The Livestock Sector in Eastern Europe

Constraints and Opportunities

Cornelis de Haan,
Tjaart Schillhorn van Veen, and
Karen Brooks
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The World Bank
Washington, D.C.
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ISSN: 0259-210X

Cornelis de Haan is livestock adviser in the World Bank’s Agriculture and Rural Development Department. Tjaart Schillhorn van Veen is livestock specialist in the Agriculture and Rural Development Division of the Bank’s Europe and Central Asia, Middle East and North Africa Regions Shared Services Department. Karen Brooks is senior economist in the Agricultural Policies Division of the Bank’s Agriculture and Rural Development Department.

Library of Congress Cataloging-in-Publication Data

Haan, C. de.
The livestock sector in Eastern Europe: constraints and opportunities / Cornelis de Haan, Tjaart Schillhorn van Veen, and Karen Brooks.
p. cm. — (World Bank discussion papers ; 173)
Includes bibliographical references.
ISBN 0-8213-2202-8
III. Title. IV. Series.
HD9425.E82H3 1992 92-26314
338.1'76'00947—dc20  CIP
FOREWORD

Agriculture in Eastern Europe is undergoing dramatic change. Ownership of land and animals is transferred from the state to the private sector. Consumer and producer subsidies are being phased out, and formerly protected internal markets are being opened up. These changes have had profound effects on production and rural income and employment, as internal and export demand collapsed and prices plummeted. The whole sector now has to adapt to these open market conditions.

The crucial livestock sector--contributing about half of agricultural production and using more than half the locally produced grain--was severely affected by the move from a command to a market economy. Past policies of heavy protection and subsidies had caused excessive consumption, use of inappropriate--and often polluting--technologies and inefficient production. The required adjustments are therefore the more painful. Production has declined, especially in production systems depending on imported feed with respect to inputs, and external market with respect to output. Overall the sector has experienced a contraction of approximately 20% since the late eighties.

Still, the sector has considerable potential. Physical conditions are generally good for livestock production and market opportunities already exist and can be still further developed.

This report indicates how this potential can be further developed. It presents the current situation as a result of past policies and recommends short and medium term measures to improve efficiency, develop markets and reduces the sector's negative environmental impact. This report intends to guide World Bank staff, other donors and Eastern European officials involved in the sector in the technical, institutional and policy issues concerned.

Harinder S. Kohli
Director
Technical Department
Europe, Central Asia, Middle East and North Africa Regions

Michel Petit
Director
Agriculture and Rural Development Department
ACKNOWLEDGEMENTS

The authors have made extensive use of the information presented at two consecutive round tables organized by the European Association for Animal Production and FAO in respectively Budapest (April 1991) and Berlin (January 1992). These contributions to a better understanding of the processes in the livestock sector in Eastern Europe are gratefully acknowledged. Furthermore, the authors wish to thank the many World Bank colleagues who commented on this paper. In particular, they would like to thank Mr. Prem C. Garg, who reviewed several drafts, Mrs. Arntraud Hartmann and Mr. Odin Knudsen who acted as peer reviewers, Mr. Rory O’Sullivan for support and encouragement and Mr. Willem Zijp who provided input in the part on Human resource development. As always the remaining errors and omissions should be attributed to the authors.
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EXECUTIVE SUMMARY

INTRODUCTION

i. The purpose of this paper is to analyze past and present developments in the Eastern European livestock sector, in order to prepare for a carefully formulated and executed adjustment. The authors try to explain the forces which shaped the sector in the past and, based on this analysis, suggests priorities for World Bank assistance in the modernization process.

PAST POLICIES

ii. In most East European countries livestock comprises about half of total agricultural production, is the main user of cereals, and is an important foreign exchange earner. Past policies have led to this prominent place, and largely shaped the present sector. First, as the consumption level of meat and milk was generally considered to be a barometer of the well-being of the population, national policies pursuing self-sufficiency and low food prices through high protection and subsidy levels were considered to be fully justified. Later on it became also important as a foreign exchange earner. The livestock sector was therefore one of the most highly subsidized and protected sectors in agriculture. Emphasis, however, was on quantity rather than quality. Second, and in part because of its perceived importance in earning foreign exchange, policies were introduced to collectivize the livestock sector. Still, in all Eastern European countries individual ownership of livestock remained permitted and, in effect, the private sector owned relatively more livestock than land. Meat and milk processing, on the other hand, remained largely in the state sector. It was therefore not subjected to the intense competition and subsequent plant size increase, which shaped the industry in the US and Western Europe in the eighties. Third, with increasing budgetary constraints in the eighties, investment dropped to very low levels.

RESULTING TECHNOLOGIES

iii. These policies led to inefficiencies in installations and technologies.

(a) Farm structure. Collectivization created units too large to be economically efficient, except in Poland and Yugoslavia where private agriculture predominated. The large collective animal farms created an important source of environmental pollution. On the other hand, in those countries where land was not collectivized, the private sector and farm size remained small, with extremely fragmented plots.

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1/ This paper concentrates on the developments in Central and Eastern Europe, e.g., Bulgaria, Czechoslovakia, Hungary, Poland, Romania and the former Yugoslavia (EEU 6). It does not include the Commonwealth of Independent States (CIS).
(b) Feed. Subsidies on grain, fuel and interest rates led to an excessive use of concentrate feed in dairy production instead of the more rational use of fodder crops and grassland. In addition, grain subsidies led to inadequate attention to overall feed quality, especially to the energy/protein balance. The result was an imbalanced diet and overfeeding with costly grain. Tentatively it was estimated that the structural deficit of 1 million tons feed protein was compensated by a wasteful use of 10 million tons grain.

(c) Stock quality. The policy of self-sufficiency and the input subsidy policies led to the development of breeds, that, especially in efficiency characteristics (feed conversion, fertility) and quality (carcass quality, lean-to-fat ration) can not, given the current globalization of the markets, compete with the modern American and European breeds and lines.

(d) Input and advisory services. Research and extension focussed on the social sector, and have been conditioned by the subsidy policies on feeds and investments. Little technology is available on equipment and machinery for small-holders (milking, cooling equipment for example) or on grassland. On the other hand, the command economy facilitated the imposition of the strict discipline necessary for good disease control. Thus, the major contagious diseases were well controlled. The "management" diseases (stiffness due to poor housing, mastitis, deficiency diseases, internal and external parasites) were less well controlled and brought substantial losses.

(e) Equipment and installations. Collectivization, subsidies, and the declining investment levels, brought labor intensive, energy inefficient and environmentally dangerous farm buildings and equipment.

(f) Agro-processing. The decline in investment and the lack of competition caused stagnation of the development of processing (feed mills, milk and meat processing plants). Plants remained small and equipment outdated. This resulted in inefficient processing and a limited product range of mediocre quality and, consequently, in an inability to compete in the international markets.

RESULTING PRODUCTIVITIES

iv. Despite subsidies and protection, the overall performance of the sector has been mediocre at best. Annual growth in the sector varies from a very poor 0.4%, for beef, to an acceptable 3.0-4.7% for the poultry sector. Productivity per animal has stayed even by West European standards, but was lagging in efficiency characteristics like feed conversion, where Eastern Europe (with the exception of Hungary) is about 30 percent behind. The limited competitiveness in the international markets is shown by the

2/ Poultry, with its rapid turnover and industrial production system, is generally doing well as long as feed costs are subsidized.
low value added of exported livestock products (more than half of the livestock exports are in the form of live animals) and by the much lower price (up to 40 percent less) East European products obtain in the world market. Productivity in the socialized sector is generally higher than on private farms, due to privileged access to higher quality inputs, such as feed, breeding stock and equipment.

THE SECTOR IN TRANSITION

v. The macro-economic adjustments, with the abolition of producer and consumer subsidies and the fall in real income, have led to a general decline in demand, which, together with the collapse of the Soviet market, resulted in excess supply. The sector has contracted approximately 20 percent to date, and further, albeit less drastic, adjustments are to be expected before the industry will stabilize. These adjustments often affected above all the more specialized production units that are dependent on (semi)manufactured inputs, such as the intensive poultry farms, and the larger, more commercial private farms in Poland. The contraction has an impact on the current and future development of the sector, since returns to investments facilitating consolidation and modernization are currently depressed. It is expected that the sector will, in the short and medium term, not reach the output achieved in the late eighties.

OVERALL PERSPECTIVES

vi. While precise estimates of Eastern Europe’s comparative advantage in producing milk and meat are not available, the overall outlook is modestly optimistic. The contraction taking place at present may lead to a more efficient production system, and does not necessarily result, in the long-term, in major reductions in output. The region possesses a reasonable climate, especially the southern countries (Bulgaria, Romania and Yugoslavia) are favored with a mild climate supporting low-cost production of feed, reducing the energy cost associated with poultry and pig production. The geographical location of poultry production and to a lesser extent pig production may, in the long-term, shift southwards, influenced by lower energy costs as well as by the availability of protein feeds grown in these southern areas. The region also has low-cost skilled labor and, in the countries that collectivized, large fields well suited for mechanized fodder production. Finally, many of the soils of the region are either only suitable for livestock or require a regular supply of organic manure to maintain fertility, indicating a need for a mixed farming system. On the negative side are the long winters in the northern countries, the dilapidated infrastructure on the farm and in the livestock processing industry (with the exception of Hungary), and the lack of managerial skills and motivation necessary in the complex and demanding livestock industry. The region has a large, albeit contracting, internal market and limited possibilities in the Soviet Union, the Middle - and Far East, and the rest of the developing world. The region can certainly compete for the lower end of the EEC market, but access to that market depends on political decisions.
FUTURE ACTIONS

vii. In the short term, the industry has to come to grips with (a) its approximately 20% contraction, (b) the price and input supply adjustments. Of immediate concern is to maintain an efficient production base. Specific measures may include protection from subsidized external markets, prevention from excessive fragmentation and asset stripping provision of essential inputs to improve efficiency (i.e. feed additives). The contraction should be targeted to marginal producers. Contraction should not be delayed through subsidies spread among all enterprises.

viii. In the medium term, three lines of actions are essential to improve competitiveness and sustainability of the livestock industry in the region:

(a) increase efficiency, including (1) a greater emphasis in ruminant production on fodder and pasture based production, and in non-ruminants (pigs and poultry) more attention to protein quality; (2) more attention in cattle breeding to efficiency in roughage conversion, in non-ruminant production to better feed conversion characteristics, and for all livestock more attention consumer to consumer preferences (less fat, protein content of milk); (3) more attention to labor and energy efficiency in farm buildings and equipment; (4) more attention to specialty products such as wildlife/livestock systems; and (5) improvements in management incentives, research systems and rationalization and privatization of veterinary, breeding and extension services.

(b) improve quality through (1) the introduction of better standards, the restructuring of pricing systems with incentives for quality, and the redirection of breeding and production methods; (2) expansion of the product line; (3) improved packaging; and (4) increased marketing efforts.

(c) clean-up of the environmental contamination caused by larger scale production units. This will require large investments or closure of these farms.

ix. The pursuit of greater competitiveness and sustainability will proceed within the context of changes in ownership and farm structure already underway. In each of the countries of the region, new laws on land ownership have already been adopted and changes in land tenure and farm structure have begun. These changes are complex and shaped by social and historic factors, as well as economic changes in farm structure. Asset management, not consistent with pursuit of greater competitiveness and ecological sustainability cannot prevail in the longer run. Although there has been much study of the relationship between farm size and efficiency, research does not support the concept of a unique optimal farm size or form of organization (for example a corporate-, or family farm). It is therefore not appropriate, nor would it be feasible in the current climate, to attempt to prescribe a particular form of organization or farm size; for example, either
retention of the large-scale farms of the past, or mandatory imposition of small family farms. The former privileged access of large farms to markets and inputs should be dismantled along with the institutions that conveyed the privilege. Furthermore, legal and financial constraints on consolidation of fragmented small holdings should be removed. These and similar steps facilitate a process through which, over time, a new farm structure consistent with the new imperative for competitiveness and the new distribution of property rights may emerge.

