost all (92%) of the farms with more than 10 cows made investments.

Also the source of investment finance differs by size category. Three quarters (74%) of the largest farms use loans to finance the investments, while only slightly more than half of the other farms use loans.

From those who obtain credit, 43% get credit from the dairy company, and 69% get a loan from a bank (including 10% who get loans from both sources). Of those who get loans from the banks the vast majority does so under so-called preferential, i.e. subsidized, interest rates. In fact, 60.4 % of the households had used preferential bank loans in the past, while only 11% had ever used bank loans on commercial terms. Moreover, preferential bank loans provide cheaper credit than the dairies: on the question why households who invested did not use loans from the dairy the most important reason (42%) was that they could get cheaper loans elsewhere.

In summary, small farms are less likely to invest than larger farms and if they do, they are more likely to do it using own resources. Almost all farms over 10 cows invest, and three quarters of them use loans, both from the banks and from dairies. Moreover, while the share of loans from the dairy company is stable across size classes, the farms with less than 5 cows are less likely to obtain a loan from the banks.

Further, table 4 suggests that the reason why loans come from dairies or from banks may have more to do with the *type* of investment than with the characteristics of the farm. Dairy loans are used almost uniquely for investments in enlarging and upgrading the livestock herd (30%) and cooling tanks (56%). Together these account for 86% of all dairy loans. In contrast, only 29% of all bank loans are used for these types of investments. Bank loans are used more for investments in stalls (new, enlarging, or modernizing), land, and other investments.

Table 4 also illustrates that investments in land and in cooling tanks are financed relatively more from loans. This holds even more for investments in new cooling tanks (63%) than in second hand cooling tanks (44%).

Table 5 indicates that trade credit, i.e. loans from the dairy, for investments are especially important for small to medium size loans. For investment loans up to 10,000 PLZ the dairy provides around one-third of the loans. For larger loans (10-50,000 PLZ), the share of dairy loans declines (22%). Loans over 50,000 PLZ come almost exclusively (93%) from the banks under preferential, i.e. subsidized, loans.

Table 5 confirms also how in general commercial bank loans are very limited in Polish agriculture as most of the bank loans have subsidized interest rates.

Note that the loans from dairies are only a partial indicator of the financial assistance offered by dairies. As explained above, part of their assistance is under the form of loan guarantees with the banks. Hence, part of the loans given by the banks are indirectly due to these loan guarantee programs of dairies. The importance of these is emphasized by answers to the question why households could not obtain preferential bank loans. Almost half (45%) of the households who could not obtain preferential bank loans identified lack of sufficient collateral as the main reason.

Table 6 provides further evidence that dairy financial assistance programs have been very important in stimulating on-farm investments. The share of farms that made recent investments is significantly larger in the group that delivers to dairies with assistance programs (86.5% on average) compared to those that deliver to dairies without assistance programs (66.4 % on average).

Interestingly, the largest difference is for the input supply program. This suggests that the indirect investment impact of the programs may be even more important than the direct impact. The programs which assist farms in accessing inputs (mainly feed) are likely to affect investment indirectly by enhancing the profitability of the farm by lowering input costs, or reducing transaction costs in accessing inputs. As such they affect investments through improved profitability or through reduced transaction costs in input access.

The story is similar for looking at changes in herd size (table 7), although less farms have increased their herd size (53% on average with assistance, and 40.5% without) than have made investments in general (87% on average with, and 66% without). Yet there is a significant difference in herd size upgrading between farms delivering to dairies with and without assistance programs.

Finally, we found no significant difference in 2001 of assistance programs provided by foreign owned companies and domestic dairies, except for the loan guarantee programs which were more extensively provided by the foreign dairies. (see table 8) Other evidence suggests that foreign investment has played a more important role early on in transition as an initiator of change and institutional innovation. The survey shows that the share of farms delivering extra class milk (the highest quality by EU standards) was significantly larger among farmers delivering to foreign owned dairies (58% versus 38% among farmers delivering to domestic dairies) in 1995. However, by 2000 this gap had almost disappeared:

83% versus 79% of farms delivering to foreign versus domestic dairies supplied extra class milk (Dries and Swinnen, 2002).

Impact

The impact of these investments has been significant. First, the share of "bulk tank farmers", i.e. farms which have invested in on-farm cooling equipment, in total milk supply of the 6 dairy companies has increased from around 5% in 1996 to around 30% in 2001.

Second, partially as a result of this, the average quality of milk delivered to the six dairies which we interviewed improved dramatically over the past five years. While by 1996 only 30% of the milk delivered to these dairies was of 'EU extra class' quality, by 2001 this share had risen to around 80% (see figure 4).