BANK INPUTS

x. The Bank could support these trends at the policy level by:

(a) encouraging the continuation of present policies of liberal pricing and subsidy reduction. If necessary, internal markets may be protected against dumping. Vulnerable groups can receive targeted food assistance; milk, for example, is an important commodity in these programs;

(b) discouraging constraints on land and asset use, such as defined farm size, restrictions on contracting, and prohibitions on hiring of labor and services, but encourage a pluralistic approach;

(c) supporting policies and lending practices that ensure that the various enterprise forms are subject to the same subsidy and taxation regimes, and have equal access to services, inputs and capital;

(d) assisting in the development of a legislative environment which fosters private enterprise and a market oriented economy, with respect for human and animal welfare;

(e) assisting in the re-orientation of the management and labor force, through re-training and re-organization;

(f) introducing stricter quality standards and quality price incentives for meat and milk, and associated products;

(g) introducing stricter environmental standards for intensive as well as extensive production units, and encouraging mixed land use.

xi. Support at the institutional level could include changes, which inter alia would

(a) promote, in research and extension, a closer cooperation between animal health and animal production disciplines and, more generally, between livestock and crop production;
(b) establish a clearer separation of responsibilities between animal breeding institutions and performance recording schemes;

(c) promote close relationships between Eastern and Western (or other) institutions, not only in research, but also between breeders and other private industry organizations;

(d) promote extension services, with emphasis on farm management;

(e) sponsor privatization of animal health and production services, and the development of commodity groups and producers associations;

(f) assist in policy analysis, project evaluation and funding of investment in rural infrastructure. Considering the rapid changing economic conditions, there would, for example, be a need for relatively frequent sector analyses.

xii. At the project level the Bank could support:

(a) research on priority areas of grassland and fodder production, protein feed crops, adapted farm mechanization and housing, and livestock/wildlife management systems and their economic evaluation;

(b) conservation of local livestock breeds able to perform well under local conditions with low quality diets;

(c) the environmental clean-up of the oversized and excessively polluting production units;

(d) where necessary, land consolidation programs, and especially those that promote complimentarity between the hilly and mountainous areas and more intensively used areas;

(e) provision to qualified borrowers, through the commercial banking sector, credit to support construction and consolidation, adapted mechanization programs, quality and efficiency improvements and diversification in the feed mill and meat and milk processing industry;

(f) in conjunction with the private sector, more efficient internal and external marketing systems;

(g) risk sharing mechanisms (partial bank guarantees) to promote joint ventures with foreign companies;
(h) support vocational training for farmers and private entrepreneurs, and consumer education;

(i) at the farm level most support is directed towards the development of mixed farming systems; as such most Bank support in this area will be a component of a larger agricultural-, or agro-processing project.

xiii. In addition the Bank should monitor the rapid changes in the economies of the Eastern European countries and the expected technological modernization of the agricultural and animal production systems through sector analysis.
Chapter 1. **THE LIVESTOCK SECTOR IN THE EAST EUROPEAN ECONOMIES**

**General**

1.01 Animal production is a mainstay of East European agriculture and warrants attentive consideration in the formulation of the short term and long-term strategies. Although the contribution of agriculture to overall GDP in Eastern Europe is modest (8 to 20 percent [Annex table 1]), with an estimated output of about US$ 30 billion\(^3\), the livestock sector constitutes 50 percent of the total agricultural production. Livestock consumes from 50-70 percent of domestically produced cereals. Within the agricultural sector, livestock products make up between 24 and 50 percent\(^4\) of agricultural exports and are thus important sources of export earnings.

![Figure 1. MAJOR OUTPUT VOLUMES OF THE RED MEAT INDUSTRY (PERCENT) COMPARING EASTERN EUROPE, THE EEC AND THE USSR (Source: FAO production 1990)](image)

**Relative Importance of Individual Commodities**

1.02 On the basis of world market prices, pork is by far the most important livestock commodity in Eastern Europe, followed by beef, milk, poultry meat and eggs (table 1). Beef and milk production together are only slightly more important than pork. Pork is especially important in Poland and Hungary. Mutton, wool and small ruminant dairying are relatively unimportant, except for the southern countries. Animal manure provides an essential contribution, as a fertilizer substitute and to improve the structure of the poor, sandy soils in many Eastern European countries. Animal traction, using horses, oxen or buffaloes, may locally still be important but overall draught animals are increasingly replaced by mechanized power. Processed hides, skins, and leather have traditionally been strong components of the agro-processing industry, especially in Czechoslovakia.

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<td>Pork</td>
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<tr>
<td>Broilers</td>
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</tr>
<tr>
<td>Beef</td>
<td>22.4</td>
</tr>
<tr>
<td>Eggs</td>
<td>7.7</td>
</tr>
<tr>
<td>Milk</td>
<td>20.2</td>
</tr>
<tr>
<td>Mutton</td>
<td>4.4</td>
</tr>
<tr>
<td>Wool</td>
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Table 1. RELATIVE SHARES OF THE VALUE OF OUTPUT OF THE LIVESTOCK INDUSTRY IN EASTERN EUROPE (1989)

\(^3\) At international prices.

\(^4\) In some cases, however, countries sold fresh, good quality meat for export, and used cheaper, lower quality imported meats for the internal market, to increase foreign exchange earnings.
Chapter 2. LEGACIES OF PREVIOUS POLICIES

2.01 Major objectives of past East European agricultural strategies were the provision of cheap food to the population and achievement of self-sufficiency in production. This was especially the case in the livestock sector. Instruments for implementation of these objectives included subsidized inputs, services and consumer prices, and collectivization. These two policy domains largely defined the structure of production, ownership of land and animals, the use of labor and capital investments, and the characteristics of input supply (feed, services) systems and the agro-processing industry. The following paragraphs provide an overview of these factors.

Incentive Policies

2.02 Ample meat and milk supplies were considered to be a key barometer for the populations well-being, and livestock production in the former East European command economies was highly protected and subsidized. For example, the producer subsidy equivalent (PSE) (the aggregate of the different subsidies) for milk and pork varied in Poland in the late eighties between 50 and 70 percent, respectively at par or exceeding the EEC protection levels (Annex table 2). Over the period 1986-1989, subsidies on meat and milk in Poland were 1.2 percent and 1.6 percent of GDP, respectively (Knudsen 1991). Milk producer prices in Poland were, during this period, on average 24 to 50 percent above world market prices. This support was supplemented by subsidies on inputs, particularly for animal feed (in Poland about 0.3 percent of GDP). Total subsidies to the Polish livestock sector constitute 60 percent of total agricultural subsidies, whereas the sector's contribution to agricultural GDP was only 50 percent. Similarly, in 1986 in Hungary 76 percent of the agricultural subsidies went to milk and meat, which contributed less than 50 percent of agricultural production.

2.03 Consumer subsidies were large and, in addition to producer subsidies, led to high levels of consumption of meat and milk. Meat consumption under the command economy fluctuated between 70 and 100 kg per capita per year (Annex table 3). These levels of meat consumption exceed those in market economies with comparable income levels. Similarly, consumption of dairy products was significantly above the average consumption in the EEC.

2.04 These subsidies mainly benefitted the social sector, although there was a considerable spill-over from the social sector to private farms. Data from Hungary (1986) show that for agriculture as a whole, subsidies constituted 51 percent of the value added, compared to only 2 percent of the privately produced value added. Similarly, in Poland it was estimated (Knudsen 1991) that in 1986-1987 the social sector had a 10 to 50 percent higher PSE for pork and milk than the private sector (Annex table 2). The Polish private sector benefitted only from higher protection and subsidies with beef.
Ownership policies

Land

2.05 Past land tenure policies greatly affect present farm structure. In Albania, Bulgaria, Czechoslovakia, Hungary and Rumania, collectivization policies have made land use by private farmers rare, whereas in Poland and Yugoslavia land was not collectivized and private land ownership predominates (Annex table 4). Average farm size of the social sector varies between 500 ha and 7,000 ha for the state farms and from 100 to 4,500 for the cooperatives. Yet, in all countries some form of private land ownership remained, mostly in the form of small plots of up to 0.5 ha allotted to collective farm workers. In Poland and Yugoslavia, with a predominantly private farm sector average farm size is 3 to 6 ha, significantly below the 18 ha average farm size in Western Europe.

2.06 Collectivization did not increase available land per worker. For example, there is about 6-7 ha land available per active worker on the state farms of Poland and Yugoslavia, compared with 3.5 - 6.4 ha on private farms there. If the larger share of part-time farming of private farmers in these countries is taken into account, available land per active full time employed laborer will be about the same in the two sectors. Similarly, available land per active worker in the other countries is around the 7 ha. Collectivization has pooled land resources, however, erased individual boundaries and thus led to large size, well mechanizable plots. This in contrast with land holdings in Poland and Yugoslavia, where land fragmentation is a serious problem, with on average 10 to 12 plots per farm. Economies of size are important in grazing and pasture management, in particular in fodder production and conservation (hay and silage making).

2.07 Land was often undervalued or not valued at all, and value of buildings overstated. In former East Germany, for example, buildings constituted nearly half of farm assets, compared to approximately 10 percent in West Germany. A re-evaluation may be necessary, especially where these overvalued buildings were used as collateral for farm loans.

Livestock

2.08 Livestock ownership followed the same pattern as land tenure, i.e., in those countries with predominantly collective land ownership, animals were mainly collectively owned, whereas in the countries with predominantly private land ownership, logically most livestock is privately owned (Annex table 5). Still two interesting phenomena are worth noting:

(a) Private farmers owned relatively more livestock than land. For example in Hungary with only 12 percent of the arable land and 3 percent of grassland belonging to private farmers, they own 24 percent of the cattle. This is primarily a result of the strong contractual or informal linkages between social and private farmers, especially through the trade of feed to members or employees of large farms. When politics permitted active cultivation of private plots, the large farms encouraged growth of livestock production there. Large farms marketed much of the output from private production
of their employees. In some countries, tax laws promoted transfer of inputs from socialized farms to their employees or members.

(b) Private farmers kept a higher percentage of female animals (cows, sows). This revealed the preference of the private sector for the more labor- and management-intensive breeding and milking operations, and of the socialized sector for the more easily mechanized and managed fattening operations.

2.09 Herd size varies between 1.5 and 3 cows per farm in the private sector and exceeds 200 cows in the social sector (table 2). Bulgaria, Czechoslovakia and Romania in particular have very large herds in the social sector. This compares with an average herd size per farm in the EC12 of 31.6 (1989), ranging from 6.3 animals in Portugal to 82.8 in the United Kingdom; the herd size in nearby Austria was 18. However, few dairy

| Table 2. AVERAGE HERD SIZE (HEADS/FARM) UNDER DIFFERENT ENTERPRISE FORMS, 1989 |
|-----------------|-------------|-------------|-------------|-------------|-------------|
|                 | Hungary     | Poland      | Romania     | Yugoslav    | EC12        |
| Dairy cattle     |             |             |             |             |
| Private         | 2.5         | 2.4         | 1.5         | 3           | 32          |
| Socialized      | 550         | 255         | 1,000+      | 200+        | n.a.        |

farms of the size found in Eastern Europe are found in the EEC, with only 0.5 percent of the holdings in the EC12 (7 percent of the cows) in herds of more than 300 animals, compared with, for example, Hungary (1985), where about 40 percent of the dairy cows are kept in holdings of more than 300 animals. The large farms become inefficient due to management and waste disposal problems. Similarly, unit size in pigs in the Eastern European private sector is small, with a typical private farm involved in pig production in Hungary (1985) and Poland (1989) having 1 to 2 sows and 6 to 10 feeder pigs. Pig production units in the socialized sector are generally very large, with typical units of 500 to 1,000 sows, with up to 100,000 fattening spaces and outputs of up to 150,000 head per year. This compares with an average unit size in the EC12 (1988) of 68.3 animals, ranging from an average of 9 animals per holding in Portugal to 406 animals per holding in the Netherlands; the average holding in Austria is 25 (de Haan, 1991).

**Agro-Processing**

2.10 Nearly all Eastern European feed mills and meat and milk processing plants are owned by the socialized sector. Most feedmills are managed by parastatals. Dairy processing is managed entirely by cooperatives in Poland and partially by cooperatives in Hungary and Yugoslavia. These cooperatives, however, have been dominated by the government in the past, and have behaved like parastatal companies. State dairy

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5/ A complicating factor of the small production systems with limited feed resources is the seasonality of production; in Poland for example 60% of the milk output was produced in spring and summer.
monopolies prevail in the other Eastern European countries. Meat processing is generally managed by state monopolies.

2.11 The agro-processing industry in Eastern Europe has not been subject to the forces that led to consolidation and subsequent increase in plant size in the agro-processing industry in the Western Europe and the US during the eighties. As a result, East European agro-processing plants are generally small, and often serve a single state or cooperative farm. For example, the average capacity of East European feed mixing plants fluctuates between about 8,000 ton/year in Poland (1990) and 20,000 ton/year in Yugoslavia (1991) and Hungary (1985), compared with about 50,000 ton/year in, for example, the Netherlands (de Haan, 1991). Similarly, dairy plants in Eastern Europe have an average throughput of 30,000-50,000 lt per day (with the exception of Bulgaria, which has a much higher average size) compared with about 300,000 lt per day in the Netherlands (Table 3.).

### Table 3. AVERAGE DAILY MILK THROUGHPUT PER DAIRY PLANT IN SELECTED EASTERN EUROPEAN COUNTRIES AND THE NETHERLANDS

<table>
<thead>
<tr>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Milk (Ltx1000)</td>
<td>205</td>
<td>52</td>
<td>42</td>
<td>30</td>
<td>290</td>
</tr>
</tbody>
</table>

Equipment and Capital Investments

At Farm Level

2.12 State and cooperative farms in the past had preferential access to investment. For example, in Poland, state farms received an estimated 40 percent of capital investment during the last two decades (Polish-European Community-World Bank Task Force 1990), while accounting for less than 20 percent of agricultural GDP. It is now estimated that per ha capital inputs on state farms were twice as high as average for Polish agriculture. Similarly, investments in Hungary's private sector with about 35 percent of the output, amounted over the period 1980 till 1985 to only 1 percent (mainly in construction) of total investments and total capital assets of the private sector amounted (1984) to only 7 percent of total estimated agricultural assets. Much of the investments in the socialized sector were used for large and unhealthy buildings that were the underlying cause of major health problems leading to a low productive lifespan of the animals. Dairy cattle, for example, often lasted less than two lactations because of foot and leg problems or mastitis caused by concrete floors; calf mortality was often 20 percent because of poorly ventilated buildings.

2.13 The rate of investment has decreased considerably in the last decades (with the exception probably of Hungary), and equipment and facilities in livestock have become obsolete. Thus, for Czechoslovakia, Podesbraski, et.al. (1991) reports that, following the substantial investments in the early eighties, maintenance and replacements have fallen behind, and an estimated 50-55 percent of the cattle and 60 percent of the pig breeding
facilities are sub-standard. Even with reduced investment in the recent past, many cooperative and state farms have debts that, under the new economic conditions, threaten their survival. A brief survey of farms in East Germany, for example, indicated an expected survival of 65 percent of 133 former collective farms when old debt were canceled, compared to 18 percent if these debts remain in effect (Hinrichs, 1991).

**At Agro-Processing Level**

2.14 Investments in the feedmill and livestock processing industry peaked in the late seventies and early eighties and substantially declined over the last decade. As a result, the livestock processing industry has outdated equipment and uses generally obsolete technology. For example, only a small percentage of the feed industry in Eastern Europe has pelleting and fat mixing equipment (only 5 percent of commercial feed in Poland is provided in the form of pellets\(^6\), compared with 80 to 85 percent in the EEC). Yearly investments in the dairy industry in Poland and Hungary now fluctuate around US$0.01 per liter processed, about one-fifth the investment per liter in, for example, the Netherlands. Capital investment in the meat industry shows in general a similar decline, with the possible exception of Hungary which, with World Bank support, has continued to modernize its meat processing industry. As a result, processed livestock products are poorly competitive in the world market. Dairy plants in the former East Germany pay farmers 20 percent less than in the former West Germany, because Eastern processing technology is less efficient (Isenmeyer, 1991).

**Labor**

**At Farm Level**

2.15 Poor incentives in the socialized sector and the lack of capital investment in the private sector has led to low labor efficiency in both. For example, in dairy production, case studies in Hungary (1985) indicate a requirement of 3.7 to 6.0 man-hours per 100 liters produced in the state farms, compared with about 1.2 man-hours in modern family farms in Northern Europe. The excessive amount of managerial and service personnel (30 percent) in state and cooperative farms and the excessive specialization of the labor force are the major reason. Still labor costs are low; in 1991, for example the labor cost in Poland were less than 10 percent of the labor cost in the U.S.

2.16 Private farming in Eastern Europe in the past was predominantly a part time occupation, and women did much of the work. If these patterns prevail in the future, it will be important to design extension programs to reach large numbers of women engaged in part-time small scale livestock production.

**At Agro-Industry Level**

2.17 The small plant size and the lack of management incentives has led also to low labor productivity in the agro-industry. In the feed sector, output is about 500 tons per employee per year, about one-fourth of the West European averages. Still, meat and milk processing constitute one of the most important sources of off-farm employment in the

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\(^6\) Pelleting prevents losses during milling, transportation and on the farm.
rural areas. For example, the Polish meat, egg/poultry and dairy processing industry employs 43% of all labor in agro-processing.

**Environmental Contamination**

2.18 Probably the worst legacy of past policies is the massive environmental contamination caused by unsound farming practices. The large ("mega") livestock farms are sources of soil, water, and air pollution. This pollution is exacerbated by the imbalances in protein/energy supplies (para. 3.02) leading to over-use of grain and cereal by-products and, subsequently, to much higher phosphate excretion than with a more balanced diet. Similarly, anti-pollution measures in the livestock processing industry are generally deficient. Indirectly the sector is affected by the overall environmental contamination, locally resulting in relatively high residues of metals or PCB’s in animal products.

**Support Services**

**Animal health**

2.19 The objectives of the animal health services were to limit the number of diseases through vaccination and hygiene and in later years to adjust to the health and quality requirements needed for export outside the East bloc.

2.20 These services were generally provided by the socialized sector, although in many instances the state farms and cooperatives recruited their own veterinarians. The pricing policy for veterinary care varied among countries. Poland and Romania provided most services free of charge; in Hungary veterinary care was generally provided by veterinarians employed by the socialized units; and in Yugoslavia most of the services were paid for by the beneficiaries.

2.21 The animal health coverage is broad: in Hungary, Poland, Bulgaria and Yugoslavia (FAO-WHO-OIE 1990) there are about 2,000 veterinary livestock units\(^7\) per veterinarian; in Romania about 4,000. This is comparable to West European standards\(^8\), with about 2,000 VLU per veterinarian in (formerly) West Germany (1988) and 3,500 VLU per veterinarian in the Netherlands.

**Animal breeding**

2.22 Animal breeding was traditionally the responsibility of the public sector. In most countries artificial insemination (AI), performance recording and herd book functions were carried out by the same service. Services remain largely free of charge or subsidized; Hungary and Yugoslavia have full cost recovery. AI is generally widespread, especially in the countries with subsidized services. In Poland, for example, AI is used for 80 percent of dairy cows (this is comparable to Western European figures). AI in swine breeding is

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\(^7\) VLU, defined as 1 cattle, 0.5 pigs, 0.1 sheep or goat and 0.01 chicken or duck.

\(^8\) The coverage is more intensive, however, when the contribution of veterinary technicians is added. In Bulgaria, for example, the ration veterinarian/technician is 23.
less frequently used, especially in those countries where smallholder production predominates (Poland, Yugoslavia), reaching, for example, only 10 percent of the population in Poland (1990). Where large units predominates in pigs, AI in pigs is also widespread.

2.23 The technical AI parameters are rather poor and sire selection and use of superior sires is suboptimal. Available data give on average 2.6 and 3 inseminations per calf born in Hungary (1983) and Romania (1990), respectively, and a 72 percent 60-day non-return rate in Poland (1990), compared with less than two inseminations per calf born in most countries in Western Europe. Furthermore, the number of inseminations per bull is low, leading to slow genetic progress. Bank sector missions report figures of 1,250 from Hungary (1982) and 10,000 from Poland and Romania (1990), compared with over 20,000 in most West European countries. The use of imported semen in those countries is below 20 percent of total inseminations.

Research and Extension

2.24 Technology generation and transfer in Eastern Europe has emphasized the parastatal sector and neglected the private smallholder. Research is fragmented among different institutes. There is little contact between the different disciplines, especially between health and production specialists. Furthermore, key constraints such as grassland production and conservation are not adequately addressed, and there is an almost complete absence of economic evaluations of the technical results. Finally, the macro-economic stabilization programs force staff reduction and a general decrease in funding for research and extension.

2.25 Extension is (a) carried out by the researchers themselves, who directly inform their "megaunit" clients (Bulgaria, Romania) of technological advances; (b) organized among various units in the social sector on a commodity basis (Hungary); or (c) funded partially by public funds and by either the users in the social sector (Yugoslavia) or the proceeds of special production units operated by the extension service (Poland). Poland and--partially--Yugoslavia (Habe et al. 1991) are starting to focus their livestock extension on the private farmers. Urgent action in this respect is required for all the East European countries.
Chapter 3. **INHERITED TECHNOLOGIES**

**Feed**

3.01 The policy of food self-sufficiency has led to excessive attention to grain production (Poland, Romania), and the use of grains for feed, without adequate attention to overall feed quality. Collectivization and mechanization led to excessive attention to the use of grain and neglect of fodder crop and grassland production.

<table>
<thead>
<tr>
<th>Table 4. ESTIMATED PROTEIN DEFICIENCY IN SELECTED EASTERN EUROPEAN COUNTRIES (SOYA MEAL EQUIVALENTS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poland 500,000 tons (1990)</td>
</tr>
<tr>
<td>Romania 1,000,000 tons (1990)</td>
</tr>
</tbody>
</table>

3.02 Eastern Europe has a structural deficit in high-quality feed protein. The deficit, mainly for the non-ruminant sector, was estimated before the contraction at 1 million tons of feed protein or the equivalent to almost 2.5 million tons of soybean meal (table 4). The relative importance can be demonstrated by comparing this with the total of 9 to 10 million tons of soya cake imported in the EC12 (1988), with a much larger livestock population. This deficit leads to inappropriate protein/energy balances, with the result that the animal needs more feed for the same growth. Although exact data are not available, estimated feed conversion in pig production in Eastern Europe would be between 4 and 5.5 kg feed per kg growth (compared to 3 kg/kg growth in West Europe) and in broiler and egg production between 2.5 and 3.5 kg per kg feed. While part of this difference might be caused by inferior genotype and inadequate thermo-insulation of livestock housing, it can be safely assumed that at least half the difference is caused by the inadequate protein feeding. Thus, for example for Hungary, Poland, Romania and Yugoslavia, a saving of about 10 million ton of feed could be made, if the deficit of about 2 million ton of soja meal equivalents would be resolved. Furthermore the inefficient feeding causes much greater pollution as the higher feed consumption leads to higher excretion of phosphates than necessary (van der Zijpp, 1991).

3.03 The deficit in high-quality protein is exacerbated by poor grassland management. This is the result of earlier subsidy policies, which made concentrate feeding more attractive than grass, and of the general neglect by research and extension of grassland management techniques. The long grazing or cutting intervals generally used in Eastern Europe lead to a sharply reduced protein content of the pasture whereas a more intensive grazing would be more efficient. There is a heavy reliance on hay making instead of silage, causing further losses of the conserved product. Little use was made of existing topographical potential for stratification of the production system (for instance by raising young dairy stock in the hills and mountains).

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2/ Based on a saving of 1 kg feed per kg growth on the approximate 6.5 million ton pork (live weight), .75 kg feed saving per kg growth on the approximate 2 million ton of broilers (live weight) and .75 kg feed per kg eggs on the 1.5 million ton of eggs produced in the four countries.
3.04 The discrimination against the private sector in land tenure and subsidy policies has led to the adoption of different feed technologies in the various sectors. The much higher degree of mechanization in the socialized sector has led to an energy costly but technically better harvesting and conserving methods on state and cooperative farms. Private farms, particularly in Poland and Yugoslavia, have relied primarily on weather-sensitive hay making, whereas state farms and cooperatives predominantly rely on higher-quality-yielding silage. For example, in Poland, private farms transformed 85 percent of the total area mowed into hay and 15 percent into silage, whereas the state and cooperative farms used 40 percent of their area mowed for hay making and 60 percent silage making (Polish-EEC-World Bank Task Force, 1990). The state farms and cooperatives generally use better feed conservation techniques (hay ventilation, grass wilting and clamp silos) than the private sector. Private farms had poor access to high-quality concentrate feed, especially protein feed. For example, of the 8.3 million tons of concentrate feed produced in Poland, only 3 million tons are used by private producers, although they own 88 percent of the dairy cattle, 70 percent of the pigs, and about 66 percent of the poultry. As a result, the concentrate used by the private farmers often consists mainly of cereals and is highly deficient in protein. Furthermore, because of the presently high overhead cost in the feed industry, most of the private sector relies strongly on home-mixed feed, without essential feed additives such as vitamins and microelements.