Third, there is an important shift in the farm size distribution. On the one hand, there is a movement of farms towards smaller farm sizes, i.e. farms that are moving out of commercial dairy production. On the other hand, farms on the other side of the size distribution are growing even more to reach some viable size of production. Figure 5 shows that there is a strong tendency for farms with 4 to 12 cows to decline in favour of very small farms (1-3 cows) or to grow to become farms that have 18-24 cows. If we look at the changes in distribution in terms of numbers of cows per farm size group, the dynamics become even more outspoken (figure 6). There is an important increase in the number of cows kept by farms with 18 to 24 cows, while increases in the number of cows kept in the smallest farms are more moderate.

Conclusions and Lessons

Agricultural finance in Poland has been dramatically restructured since 1988. Before, credit was distributed through the fully state controlled banking system in accordance to a State central plan. It was the Polish government's instrument to implement its agricultural policy, mainly by extending subsidized loans to farmers and co-operatives, both state-owned and private.

Since then the banking sector and macro-economic policy has been reformed and liberalized. While this has caused hyperinflation, high interest rates, and many disruptions in the banking and rural finance system in early transition, these transitional features have diminished, some faster than others. Inflation came down quickly to manageable levels. Interest rates have only gradually declined from over 40% to less than 10% annually.

The restructuring of the banking system and the provision of finance to enterprises has taken longer. The flow of finance to farms and rural enterprises, and recovery of farm investments, under the new market finance system seems to have taken off only in the second part of the 1990s.

While many studies report that there remain significant constraints in rural credit markets in Poland, our study suggests a more optimistic conclusion. A large part of Polish farms have made investments in the past years, and many of them with loans from either banks or processing companies. Only the smallest and least dynamic farms seem to still have

significant problems accessing finance for investments. Virtually all farms with more than 10 cows (not exactly an enormous size) have made investments, and three quarters of them with loans.

Processing companies, and in particular dairy companies in our study, have played an important role in financial assistance, in particular for dairy-specific investments such as cooling tanks and livestock. In addition, they had an important indirect impact on farm activities and investments through their feed supply programs, affecting the overall profitability of the farms, and their loan guarantee programs, affecting the access to bank loans of the farms. These assistance programs have been targeted at both large and small farms.

While foreign investment in processing companies seems to have played an important role in introducing institutional innovations in contracting and financial assistance programs for farms, by 2001 there was no significant difference in the programs and assistance provided by foreign companies and domestic companies. This suggests that FDI may be important as an initiator of change but that important spillover effects can occur and that major innovations can spread through the agri-food system based on domestic companies.

The impact of these programs at the farm level has been significant. On-farm investments in dairy specific equipment have resulted in an important increase in high quality product deliveries. Furthermore, changes in the farm size distribution are showing a bimodal pattern. Medium sized farms are either growing into more competitive, viable enterprises, or they decrease in size and exit the market.

The use of credit subsidies is widespread in Poland. In our survey the vast majority of the bank loans had preferential terms, and credit subsidies seem to have an important impact on the costs of bank loans for farms. In fact, credit subsidies seem to be one reason why trade credit is not more widespread than it currently is. It is impossible from our analysis to conclude how much investment would take place in the absence of the credit subsidy system.

Finally these insights reinforce some basic lessons for government policy. First, and foremost, they confirm the importance of basic reforms in macro-economic policy and in the banking institutions. A stable macro-economic policy framework, and overall policy stability is not only important for any sustainable finance, rural or urban, to develop, but also to attract investment in agribusiness and the food industry, either from foreign or domestic investors.

The study also confirms that privatization and reform of the up- and downstream sectors are important factors for the creation of recovery, investments, and growth in the farming sector. This is not only important for providing access to output markets and inputs, but also to enhance access to finance for investments, and even inputs.

REFERENCES

ARR and IERiGZ, 2001, *Rynek Mleka. Stan I Perspektywy*, Warsaw.

Cungu, A. and J. Swinnen, 2002, "Investment and Contracting in Transition: Evidence from Hungary" *LICOS Discussion Paper*, LICOS-Centre for Transition Economics, Katholieke Universiteit Leuven.

Davis, J.R., Gaburici, A., and P.G. Hare, 1998, "What's Wrong with Romanian Rural Finance? Understanding the Determinants of Private Farmers' Access to Credit?", Centre for Economic Reform and Transformation discussion paper 98/08, Department of Economics, Herriot-Watt University, Edinburgh.