Animal Breeding

3.05 The policy of self-sufficiency led almost all countries to develop over the last thirty years--through cross-breeding and selection--their own adapted breeds, notably in dairy and swine production. Several countries (Hungary, Poland and Romania) have gone further and developed synthetic lines and hybrids in pigs and poultry. However, breeding and selection have resulted in breeds and lines which cannot compete with the West European and North American breeds, on the basis of direct production and quality parameters, although they may be better adapted to local conditions and a diet low in high quality proteins. With the increasing globalization of the sector in Eastern Europe, these breeds will not be able to withstand the influx of West European stock and could disappear completely in a rather short time, bringing loss of valuable genetic material in the process. This is confirmed by experience in the former East Germany, where local breeds have all but vanished or are in the process of doing so. Some local breeds have characteristics worth conserving, and conservation of local breeds needs to be considered in future research and extension projects in the region.

Animal Health

3.06 The ample supply of veterinarians and the past administrative control has led to good vaccination coverage and good overall epidemic disease control, but poor public health and quality standards. It will be important to maintain the system of vaccination and epidemic disease control at lower cost than in the past. This is especially important for Poland, the only Eastern European country with a foot and mouth disease (FMD) free status; a fact which broadens its export opportunities. Unfortunately, there are early signs of a breakdown of the system. Moreover, FMD is only one of many diseases which limit exports to countries with stricter disease prevention regulations. Also, the diagnostic
ability, especially with respect to microelement deficiencies and toxicological problems is limited.

**Equipment and Installations**

**On Farm**

3.07 The decline in capital investment, and the surplus labor led to on-farm installations which are often:

1. **labor intensive.** Dairy cattle installations frequently are still the single stand type with bucket-type milking machines, instead of the walk-through milking parlor. Swine and poultry installations frequently lack automatic feeding and de-
2. **energy inefficient.** With energy heavily subsidized, materials chosen were not energy efficient, and energy cost per animal in the severe Eastern European winters is very high;
3. **deficient in protection of animal welfare.** Installations and housing systems, in particular for intensive pigs and poultry production are almost universally of the types now increasingly being outlawed in Western Europe (tie-on farrowing crates for sows, batteries for poultry);
4. **environmentally hazardous.** Manure and silage effluent disposal are absolutely inadequate. The ensuing environmental contamination is considered the major problem in large collective and state farms; and
5. **inadequate.** Milk cooling systems or storage of eggs and other produce are inadequate, often not well maintained, and frequently not consistent with the production levels of the farm unit.

**In the Agro-Processing Industry**

3.08 The last decade's decline in investment in the agro-processing industry, caused product diversification for the internal market to be limited and product quality to be mediocre. For example, in Poland (Polish-EEC-World Bank Task Force, 1990), the share of highly profitable yoghurts and other flavored liquid milk products is only 16 percent of the total liquid milk market. Ice cream is only .2 percent of the total dairy product output. In contrast, this share of further processed products is 40 percent in the Netherlands. Romania and Hungary have focussed on a broader export market and have a more diversified product line. Similarly, with few exceptions (Polish ham and sausages for the US market canned meat from Yugoslavia, and pan-ready poultry from Hungary), value added processing and packaging is limited.

3.09 In effect, most Eastern European livestock exports consist of raw products with little value added. For example, the ratio of live animal to beef export is nearly 3 times
higher in Eastern Europe compared to selected EEC countries\textsuperscript{10} (Annex table 7). This trend is even more obvious in the small ruminant market, where Bulgaria, Hungary, Poland and Romania's market share of live animal export was over 40 percent in 1981-87 compared to around 15 percent for lamb and mutton. In dairy, the value added milk products contribute in only a limited number of countries significantly to agricultural output. Cheese is the most commonly exported product (Yugoslavia, Romania, Bulgaria, Czechoslovakia and Poland), but the total export of all of Eastern Europe is less than that of, for example, France. Butter and milk powder are mainly exported by Poland and Czechoslovakia, casein by Poland.

\textbf{Marketing}

3.10 Most livestock products were marketed through state channels. These channels were characterized by:

- \textit{poor price transmission} throughout the channel;
- \textit{lack of feedback}, especially in terms of quality requirements from the consumer to the producer;
- \textit{lack of market transparency}, and increasing use of barter trade; and
- \textit{lack of market infrastructure}, especially in refrigeration equipment; storage, and management skills.

For the more perishable products such as eggs and milk a substantial direct farmer to consumer market existed in many countries. For example, about 35 percent of the milk produced in Poland was estimated to remain outside the formal marketing channels and was either directly consumed on the farm or directly sold to consumers.

\footnote{In some cases, however, this was related to an effort to increase foreign exchange earnings by selling livestock and fresh meat for export and use cheaper, lower quality, imported meats for the internal market.}
Chapter 4. **RESULTING PRODUCTIVITY**

**Overall Performance of the Sector**

4.01 Growth in the livestock sector has been mediocre (table 5). Milk and beef production grew over the last twenty five years at a modest annual rate of 1.4 and 0.4 percent respectively, mainly as a result of a growth in productivity per head. Pork production grew over that period 1.8 percent per year, however exclusively as a result of an increase in the numbers. Only poultry production has increased at an acceptable rate with meat production growing at an annual rate of 4.7 percent and egg production at 3.0 percent per year. The growth in the poultry sector has mainly been a result of an increase in productivity per head. This better performance of the poultry sector is, because poultry production is (i) less environment specific and the technology could therefore be imported from the West; (ii) has a rapid turn-over, and is easy to mechanize; and (iii) depends largely on feed grain, and therefore benefitted strongly from subsidy policies.

Table 5. **ANNUAL GROWTH (%) IN PRODUCTIVITY OF LIVESTOCK COMMODITIES IN THE PERIOD 1961/65 TILL 1988/90 IN THE SIX EASTERN EUROPEAN COUNTRIES** (Source: FAO Production data).

<table>
<thead>
<tr>
<th></th>
<th>Numbers</th>
<th>Prod./Head.</th>
<th>Output Growth</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cattle</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dairy cows</td>
<td>-0.1</td>
<td>1.5</td>
<td>1.4</td>
</tr>
<tr>
<td>Beef</td>
<td>0.1</td>
<td>0.3</td>
<td>0.4</td>
</tr>
<tr>
<td>Pigs</td>
<td>1.9</td>
<td>-0.1</td>
<td>.8</td>
</tr>
<tr>
<td><strong>Poultry</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Meat</td>
<td>1.4</td>
<td>3.3</td>
<td>4.7</td>
</tr>
<tr>
<td>Eggs</td>
<td></td>
<td></td>
<td>3.0</td>
</tr>
</tbody>
</table>

4.02 Productivity has lagged considerably behind the Western European levels. Average milk production per cow is provided in table 6. There is a significant difference in average productivity between the Eastern European countries (Annex table 6). In milk, the production in Poland (3,250 lts per lactation) and in particular Hungary (4400 lts per lactation) is approaching EEC levels, but the production of the southern countries reaches only half (1,800 to 2,200 liters per lactation) such levels. Different feeding (grassland constitutes a much smaller share in the dairy feeding systems of the southern countries)
and breeding in the dairy herds, must be important factors explaining this difference. In pig and poultry production the differences are less pronounced.

**Production Levels in the Social and Private Sectors**

4.03 Access to better feed and breeding services causes the milk yield per cow in the socialized sector to be about 20 to 200 percent higher than on private farms (Annex table 8). These data seem to rebut the widely accepted West European theory that diseconomies of scale (especially in reproductive management and health care) come into play when herd size exceeds certain levels (i.e. 300 cows). This diseconomy is not corroborated by two Hungarian studies (1982 and 1985), which show that with increasing herd size, even over 1,000 cow units, the cost of production per liter declines. It is not clear, though, whether this observed increased efficiency with increasing size is a result of preferential access of the larger farms to scarce feed and equipment (an advantage which would disappear in a more liberal economy), of the low labor costs, or due to other sources. Moreover, the environmental costs were not considered in these studies.

4.04 For pig production few comparative analyses are available. Data from Romania (1990) show an off-take of 10.9 piglets per sow in the socialized sector, compared with 11.4 on private farms. Comparative data from Poland (1990) show 11.5 piglets per sow for the socialized sector and 10.5 for private farmers. Data from Hungary (1987) and Poland (1990) point to a 20 to 30 percent higher feed use in pigs fattened on private farms. This is probably a result of the feed protein deficiency on private farms (para 3.03). Average weight at slaughter is much higher in the private sector, reaching 144 kg for the private sector in Romania (1990), compared with 107 kg on state farms. Most poultry production is in the socialized sector.

**Financial Efficiency**

4.05 While physical yields have been higher in the social sector, this does not necessarily mean that the social sector has been economically or financially more efficient. Data from Poland (Polish-EEC-World Bank Task Force, 1990) and Hungary (1985) show that more than half the livestock enterprises in the social sector were producing at a loss, in particular if full cost (including land rents) were taken into consideration. Similarly, profitability of the dairy and meat processing industry in Eastern Europe is low. For example, in Poland the meat and dairy industry is one of the least profitable industries. Knudsen (1991) reported that of the 56 loss-making state enterprises (out of a sample of 500 from all sectors), 34 (60 percent), were directly related to the livestock sector (meat and poultry and feed processing).
5.01 The political reform process in Eastern Europe has initiated a radical transformation of property rights. With the introduction of macro-stabilization programs, price controls are abolished and subsidies cut drastically. For example, the subsidies in the dairy industry in Poland fell from US$1 billion in 1989 to zero in 1991. Consumer prices increased and demand fell. Hungary reports a fall in per capita consumption of meat and milk of about 30 and 10 percent respectively. In Poland, per capita consumption of milk dropped 10 percent between early 1989 and early 1990 following the complete removal of all food subsidies in late 1989, and dropped another 8 percent in 1991 (Kowalski, 1992). Meat consumption remained initially the same (Polish-EEC-World Bank Task Force, 1990), but declined in 1990-91.

5.02 This situation is aggravated by the collapse of the Soviet market and the transient decline in 1990/91 of the Middle Eastern markets. Remaining trade in food with the former USSR is either on credits or grants from EEC or USA, with which East European governments can not compete. The combined USSR and Middle Eastern markets bought in 1988 from for example Hungary and Yugoslavia about 25 percent of their exports of meat and milk.

5.03 The resulting oversupply is exacerbated by institutional changes introduced during the transition, as can be demonstrated by the Polish experiences. First, exports stagnated following the abolition of the national and secondary cooperative structures responsible for dairy stock management. This led to a high degree of uncertainty and indecision, followed by distress selling at extremely low prices (one-third to one-half the world market price), particularly of butter. Single buyers continue to dominate the regional markets. The price liberalization and abolition of national dairy and meat monopolies have therefore led to the maintenance of inefficient regional monopolies, which compensate for the reduction of subsidies by increasing overhead margins instead of improving efficiency (Knudsen 1991). The productive sector is thus hostage to inefficient input supply and processing and marketing sectors. At the farm and industry level the situation is exacerbated by high inflation and the imposition of positive interest rates, which led to financing charges which the sector could not meet. This is leading to an elimination of the most inefficient enterprises as well as a general contraction of the sector. In some instances especially the more progressive farmers are affected. For example in Poland, hard hit by plummeting dairy prices (para 4.03), the medium sized progressive farms,
which are more exposed financially, were more severely affected and had to slaughter their cows.

5.04 The fall in production and demand directly affects the financial viability of the agro-processing industry. This trend was observed in Poland in mid-1990 after the introduction of the stabilization program. The Polish feed mill industry experienced a drop of 60 percent in demand following the stabilization program and operated at 20 to 30 percent capacity. To survive, the industry drastically increased its margins for processing and distribution, which in turn brought the feed price to a level about double the raw material costs, compared with a processing and distribution overhead of about 20 percent in Western Europe. This is leading to a strong shift toward on-farm mixing. (Polish-EEC-World Bank Task Force, 1990).

5.05 After about 1-2 years of adjustments, livestock population have declined by about 5-20 percent and production by about the same amount (table 7 and Annex table A10). Some of the factors which explain the different trends (Annex table 10) are:

(a) Countries which depended on external trade, Hungary and Romania example, showed the steepest decline in livestock number and production. This was to be expected with the declining purchasing power of their major trade partner e.g. the now former, Soviet Union.

(b) Countries with a strong internal market and a private livestock industry seem to be less severely affected.

(c) The reduction in consumer subsidies on milk and the subsequent decline in milk consumption11, led to surplus production and consequently a forced culling of dairy cows. The production surplus was exacerbated by subsidized imports from the EEC, especially in the more open market in Poland. This culling of dairy animals led to the strong increase in the beef output, although this is, of course, temporary.

(d) The decline in the sheep sector was probably caused by the, temporary, weakening of the Middle Eastern export market, especially to Iraq, one of the main buyers of Eastern European sheep.

(e) The decline in the poultry industry is mainly a result of declining export (Hungary, Bulgaria, Romania), of the difficulty to obtain quality feed, and of

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11/ For example, per capita milk consumption in Poland is estimated to have declined from 279 liters fluid milk equivalents over the 1984-1990 period to 239 fluid milk equivalents in 1991.
the general decline of the social sector, which even in Poland, was heavily involved in poultry production.

(f) Finally, the better performance of the pork sector (especially in Poland) is mainly the result of a strong internal market for pork and the low prices for cereals and potatoes, leading farmers to use these products for pork production.

5.06 These adjustments are small in comparison with the changes in former East Germany, where from the winter 1989/1990 to summer 1991, cattle numbers declined by 30 percent and pig numbers declined by about 50 percent (Isenmeyer, 1992). It is still too early to assume that no further adjustments can be expected in the Eastern and Central European livestock sector. However, the latest trends in the Eastern European markets point to consolidation, now that livestock numbers have adjusted to the 10-20 percent drop in local demand, as well as to the reduction of export to the former USSR. For example, the milk prices in Poland have been rising from the low of $0.04 per liter to a more attractive $0.12 per liter (Kowalski, 1992).
Chapter 6. FUTURE PERSPECTIVES

Overall Perspectives

6.01 A tentative assessment of the comparative advantages of Eastern Europe with the main other producers active on the world market are:

(a) For dairy and beef production, positive aspects of the physical environment of Eastern Europe are the predominance in several countries of poor soils which absolutely require organic manure, the more continental climate suitable for high quality fodder and grassland production and conservation, and many (upland) areas suitable for ruminant livestock production only. On the negative side are the rather short growing season and frequent dry summers. The farm structure, with large plots in those countries with previous collective land ownership, favors efficient fodder-harvesting techniques. Many units, especially in Bulgaria, Czechoslovakia and Romania are too large, however, for efficient management and sound environmental practices. On the other hand, farm size in Poland and Yugoslavia is too small to permit rational feed and animal management. Farm labor is generally low cost and skilled, although frequently too specialized, and poorly motivated. Inadequate skill levels are particularly evident in dairy production. Farm installations are frequently outdated and environmentally unsafe. In Poland and Yugoslavia, the farm size is too small to permit essential investments in quality improvement, especially for milk. Genetically, Poland and Hungary have good quality stock, hardy enough to resist the somewhat more severe winters of Eastern Europe. The animal health status has, so far, been good. The meat and milk processing industry which is weak, burdened with poor quality raw material, has poor equipment, and has limited product diversification.

(b) Many of these factors apply also to the pig and poultry ("white meat") sector. The long severe winters and poorly insulated buildings constitute a strong handicap, in particular for poultry production, where low temperatures directly affect feed efficiency. The poultry industry will therefore need to concentrate in the areas with more moderate winters. On the other hand, the warm summers in the southern countries provide excellent possibilities for the production of cereals and high quality protein feeds. The more easily mechanized white meat sector suffers less from the labor deficiencies sketched above, and profits from the lower labor costs. As regards farm structure a key issue in the livestock sector is the cost of reducing the environmental contamination of the "mega-units". Experience in East Germany indicates that in many instances outright closure is the only solution. The key technological constraint is the structural feed protein deficiency in the area, although technologies are becoming available to address this issue. With the increasing globalization of the livestock breeding stock supply, the current inferior quality of pig and poultry breeds in Eastern Europe needs only to be a temporary drawback. The processing industry suffers from outmoded and dilapidated equipment, and is in its present state not competitive with the West European or North American
industry. A complete renovation will be required. However, if sufficient capital is found, the processing industry would benefit from the significant recent technology advances in food processing and could build up a very modern equipment base. With prevailing salaries low, a renovated industry could thus become one of the most competitive industries in the world.

(c) Eastern Europe traditionally had a strong leather industry. At present the utilization of bovine hides is higher (in Czechoslovakia and Romania approximately 300 percent) than domestic production. Productivity is low, and improvements can be made in quality (for example from sole leather to fine leather).

6.02 With little attention given to real production costs under the command economies of the past, there are almost no data to assess how these factors affect production costs relative to those from other major meat and milk producing areas in the world. There is thus an urgent need to develop such comparisons. A preliminary assessment of production cost for meat and milk in Poland indicates that Polish production costs for meat and milk are competitive with world market prices (table 8).

**Immediate Market Prospects**

6.03 In the short term the domestic market for animal products will continue to decline with further removal of subsidies and falling purchasing power (Annex 2). Similarly, profitable export markets are unlikely to increase substantially in the near future, although the EEC decision to purchase meat and milk in Eastern Europe for food aid to the CIS may provide some relief. Access to the EEC is being regulated under so-called association treaties, which are already signed with Czechoslovakia, Poland and Hungary and are being negotiated with the Albania, Bulgaria and Romania. The association treaty (Annex 2) with Czechoslovakia, Hungary and Poland allows a gradual (5-10 percent per year) increase in the reduced tariff import quota reaching 179,000 ton meat and 300,000 live cattle in the year 1996 (Mortensen, 1992). While important, the total quota would only cover about 3 percent of the total production and about 25 percent of the exports. Chances for increased demand from the Middle East are not very bright.

**Longer-Term Prospects**

6.04 Long term prospects are difficult to assess. In most countries the output contraction of 10-20% will, at least for the next five years, be permanent. Population growth has stagnated in the most of Europe and both meat and milk demand are
expected to rise between 0.5 and 1 percent in both Eastern and Western Europe. Key imponderables are:

(a) **Economic developments within Eastern Europe.** Using the consumption patterns in Italy and Austria as an arbitrarily selected standard (Annex Table 3.), meat consumption in all Eastern European countries may still rise modestly in the long term. Consumption of milk products (cheese, yoghurt etc.), rather than fluid milk and butter, may rise significantly. These increases reflect a slight convergence towards consumption patterns in more affluent western societies. At present neighboring countries already are important trade partners, and future demand in anyone country will depend on the economic development, especially in deficit countries such as Czechoslovakia.

(b) **Political and economic development in the Commonwealth of Independent State (CIS).** Eastern Europe has a comparative advantage in terms of distance, familiarity with culture and language and experience with trucking of perishable goods.

(c) **Access to the EEC through the GATT negotiations and the reduction of protection and subsidy levels of the EEC.** The outcome of these ongoing processes is difficult to assess. The increasing resistance from the Western European governments to continue the high level subsidy to their livestock sector, and political considerations of the EEC towards providing greater access for Eastern European products are presently by counter balanced by strong protectionist demands of the livestock fam lobby in the EEC.

(d) **Competitiveness of Eastern European livestock products in the Far East.** The major expansion in the world meat market is in Korea, Taiwan and Japan. For example poultry meat imports increased 62 percent in Japan over the period 1987-1990. However, the competition is heavy from New Zealand, Australia and Thailand, who have a comparative advantage in terms of distance and quality. In addition, China has seen a very strong development of its production over the last decade and will be a strong competitor in the future as well.

(e) **Economic development of Africa and the rest of Asia.** Demand for livestock products in other developing countries has been increasing at a rate of 2 percent per year, and the low quality, but inexpensive Eastern European livestock products have a place in this market.

**The Future Shape of the Industry**

6.05 Considering these factors together, a following vision emerges of the Eastern European livestock sector in the year 2000. Overall composition of the sector, This will mostly be defined by the growth of the internal market and the changes in consumer preferences.
(a) The fall in demand is expected to consolidate at about 20 percent, future annual growth of about 1% percent. That means that in the year 2005 the overall sector could be of about the same size as at the end of the eighties before transition, although this will depend to a large extent on trade performance.

(b) The increased opening to the West will bring about increased health consciousness, which will imply (i) an increased consumption of poultry meat, now at approximately 15 kg/per capita,\(^{12}\) (ii) a stabilization or reduction of beef consumption; (iii) a lower pork consumption, and consumer preference for much leaner pork (i.e. lower slaughter weight). Assuming an annual per capita increase in consumption of 1.5 percent for poultry meat and a 0.5 percent per capita decline in pork and beef consumption, internal demand would increase only slowly.

6.06 Farm size and enterprise form will depend on the pace of establishment of land markets and to what degree they are liberalized. Farm structure will further depend on the economic growth in other sectors (industry, services) are able to absorb surplus farming population and allow restructuring. Provided some modest restructuring is possible, three forms of farms are likely to emerge:

(a) The large enterprise, evolving from the current state farms and cooperatives, with shared ownership by the former laborers/members. Experience in former East Germany indicated that this is the preferred enterprise form in the initial phase, one year after the unification about 90 percent was still managed as a large unit. Key factors for the success of enterprises will be their capacity to (i) reduce surplus labor by at least 50 percent; and (ii) persuade commercial banks to grant them loans (Isenmeyer, 1992) to upgrade installations and machinery. To avoid diseconomies of scale, and environmental pollution, maximum limits per unit for livestock will probably between 500-1000 cows and 1000 sows, although within an enterprise several of such units could be envisaged.

(b) A substantial part of the large enterprises will break up eventually in medium sized farms of 100-200 ha with crop and livestock production, and about 200 cows and/or 500 sows, owned and managed by small partnerships or individual families. On the other hand, many of the small farms, presently being formed (para c) in Romania and Bulgaria might amalgamate in such large farms as well. These farms could be the backbone of the future agricultural production in Eastern Europe, as they will combine the advantages of adequate overall farmsize and large plots with individual management.

(c) Small sized part-time farms will remain the mainstay of agriculture in Poland, Albania and Yugoslavia. They might well become the dominant feature of the other East European countries, if surplus farm labor can not be absorbed in other sectors of the economy, and if limits continue to be

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12/ Except for Hungary and Poland with a PC consumption of respectively 22.7 and 8 kg (1990).
imposed on farm size. Such smaller units will offer good opportunities for more intensive pig and poultry production, but would be less efficient in pasture based ruminant production.

6.07 In the long term the European livestock industry may see more drastic changes. The poultry industry, for example, now located close to the ports of entry of American grain and soy beans, may transfer south eastwards towards Hungary, Romania and the southern FSU which are expected to be major growers of these crops in the early 21st century. These changes will also influence consumer preferences, major technological advances and the concerns about the environmental aspects of intensive livestock production.
Chapter 7. **FUTURE ACTIONS**

Management of the Transition

7.01 Consistency and continuation of the policies during the transition period are of immediate importance. The high share of livestock products in the diet of the East and Central European population makes these adjustments in the livestock subsector particularly sensitive and difficult to manage. There is a danger of overreaction from the government, with reimposition of price controls, guarantees, and producer and consumer subsidies. These, if instituted, would simply delay the inevitable consolidation and impede the emergence of a more efficient industry. Still measures might be justified to conserve the most efficient operators in the sector and maintaining its comparative advantages. This could include the following steps:

(a) While preparing ownership transfer, the multiple activities of state and cooperative farms need to be restructured into financially autonomous units to avoid cross subsidization between these units. This implies the introduction of individual autonomy and cost recovery for units that supply inputs (feed mills), services (animal breeding, health, etc.) marketing and processing and the farm proper; these activities are at present frequently carried out by a single social enterprise without individual cost and profit accounts. To enhance competition, this might in some cases imply a complete breaking up of the original enterprise in independent units. More often, however, it will, at least for the time being, imply maintaining the financially autonomous enterprises within a vertically integrated structure;

(b) introduction of improved financial and managerial control to ensure that the individual profit centers are managed as such and to avoid asset stripping and pilfering, particularly during transition;

(c) introduction of subsidy policies for state and cooperative farms and livestock processing plants, with clearly spelled out reduction targets and time spans, to eliminate almost immediately the most poorly operating enterprises. The subsidies should be in the form of direct transfers (and not as price or input transfers), and should aim to promote efficiency. They could be tied to agreed-upon development plans on labor reduction and input usage (as currently done in former Eastern Germany) or subsidize investments in product quality or efficiency improvements in, for example, energy and feed utilization;

(d) improvement of the efficiency of existing enterprises through the supply of critical inputs such as protein and other feed additives to improve feed efficiency, and essential vaccines and drugs, to maintain adequate animal health status;

(e) introduction of measures to promote higher quality products. This would imply the immediate introduction of a much higher price differential for more hygienic milk (lower bacterial count) and leaner (thinner backfat) pigs. Such
measures would mainly benefit better managed enterprises, which would already have a better quality control, and could be complemented by other measures in the longer term (para 7.01); and

(f) promotion of privatization, and efficiency gains in the processing industry. This deserves the utmost priority, as experience, for example in Poland, clearly shows that stagnation and poor price transmission in the meat and milk processing industry is one of the key causes of market collapse.