Dolan, C. and J. Humphrey, 2000, "Governance and Trade in Fresh Vegetables: The Impact of UK Supermarkets on the African Horticulture Industry", *J of Dev Stud*, 37(2), pp. 147-176.

Dries, L. and J. Swinnen, 2002, "Globalization, European Integration and Transition of the Polish Dairy Sector", *PRG Working Pa*per Katholieke Universiteit Leuven.

Gorton, M., Buckwell, A., and S. Davidova, 2000, "Transfers and distortions along the CEEC food supply chains" in Tangermann, S., and M. Banse (eds.), *Central and Eastern European Agriculture in an Expanding European Union*, CAB International.

Gow, H. and J. Swinnen, 1998, "Agribusiness Restructuring, Foreign Direct Investment, and Hold-Up Problems in Agricultural Transition", *European Review of Agricultural Economics*, 25(4):331-350.

Gow, H. and J.F.M. Swinnen, 2001, "Private Enforcement Capital and Contract Enforcement in Transition Countries" *Amer J of Agr Econ*, 83(3): 686-690

Key, N. and D. Runsten, 1999, 'Contract Farming, Smallholders, and Rural Development in Latin America: The Organization of Agroprocessing Firms and the Scale of Outgrower Production', *World Dev*, 27(2), pp. 381-401.

Macours, K. and J. Swinnen, 2000, "Causes of Output Decline during Transition: The Case of Central and Eastern European Agriculture", *J of Comp Econ*, 28(1): 172-206.

Majewski, E. and G. Dalton, 2000, *The Strategic Options for the Polish Agro-Food Sector in the Light of Economic Analyses*, FAPA, Warsaw.

OECD, 1999, *Agricultural Finance and Credit Infrastructure in Transition Economies*, OECD Center for Co-operation with Non-Members, Paris..

OECD, 2001, *Agricultural Finance and Credit Infrastructure in Transition Economies*, OECD Center for Co-operation with Non-Members, Paris.

Pederson, G. D., K. Brooks, O. Lektman, and Z. Lerman, 1997, "Russian Farm Finance Performance and Restructuring: A Debt or Profitability Problem?" World Bank Discussion Paper (Draft), The World Bank, Washington, DC.

Swinnen J. and H. Gow, 1999, "Agricultural Credit Problems and Policies during the Transition to a Market Economy in Central and Eastern Europe", *Food Policy*, 21(1):21-47.

Swinnen, J., 2002, "Transition and Integration in Europe: Implications for agricultural and food markets, policy and trade agreements", *The World Economy*, 25(4): 481-501.

World Bank, 2001, *The Functioning of the Labor, Land and Financial Markets: Opportunities and Constraints for Farming Sector Restructuring*, The World Bank, Washingtom D.C.

Table 1: Dairy companies with more than 50 employees in Poland, 1993-1999

	1993	1999	Change 93-99 (%)
Total	**410**	**320**	**-22**
Cooperatives	352	270	-24
Public companies	30	0	-100
Commercial law companies	28	50	+79

Source: Majewski and Dalton (2000)

Table 2: Fact sheet on surveyed dairy companies

	Mlekpol	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 3: Investments and Loans of Farm Households

	Invests (% of total)	Uses loan to invest (% of A)	Uses dairy loan (% of B)	Uses bank loan (% of B)	Uses dairy loan (% of A)	Uses bank loan (% of A)
	A	*B*	*C*	*D*	*E*	*F*
1-5	52	54	41	50	21	26
6-10	78	51	43	70	22	36
>10	92	74	43	75	31	54
ALL	**76**	**58**	**43**	**69**	**25**	**40**

Table 4: Investments and loans by type (%)

	Investments	Total Loans		Dairy loans	Bank loans
	% by type	% investm.	% by type	% by type	% by type
Cows	14	37	14	30	9
Cooling tank	20	55	30	56	20
Stall	24	30	20	3	26
Land	9	46	11	0	14
Fence	11	2	0	2	0
Other	23	38	24	9	30
TOTAL	100	36	100	100	100

Table 5: Credit source and loan size (for most important investment)

Loan from (# respondents = 164)	dairy	bank, preferential	bank, commercial	other	Total
Loan amount (in PLZ)					
< 5000	29.6	57.7	8.5	4.2	100
5000-10000	34.9	55.8	7.0	2.3	100
10000-50000	22.2	69.4	8.3	0.0	100
> 50000	7.1	92.9	0.0	0.0	100

Table 6: Share of farms delivering that have made recent investments by dairy type

	With	Without
Credit program on-farm inv	84.0	67.7
Credit program cows	84.4	67.7
Input supply program	87.8	54.9
loan guarantee program	89.7	75.2
Average	86.5	66.4