Medium-Term Policies

7.02 Although medium to long term market opportunities exist, the volume is difficult to predict. It is clear, however, that Eastern and Central Europe will be able to enter these markets only if the livestock sector produces a better quality product at a low price. New polices will therefore have to be developed in the areas of:

(a) quality improvement and incentives for quality. Following the transition measures involving milk quality and pig carcass quality, for the medium term, more elaborate control and incentive programs at farm and industry could be developed to align local products quality to local consumer preferences and make it more competitive in the international markets. For example, the dairy pricing structure in all Eastern European countries is almost exclusively based on the fat content, and not on the protein content of the milk, in spite of a decreasing price for butter fat and an increasing appreciation for protein. Furthermore, consumers will prefer increasingly leaner meat. This, among others, can be improved by using genetic stock producing leaner meat, and by improved feeding techniques, and by a pricing structure which rewards quality. Similarly, regulations concerning contaminants (heavy metals, PCB's) and the use of estrogenic growth hormones need to be strengthened and enforced. Several parts of the region could possibly find a special niche in the Western health food markets. However, this would only be possible if the consumer has the assurance that a reliable quality control system is in place.

(b) expansion of the product line, for example, by adding baby milk, salad creams, yogurt, cheeses and industrial dairy products such as casein, skim milk powder additives, and ultra-filtration skim milk, etc. This includes more on-farm processing as done for example in Switzerland and Austria. (See Switzerland and Poland's present production mix in table 9). With much pasture land either in hills and mountains, or on soils unsuitable for arable agriculture there are excellent

<table>
<thead>
<tr>
<th>Product</th>
<th>Percent of Milk Processed into</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poland</td>
<td>Switzerland</td>
</tr>
<tr>
<td>Milk powder</td>
<td>53</td>
</tr>
<tr>
<td>Butter</td>
<td>15</td>
</tr>
<tr>
<td>Liquid milk</td>
<td>10</td>
</tr>
<tr>
<td>Cheese</td>
<td>9</td>
</tr>
<tr>
<td>Quark</td>
<td>8</td>
</tr>
<tr>
<td>Cream</td>
<td>5</td>
</tr>
<tr>
<td>Other</td>
<td></td>
</tr>
</tbody>
</table>
opportunities for extensive livestock (beef cattle, sheep), home processing, and/or wild life production.

(c) **Improved packaging and marketing.** Proper packaging would decrease losses during transport and storage, and would make the products more attractive to the consumer. There is a need for more open market structures, especially of those which serve the retail trade.

(d) **Increased marketing efforts** through the development (in the public and private sector) of marketing bureaus, and training. Although cooperatives may have a questionable name, they are useful entities to process and market perishable goods such as milk. Such cooperatives, however, should operate independently and be able to compete without public support with the private sector.

(e) **Independent farmer, commodity and trade organizations.** There is a need to foster the development of such organizations, and the linked information networks which would improve technological and price information.

7.03 Improved quality has to be combined with increased efficiency leading to reduced cost. The large well-shaped fields of the majority in the East and Central European countries could be used for competitive, low-cost fodder production, if well managed. Specific possible technological improvements include the following:

(a) a much greater emphasis in ruminant production on fodder and pasture based production, shifting away from the concentrate-based feeding practices used until now. Within the forage based production strategy, more emphasis to be given to natural pasture improvement, especially with the use of clover mixtures, to replace chemical fertilizer;

(b) more attention to protein quantity and quality. Especially for the non-ruminant sector, better balanced rations especially in essential amino-acids reduce cereal consumed and lowers cost. Promising possibilities exist in the cultivation of sunflower and soya in the southern countries and in the cultivation of field peas and fava beans (following the development of these crops in Austria) in the northern countries. The rapidly changing production technology and the present world market surplus does not favor local industrial production of the essential amino-acids (lysine and methionine).

(c) more attention in cattle breeding to produce optimal breeds, not necessarily aiming for maximum yield, but for optimum efficiency combined with hardiness, with good fodder conversion qualities, and paying attention to milk protein content rather than fat. For the non-ruminant production, aiming at better feed conversion characteristics, and for all livestock more attention to economic quality aspects (slaughter quality, milk composition, etc.);

(d) more attention to labor and energy efficiency in farm buildings and equipment;
(e) more attention to specific niches products including wild-life/livestock systems;

(f) stratification of the production systems with young stock in the upland grazing areas and dairy and feeder pig production units in the more intensive areas;

(g) the outlook on productivity enhancement using hormones and feed additives is not clear; Eastern European livestock producers should embrace these productivity enhancers if approved and used in the West;

(h) improvements in management incentives and the provision of services as described in the following paragraphs.

7.04 The need for greater efficiency must be combined with an increased concern for the environment. The "megaunits" of the social sector and the aging dairy and meat industry are major sources of pollution, and an increased demand for more environmentally friendly industry can be expected. Technical solutions are available and enforcement mechanisms along the lines of West European countries can now be introduced. Pollution control should be an integral part of any modernization effort. Existing facilities requiring an excessive clean-up might have to be closed down. All these processes lead to a substantial extensification and would reduce environmental pollution by the sector. The greater efficiency can also only come about if the sector is supported by effective services. The required policy changes in these areas are detailed below.

7.05 In animal health care, a better division between public and private sector responsibilities is an essential first step. It could be carried out according to the following principles:

(a) curative and most preventive veterinary health care (including feed analysis) can be easily privatized and fully charged to the producer, a better diagnostic service can be developed with support of producer groups and, if necessary, some public funds; and

(b) public goods services such as sanitary control, food inspection, diagnostic services, and vaccinations against the main epizootic diseases will remain public sector responsibilities, although most of these tasks can be subcontracted to private veterinarians (de Haan, 1991).

Key issues in most Eastern European countries are the pace of privatization, the incentives provided to private veterinarians and the fate of the veterinary technicians, whose jobs may become redundant under a private animal health care system. Key technical issues are (a) maintenance of the prevention of epizootics and diseases of public health importance, (b) improvement the housing and other facilities, and (c) orientation towards production diseases and (d) ensuring supplementation with microelements and vitamins where necessary. A considerable training effort will be necessary to improve the management skills of the veterinarians to operate in the private sector.
7.06 In animal breeding, there is little justification for the state to carry out and provide free animal breeding services. In countries where not yet practiced, a full cost recovery should be introduced in the short term, with a view toward medium-term privatization. Furthermore, increased efficiency needs to be sought to improve the pace of genetic progress in the population. This entails (a) the organization of AI, performance testing and herd book services in separate organizational units, and (b) substantial improvements in the efficiency of bull selection, particularly proven bull use. Several countries can make further improvements by restructuring their AI stations and inseminator networks.

7.07 Many of the suggested actions depend on the ability of the extension system and farmers to adjust to the changing circumstances. Many of the required changes are generic and do not specifically relate to animal production:

(a) commodity groups and producer associations need to be set up at the farm level and strengthened to make research, extension and education more relevant and accountable. Farmers groups are needed to obtain a more economic focus, a better integration of crop and livestock production, and a higher accountability and efficiency in research and extension. Extension and education should assist male and female farmers to better formulate priorities and work plans. These groups and associations should be given the opportunity to acquire the skills to build up networks that can cooperate (or compete) with the agro-industry, and identify and develop markets.

(b) at the institutional level there is a need for restructuring to make the institutions leaner and more efficient. There is a need, upon privatization of (part of) the service, to identify and correct the skill gaps. A masterplan for hiring and training should be developed.

(c) there is a need for consumer education, especially regarding human nutrition. Apart from an educational responsibility to inform the public at large, a legal framework may have to be set up (by government) that balances promotional efforts by the industry with private interest, public health.

7.08 Livestock extension and education must focus increasingly on the private producer, and more appropriate technologies need to be developed for the private sector. Farm laborers need to acquire broader skills. Technically, they need more information on improved nutritional management, and, above all, in grassland and fodder management and conservation.

Changes in Property Rights and Farm Organization

7.09 In Hungary, Czechoslovakia, Romania and Bulgaria, laws restoring rights of landowners at the time of collectivization were passed in 1991. These laws will bring a profound change in land management, although these changes may appear with some delay; the same applies to a lesser extent to animal ownership which even traditionally was largely private. Asset ownership and use need not be synonymous if contractual relations can be entered into rather freely. For example, fragmented ownership need not
entail fragmented use if rentals and sales can be easily negotiated. The major lesson to date to emerge from passage of these laws is that prior patterns of use appear to withstand even radical changes in ownership. It will be important in the future to promote policies consistent with efficient asset use, as prior use changes in response to new conditions. The following factors will be important: competitive provision of machinery services derived from the inherited stock of machinery plus new additions under new ownership; rigorous evaluation of applications for credit, including clear demonstration of ownership of assets offered as collateral; removal of preferential access to inputs, services, and markets on the part of remaining state enterprise; and removal of constraints on contracting, such as prohibitions on sale, mortgage, and lease, or maximum holdings.

7.10 As farms are reorganized, distribution of liabilities as well as assets will have to be addressed. For the livestock sector, the question of who is responsible for environmental cleanup will be important.

7.11 In the long-term private ownership, with free transfer of the property rights of all assets (land, processing facilities, etc.) should be the goal.

7.12 A more comprehensive privatization effort of the agro-industry, which also includes a major change in management incentives at the regional level, is an imperative for the development of the productive sector. The identification of the type of measures that would lead to such crucial behavior is one of the key questions, for which not yet all the answers exist. Both privatization and private entry will be important.

13/ Large plot size, allowing efficient utilization, was one of the few positive legacies of the previous system.
Chapter 8. THE ROLE OF THE WORLD BANK: PAST, PRESENT AND FUTURE

8.01 World Bank lending for livestock to Hungary, Poland, Romania and Yugoslavia over the period 1975-90 amounted to about US$650 million. Annex table 9 provides an overview of the Bank's past lending in the livestock subsector to these countries. (Bulgaria and Czechoslovakia only recently joined the World Bank and have not yet become substantial borrowers for the livestock sector.) Most livestock lending covered all species, although subsector-specific projects included pig production and processing, poultry production (Romania) and livestock processing (Hungary). In Yugoslavia, the emphasis was on regional development projects with relatively small livestock components.

8.02 The results of these projects have in general been favorable. Evaluations after project completion showed that three of the four livestock-only projects and 10 of the 13 livestock component projects had been successful, that is, provided an economic return of 10 percent or more. Important constraints were (a) the lack of quality feed to fully utilize the improvements in buildings, equipment and animals brought about by the Bank-funded projects; (b) excessive price controls, which affected the adoption rate of the improved technologies; and (c) limited institutional capacities to implement the projects on time.

Future Lending

8.03 The World Bank expects to lend US$8-9 billion to Eastern European countries over the next three years. This would include about 10 percent for agriculture and 15 to 20 percent for environmental concerns (the share of livestock-related activities to be financed has not yet been determined). The focus of the lending program would need to reflect the results of the sector analysis discussed above and would have the following characteristics:

8.04 At the policy level:

During Transition

(a) encourage the continuation of present policies of liberal pricing and subsidy reduction, eventually, if necessary, preserving, through well targeted subsidies protecting the most efficient producers and processors, and vulnerable groups through targeted food (milk) subsidy programs;

(b) discourage constraints on land and asset use, such as defined farm size, restrictions on contracting, and prohibitions on hiring of labor or services; but encourage a pluralistic approach;

(c) ensure that the various enterprise forms are subject to the same subsidy and taxation regimes, and have equal access to services, inputs and capital;

(d) assist in the development of a legislative environment which fosters private enterprise and a market oriented economy, with respect for human welfare;
(e) assist in the re-orientation of the management and labor force, through (re-) training and re-organization;

(f) urge the introducing of stricter quality standards and quality price incentives for meat and milk, and associated products;

(g) urge the introduction of stricter environmental standards for intensive as well as extensive production units, among other be encouraging mixed land use.

8.05 At the institutional level:

Encourage institutional changes, which inter alia would

(a) promote, in research and extension, a closer cooperation between animal health and animal production disciplines and, more generally, between livestock and crop production;

(b) establish a clearer distinction between animal breeding and performance recording schemes;

(c) promote close relationships between Eastern and Western (or other) institutions, not only in research, but also between breeders and other private industry organizations;

(d) promote extension services, with emphasis on farm management;

(e) sponsor privatization of animal health and production services, and the development of commodity groups and producers associations;

8.06 At the project level:

(a) fund research on priority areas of grassland and fodder production, protein feed crops, adapted farm mechanization and housing, and livestock/wildlife management systems and their economic evaluation;

(b) support conservation of local genetic stock;

(c) where economically warranted, promote the environmental clean-up of the oversized and excessively polluting production units;

(d) promote where necessary, land consolidation programs, and especially those which promote the complimentarily between the hill/mountainous areas and the higher potential areas;

(e) fund, in conjunction with the private sector, more efficient internal and external marketing systems including export promotion boards;

(f) develop criteria for evaluation of credit risk to assist the commercial banks to evaluate loan applications for farm building and consolidation, adapted
mechanization programs, and quality and efficiency improvements and diversification in the feed mill and meat and milk processing industry;

(g) sponsor extension services, with emphasis on farm management aspects and complementary to the private livestock breeding, supply and animal health services;

(h) develop risk sharing mechanisms (partial bank guarantees) to promote joint ventures with foreign companies.

8.07 Much of the future success of the transformation of the livestock industry depends on information. Farmers need marketing information (e.g. prices, market transparency) and production efficiency advise (e.g. technical, economical or efficiency advise); institutional staff need (re) training, while educational institutions need to be re-oriented. Therefore this review supports the Bank's approach to the reform of the agricultural information systems as proposed or implemented in Poland, Hungary and Romania.

8.08 As animal production is often a major component of mixed farm systems, most of the Bank support will generally be directed through larger multi-component agricultural, environmental, institutional, or agroprocessing projects. The rapid change of the economies in these countries may require relatively frequent updates on the sector.
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14/ Most data originate from World Bank sector reviews, which are based on freely available national statistical sources, but as sector reports are only available for official use. They include agricultural sector reports on Hungary (1985 and 1989), agricultural sector updates for Yugoslavia (1990) and Romania (1991) and Bulgaria agricultural sector reconnaissance (1990).


### TABLE A1. THE IMPORTANCE OF LIVESTOCK AND LIVESTOCK COMMODITIES IN THE NATIONAL PRODUCTION OF EASTERN EUROPE (percent)

<table>
<thead>
<tr>
<th></th>
<th>Bulgaria</th>
<th>Czech.</th>
<th>Hungary</th>
<th>Poland</th>
<th>Romania</th>
<th>Yugoslavia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agricultural share GDP</td>
<td>19</td>
<td>8</td>
<td>16</td>
<td>20</td>
<td>16</td>
<td>14</td>
</tr>
<tr>
<td>Livestock share of agric. GDP</td>
<td>40</td>
<td>57</td>
<td>46</td>
<td>50</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>Milk</td>
<td>18</td>
<td>27</td>
<td>14</td>
<td>28</td>
<td>15</td>
<td>24</td>
</tr>
<tr>
<td>Beef</td>
<td>18</td>
<td>27</td>
<td>12</td>
<td>20</td>
<td>21</td>
<td>25</td>
</tr>
<tr>
<td>Pork</td>
<td>33</td>
<td>33</td>
<td>46</td>
<td>38</td>
<td>30</td>
<td>25</td>
</tr>
<tr>
<td>Mutton</td>
<td>11</td>
<td>1</td>
<td>4</td>
<td>3</td>
<td>11</td>
<td>5</td>
</tr>
<tr>
<td>Wool</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Eggs</td>
<td>10</td>
<td>7</td>
<td>9</td>
<td>6</td>
<td>11</td>
<td>10</td>
</tr>
<tr>
<td>Poultry meat</td>
<td>9</td>
<td>5</td>
<td>14</td>
<td>5</td>
<td>10</td>
<td>9</td>
</tr>
</tbody>
</table>

Note: Based on FAO Production Yearbook figures and estimated 1990 average world market prices (per ton beef US$2,650, pork US$1,500, mutton US$2,560, milk US$1,600, eggs US$1,200 and poultry meat US$950).

### TABLE A2. PRODUCER SUBSIDY EQUIVALENTS OF THE MAIN LIVESTOCK PRODUCTS IN POLAND

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Pork</td>
<td>28.1</td>
<td>36.6</td>
<td>5.0</td>
<td>n.a.</td>
<td>n.a.</td>
<td>5.0</td>
</tr>
<tr>
<td>Beef</td>
<td>15.7</td>
<td>4.0</td>
<td>50.0</td>
<td>39.1</td>
<td>3.9</td>
<td>46.0</td>
</tr>
<tr>
<td>Milk</td>
<td>57.1</td>
<td>77.9</td>
<td>73.0</td>
<td>22.7</td>
<td>41.1</td>
<td>68.0</td>
</tr>
</tbody>
</table>

Source: Knudsen (1991)
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Poland</td>
<td>3456</td>
<td>102</td>
<td>76</td>
<td>64</td>
<td>21.4 20.8</td>
<td>45.8 40</td>
<td>0.8 0.7</td>
<td>7.9</td>
<td>153.5 153</td>
<td>3.3 4</td>
</tr>
<tr>
<td>Czechoslovakia</td>
<td>3563</td>
<td>107</td>
<td>88</td>
<td>85</td>
<td>27.2 26.4</td>
<td>52.9 57.8</td>
<td>0.4 0.4</td>
<td>13.7</td>
<td>96.5 92.5</td>
<td>8.2 9</td>
</tr>
<tr>
<td>Hungary</td>
<td>3599</td>
<td>103</td>
<td>101</td>
<td>76</td>
<td>8 6.7</td>
<td>88.4 69.4</td>
<td>0.2 0.2</td>
<td>21.9</td>
<td>93 85</td>
<td>3.8 3.8</td>
</tr>
<tr>
<td>Romania</td>
<td>3352</td>
<td>103</td>
<td>67</td>
<td>60</td>
<td>5.5 13.0</td>
<td>52.7 37.7</td>
<td>0.8 2.1</td>
<td>11.5</td>
<td>108 129</td>
<td>3.3 4</td>
</tr>
<tr>
<td>Bulgaria</td>
<td>3612</td>
<td>109</td>
<td>77</td>
<td>70</td>
<td>13.4 14.7</td>
<td>45.9 46.7</td>
<td>10.8 8.6</td>
<td>15.6</td>
<td>n.a n.a</td>
<td>n.a n.a</td>
</tr>
<tr>
<td>Albania</td>
<td>2728</td>
<td>84</td>
<td>27</td>
<td>n.a</td>
<td>n.a n.a</td>
<td>n.a n.a</td>
<td>n.a n.a</td>
<td>n.a</td>
<td>n.a n.a</td>
<td>n.a n.a</td>
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<tr>
<td>Yugoslavia</td>
<td>3501</td>
<td>101</td>
<td>68</td>
<td>67</td>
<td>13.0 15.5</td>
<td>35.7 35.4</td>
<td>2.5 2.8</td>
<td>13.4</td>
<td>88 82.5</td>
<td>2 2</td>
</tr>
<tr>
<td>USSR</td>
<td>3378</td>
<td>106</td>
<td>67</td>
<td>67</td>
<td>29.7 31.0</td>
<td>23.4 23.8</td>
<td>3.3 3.5</td>
<td>13.0</td>
<td>92 76</td>
<td>3 3</td>
</tr>
<tr>
<td>Austria</td>
<td>3472</td>
<td>99</td>
<td>99</td>
<td>98*</td>
<td>22.4 22</td>
<td>51.15 2.7</td>
<td>n.a n.a</td>
<td>12.2</td>
<td>160 133</td>
<td>7 8.5</td>
</tr>
<tr>
<td>Italy</td>
<td>3603</td>
<td>110</td>
<td>81</td>
<td>80*</td>
<td>27.1 27.0</td>
<td>28.4 29.6</td>
<td>1.6 1.7</td>
<td>18.8</td>
<td>79 73</td>
<td>15 17</td>
</tr>
<tr>
<td>Germany</td>
<td>3338</td>
<td>103</td>
<td>104</td>
<td>103*</td>
<td>22.5 19.3</td>
<td>55.1 11.9</td>
<td>0.8 1.0</td>
<td>55.1</td>
<td>54 60</td>
<td>8.5 10.4</td>
</tr>
<tr>
<td>Japan</td>
<td>2781</td>
<td>90</td>
<td>36</td>
<td>36</td>
<td>7.2 8.7</td>
<td>16.2 16.7</td>
<td>1.2 1.0</td>
<td>14.2</td>
<td>36.5 40.5</td>
<td>0.9 1.1</td>
</tr>
</tbody>
</table>

Source: FAO Production Yearbook; FAO Consumption Yearbook; USDA World Dairy Situation *: including poultry
### TABLE A4. ESTIMATED PRIVATE OWNERSHIP OF DIFFERENT LAND CATEGORIES IN EASTERN EUROPE (PERCENT)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Arable land</td>
<td>16</td>
<td>3</td>
<td>17</td>
<td>77</td>
<td>9</td>
<td>82</td>
</tr>
<tr>
<td>Pasture</td>
<td>n.a.</td>
<td>11</td>
<td>3</td>
<td>73</td>
<td>9</td>
<td>82</td>
</tr>
<tr>
<td>Farm size (ha)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Private farm</td>
<td>0.5</td>
<td>0.1</td>
<td>0.3</td>
<td>6.4</td>
<td>0.6</td>
<td>3.5</td>
</tr>
<tr>
<td>State farms</td>
<td>n.a.</td>
<td>n.a.</td>
<td>7,600</td>
<td>2,768</td>
<td>5,500</td>
<td>694</td>
</tr>
<tr>
<td>Cooperatives</td>
<td>n.a.</td>
<td>n.a.</td>
<td>4,500</td>
<td>500</td>
<td>2,100</td>
<td>94</td>
</tr>
</tbody>
</table>

*Source:* Bank sector reports and USDA.

### TABLE A5. SHARE OF THE LIVESTOCK POPULATION OWNED BY THE PRIVATE SECTOR (PERCENT)

<table>
<thead>
<tr>
<th></th>
<th>Hungary</th>
<th>Poland</th>
<th>Romania</th>
<th>Bulgaria</th>
<th>Yugoslavia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cattle</td>
<td>24</td>
<td>82</td>
<td>34</td>
<td>16</td>
<td>90</td>
</tr>
<tr>
<td>Cows</td>
<td>30</td>
<td>88</td>
<td>52</td>
<td>24</td>
<td>n.a.</td>
</tr>
<tr>
<td>Pigs</td>
<td>52</td>
<td>70</td>
<td>28</td>
<td>17</td>
<td>80</td>
</tr>
<tr>
<td>Sows</td>
<td>64</td>
<td>72</td>
<td>20</td>
<td>29</td>
<td>n.a.</td>
</tr>
<tr>
<td>Sheep</td>
<td>16</td>
<td>67</td>
<td>48</td>
<td>20</td>
<td>100</td>
</tr>
<tr>
<td>Poultry</td>
<td>38</td>
<td>67</td>
<td>38</td>
<td>42</td>
<td>48</td>
</tr>
</tbody>
</table>

### TABLE A6. AVERAGE MILK YIELD IN THE DIFFERENT SECTORS (lt/lactation)

<table>
<thead>
<tr>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Private</td>
<td>3,115</td>
<td>3,950</td>
<td>2,012</td>
<td>1,700</td>
<td>4,571</td>
</tr>
<tr>
<td>Cooperative</td>
<td>3,840</td>
<td>4,463</td>
<td>1,571</td>
<td>n.a.</td>
<td>n.a.</td>
</tr>
<tr>
<td>State</td>
<td>3,996</td>
<td>5,319</td>
<td>2,970</td>
<td>5,300</td>
<td>n.a.</td>
</tr>
<tr>
<td>Overall</td>
<td>3,250</td>
<td>4,400</td>
<td>1,958</td>
<td>1,811</td>
<td>4,571</td>
</tr>
</tbody>
</table>
### TABLE A7. EXPORT OF LIVE ANIMALS AND BEEF IN SELECTED COUNTRIES