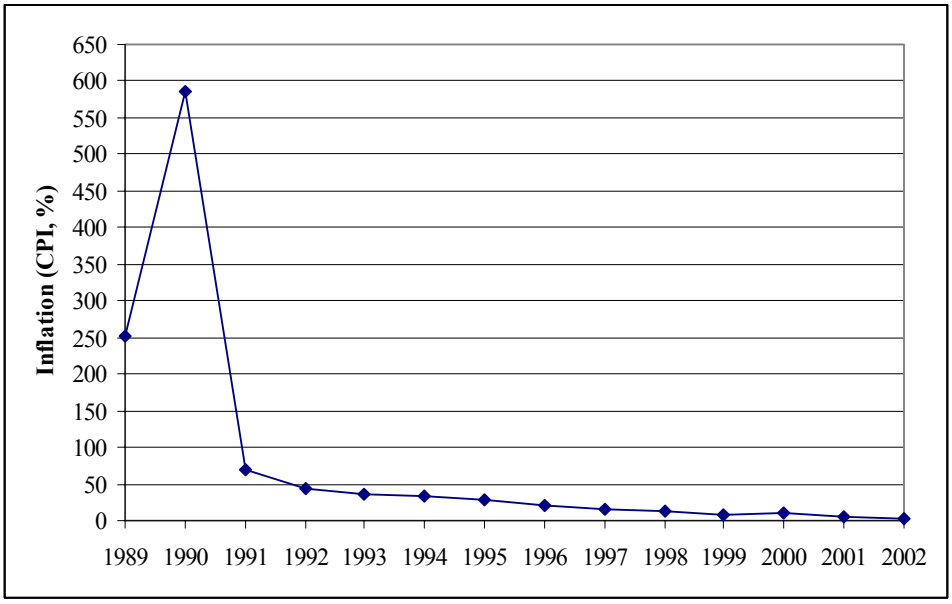
Table 7: Share of farms that increased their herd size since 1995 by dairy type

	With	Without
Credit program on-farm inv	54.0	44.6
Credit program cows	55.1	41.5
Input supply program	52.5	37.3
loan guarantee program	51.7	38.5
Average	53.5	40.5

Table 8: Foreign ownership and financial assistance programmes (% of farms delivering)

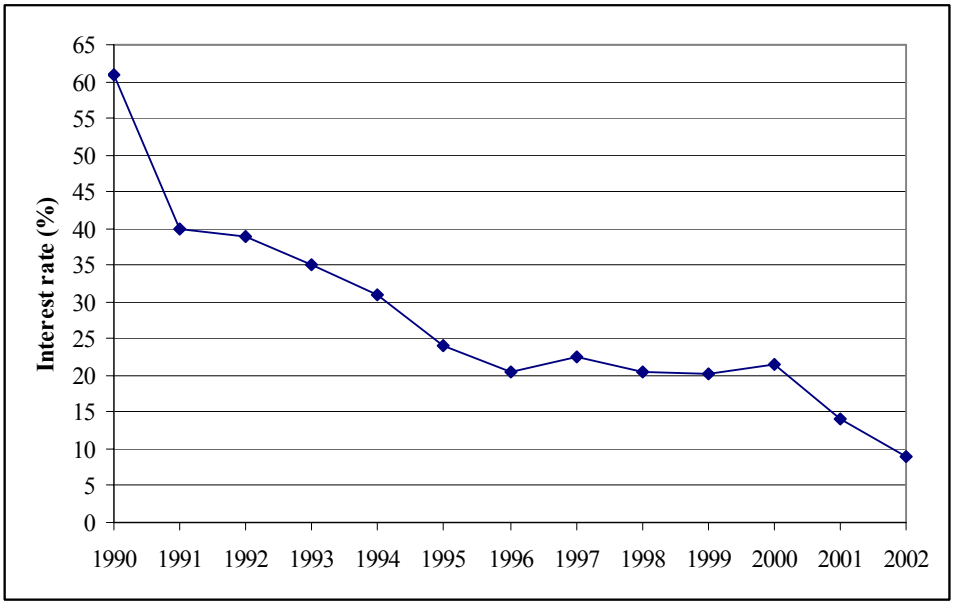
	Foreign owned	Domestic
Credit program on-farm inv	71.6	71.4
Credit program cows	73.9	70.7
Input supply program	78.9	77.5
loan guarantee program	46.2	29.8
Average	71.6	71.4

Figure 1: Inflation CPI (annual average, %), Poland 1989 – 2002



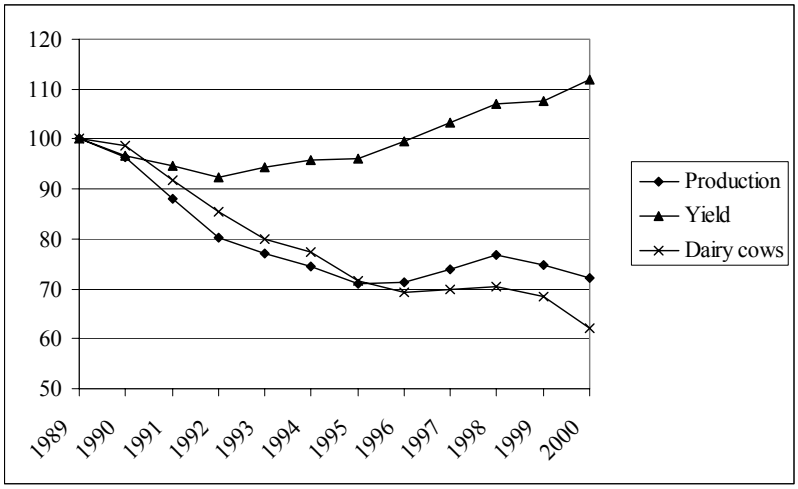
Source: EBRD

Figure 2: Interest rate (%) defined as the lowest rate charged by commercial banks to prime borrowers, Poland 1990 - 2002



Source: EBRD

Figure 3: Milk production, number of dairy cows and milk yields (Change 1989-1998 with 1989=100)



Source: ARR and IERiGZ (2001)

Figure 4: Change in share of highest quality class milk (Extra) in total supply to six dairy companies

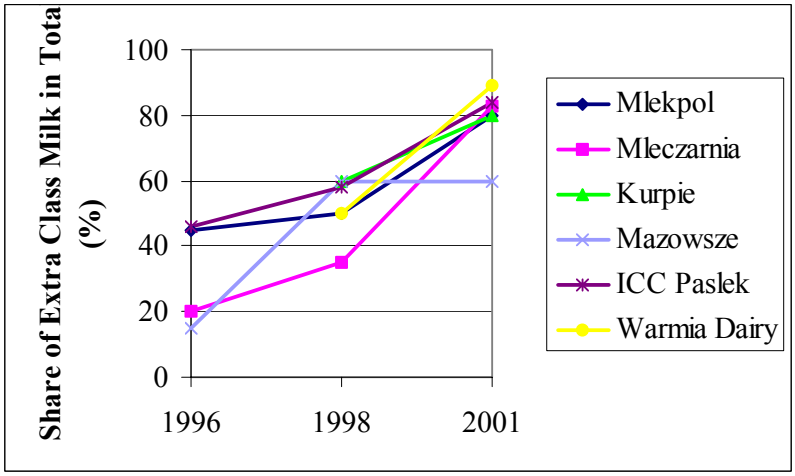


Figure 5: Change in number of farms per farm size class, 1995-2000

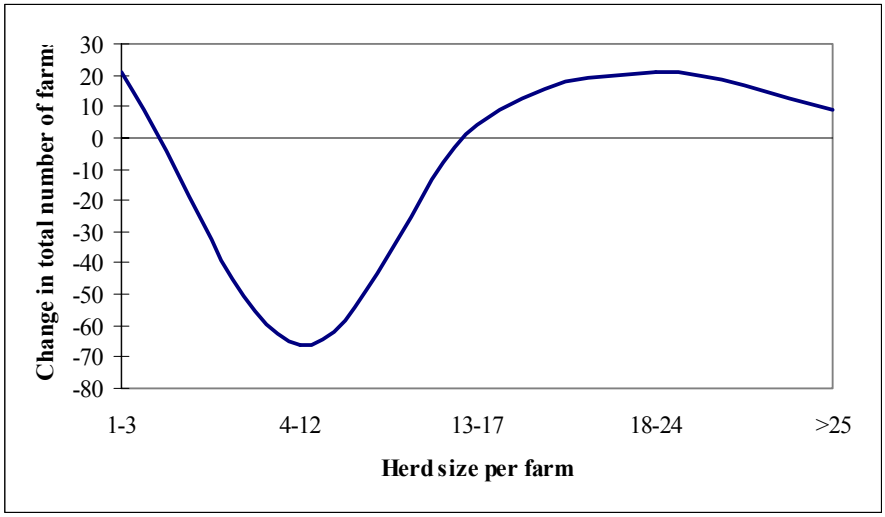


Figure 6:Change in number of cows per farm size class, 1995-2000