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Live animals (1000 hd)</td>
<td>544.5</td>
<td>629.3</td>
<td>103.5</td>
<td>115.9</td>
<td>407.2</td>
<td>279.3</td>
</tr>
<tr>
<td>Meat (Mt x 1000)</td>
<td>131.5</td>
<td>195.3</td>
<td>34</td>
<td>26.1</td>
<td>219.8</td>
<td>340.7</td>
</tr>
<tr>
<td>Live/meat ratio</td>
<td>0.84</td>
<td>0.64</td>
<td>0.61</td>
<td>0.89</td>
<td>37</td>
<td>0.17</td>
</tr>
</tbody>
</table>

a. = Export meat/meat equivalent of live cattle export

### TABLE A8. CHANGES IN SOYBEAN IMPORTS IN SELECTED EASTERN EUROPEAN COUNTRIES

<table>
<thead>
<tr>
<th>Country</th>
<th>Average Quantity Imported (in MT)</th>
<th>Average Value of Imports (US$ x 1000)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulgaria</td>
<td>16       3,816</td>
<td>242 18,399</td>
</tr>
<tr>
<td>Czechoslovakia</td>
<td>1,740   2,319</td>
<td>3,905 6,803</td>
</tr>
<tr>
<td>Hungary</td>
<td>693      640</td>
<td>934 2,030</td>
</tr>
<tr>
<td>Poland</td>
<td>10,626   7,515</td>
<td>23,624 19,976</td>
</tr>
<tr>
<td>Romania</td>
<td>10,366   27,400</td>
<td>29,120 73,980</td>
</tr>
<tr>
<td>Yugoslavia</td>
<td>6,048    24,098</td>
<td>16,451 68,358</td>
</tr>
</tbody>
</table>
TABLE A9. WORLD BANK LENDING TO EASTERN EUROPE IN THE LIVESTOCK SUBSECTOR, 1975-90

<table>
<thead>
<tr>
<th></th>
<th>Hungary</th>
<th>Poland</th>
<th>Romania</th>
<th>Yugoslavia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of projects</td>
<td>3</td>
<td>1</td>
<td>7</td>
<td>13</td>
</tr>
<tr>
<td>with livestock component</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total project costs</td>
<td>759</td>
<td>135</td>
<td>1,972</td>
<td>2,754</td>
</tr>
<tr>
<td>(millions US$)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total livestock costs</td>
<td>350</td>
<td>49</td>
<td>1,356</td>
<td>562</td>
</tr>
<tr>
<td>(millions US$)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Bank lending</td>
<td>250</td>
<td>100</td>
<td>496</td>
<td>939</td>
</tr>
<tr>
<td>(millions US$)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Estimated Bank lending</td>
<td>82</td>
<td>36</td>
<td>341</td>
<td>192</td>
</tr>
<tr>
<td>for livestock</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(millions US$)</td>
<td></td>
<td></td>
<td></td>
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</table>
### TABLE A10. CHANGES IN LIVESTOCK INVENTORY IN FOUR EASTERN EUROPEAN COUNTRIES (1989-1991)

<table>
<thead>
<tr>
<th>Country</th>
<th>Stock number 1989</th>
<th>Stock number 1991 date</th>
<th>Percent change</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cattle</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Czechoslovakia</td>
<td>5,075</td>
<td>4,206 (12/91)</td>
<td>-17</td>
</tr>
<tr>
<td>Hungary</td>
<td>1,690</td>
<td>1,540 (12/91)</td>
<td>-9</td>
</tr>
<tr>
<td>Poland</td>
<td>10,733</td>
<td>8,844 (06/91)</td>
<td>-10</td>
</tr>
<tr>
<td>Romania</td>
<td>5,188</td>
<td>4,750</td>
<td>-8</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>22,686</td>
<td>19,340</td>
<td>-15</td>
</tr>
<tr>
<td><strong>Pigs</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Czechoslovakia</td>
<td>7,384</td>
<td>6,462 (12/91)</td>
<td>-17</td>
</tr>
<tr>
<td>Hungary</td>
<td>8,327</td>
<td>7,000 (12/91)</td>
<td>-9</td>
</tr>
<tr>
<td>Poland</td>
<td>18,835</td>
<td>21,868 (06/91)</td>
<td>-10</td>
</tr>
<tr>
<td>Romania</td>
<td>14,351</td>
<td>11,800 (11/91)</td>
<td>-8</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>48,897</td>
<td>47,130</td>
<td>-4</td>
</tr>
<tr>
<td><strong>Sheep</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Czechoslovakia</td>
<td>1,047</td>
<td>500 (12/91)</td>
<td>-52</td>
</tr>
<tr>
<td>Hungary</td>
<td>2,215</td>
<td>1,732 (12/91)</td>
<td>-22</td>
</tr>
<tr>
<td>Poland</td>
<td>4,409</td>
<td>3,234 (06/91)</td>
<td>-27</td>
</tr>
<tr>
<td>Romania</td>
<td>16,210</td>
<td>15,000 (11/91)</td>
<td>-7</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>23,888</td>
<td>20,466 (11/91)</td>
<td>-14</td>
</tr>
<tr>
<td><strong>Poultry</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Czechoslovakia</td>
<td>47,000</td>
<td>33,929 (12/91)</td>
<td>-28</td>
</tr>
<tr>
<td>Hungary</td>
<td>57,000</td>
<td>42,000 (12/91)</td>
<td>-26</td>
</tr>
<tr>
<td>Poland</td>
<td>60,000</td>
<td>43,250 (06/91)</td>
<td>-30</td>
</tr>
<tr>
<td>Romania</td>
<td>128,000</td>
<td>111,800 (11/91)</td>
<td>-13</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>292,000</td>
<td>230,000 (11/91)</td>
<td>-22</td>
</tr>
</tbody>
</table>
TABLE A11. CHANGES IN LIVESTOCK PRODUCTION IN FOUR EASTERN EUROPEAN COUNTRIES (1989-1991)

<table>
<thead>
<tr>
<th>Country</th>
<th>Stock number 1989</th>
<th>Stock number 1991 date</th>
<th>Stock number 1991</th>
<th>Percent Change</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Beef</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Czechoslovakia</td>
<td>405</td>
<td>324 (12/91)</td>
<td>-20</td>
<td></td>
</tr>
<tr>
<td>Hungary</td>
<td>114</td>
<td>139 (12/91)</td>
<td>+22</td>
<td></td>
</tr>
<tr>
<td>Poland</td>
<td>637</td>
<td>687 (06/91)</td>
<td>+8</td>
<td></td>
</tr>
<tr>
<td>Romania</td>
<td>235</td>
<td>310 (11/91)</td>
<td>+32</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>1,391</td>
<td>1,460</td>
<td>-5</td>
<td></td>
</tr>
<tr>
<td><strong>Cow milk</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Czechoslovakia</td>
<td>7,101</td>
<td>5,133 (12/91)</td>
<td>-17</td>
<td></td>
</tr>
<tr>
<td>Hungary</td>
<td>2,862</td>
<td>2,562 (12/91)</td>
<td>-9</td>
<td></td>
</tr>
<tr>
<td>Poland</td>
<td>16,404</td>
<td>13,800 (06/91)</td>
<td>-10</td>
<td></td>
</tr>
<tr>
<td>Romania</td>
<td>3,439</td>
<td>3,110 (11/91)</td>
<td>-8</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>29,806</td>
<td>24,605</td>
<td>-17</td>
<td></td>
</tr>
<tr>
<td><strong>Pork</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Czechoslovakia</td>
<td>934</td>
<td>757 (12/91)</td>
<td>-19</td>
<td></td>
</tr>
<tr>
<td>Hungary</td>
<td>1,014</td>
<td>1,100 (12/91)</td>
<td>+8</td>
<td></td>
</tr>
<tr>
<td>Poland</td>
<td>1,854</td>
<td>1,875 (06/91)</td>
<td>+1</td>
<td></td>
</tr>
<tr>
<td>Romania</td>
<td>840</td>
<td>815 (11/91)</td>
<td>-3</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>4,624</td>
<td>4,547</td>
<td>-2</td>
<td></td>
</tr>
<tr>
<td><strong>Poultry meat</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Czechoslovakia</td>
<td>233</td>
<td>250 (12/91)</td>
<td>+7</td>
<td></td>
</tr>
<tr>
<td>Hungary</td>
<td>590</td>
<td>490 (12/91)</td>
<td>-17</td>
<td></td>
</tr>
<tr>
<td>Poland</td>
<td>474</td>
<td>465 (06/91)</td>
<td>-2</td>
<td></td>
</tr>
<tr>
<td>Romania</td>
<td>380</td>
<td>350 (11/91)</td>
<td>-8</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>1,677</td>
<td>1,555</td>
<td>-7</td>
<td></td>
</tr>
</tbody>
</table>
Eastern Europe Trade of Livestock and Livestock Products

GENERAL

1. Historically the major objectives of the agricultural sector in eastern Europe were (1) self sufficiency, (2) provision of cheap (subsidized) food to the population and, to a lesser extent, (3) parity and (4) provision of sufficient meat, which was often the barometer of well-being. Export (outside COMECON) and quality were, initially, not among the main objectives and, compared to western European countries, the market share of eastern Europe in the international livestock product market is relatively small. Still livestock and livestock products contribute in a major way to the total agri-food export package.

INTERNAL TRADE

2. Self sufficiency was a major objective of agricultural policy and most Eastern European countries, with the exception of the USSR, Czechoslovakia and to some extent East Germany, have been self sufficient in milk and meat. Internal markets, especially in Poland, are of considerable size and will continue to be so. The population size is, with the exception of Albania and Bulgaria, fairly stable and any major expansion of the market may have to derive from greater per capita consumption rather than from population increases. Per capita consumption, however, especially of meat and butter, was fairly high already. Consumption of animal products has been declining in the last two years when free market reforms removed some of the subsidies on food but is still equal to that in many other developed countries. Short term the internal market for animal products may decline further with removal of subsidies and a decrease in purchasing power. Demand will probably stabilize within the next few years and then increase.

3. The long term outlook, using Italy and Austria as an arbitrarily selected standard, indicates that, after the short term adjustment effects have been corrected, consumption in Eastern European countries may still rise modestly. Consumption of milk products (cheese, yoghurt etc.), rather than fluid milk and butter, may rise significantly. These increases reflect a slight convergence towards of the type animal products consumed in more affluent western societies, and a narrowing of dietary options (as affected by eating out, fast food etc.). The development should coincide with an increased quality of food from animal origin, e.g. a decline in the consumption of animal fats.
4. Most eastern European countries are trying to restructure the pricing systems of food products. The majority of subsidies have been removed which in some countries has led to traumatic adjustments of the agricultural sector. Many of these traumatic experiences relate to distorted local markets dominated by monopsonistic participants and an inefficient agro-industry. New policies are still debated and few, apart from removing subsidies, have been implemented. Apart from economic policy reform, most countries' livestock economists and technicians are debating (1.) quality improvement (2.) expansion of the product line (for example by adding baby milk, yoghurt, cheeses), (3.) restructuring pricing systems with incentives for quality.

EXTERNAL TRADE

Situation before 1988

Table 1. Total and agricultural trade in eastern European countries during 1987 and 1988 (in US$ x 1000).

<table>
<thead>
<tr>
<th></th>
<th>Poland</th>
<th>Cz. slovakia</th>
<th>Hungary</th>
<th>Romania</th>
<th>Bulgaria</th>
<th>Yugoslavia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total exports</td>
<td>12 500</td>
<td>23 500</td>
<td>9 500</td>
<td>14 800</td>
<td>14 600</td>
<td>12 000</td>
</tr>
<tr>
<td>Agric. export</td>
<td>1 250</td>
<td>675</td>
<td>2 000</td>
<td>825</td>
<td>700</td>
<td>1 075</td>
</tr>
<tr>
<td>Total imports</td>
<td>10 600</td>
<td>23 500</td>
<td>9 600</td>
<td>11 000</td>
<td>15 500</td>
<td>12 900</td>
</tr>
<tr>
<td>Agric. import</td>
<td>1 500</td>
<td>2 500</td>
<td>875</td>
<td>525</td>
<td>1 100</td>
<td>1 200</td>
</tr>
</tbody>
</table>

Source: FAO trade data

5. Agriculture contributed approximately 10% to the total exports of most eastern European countries, except in Hungary where agricultural exports constituted 20% of the total external trade. All countries, except East Germany and Czechoslovakia, also had a positive although declining agricultural trade balance during the period 1983-1988. Most agricultural exports went to the USSR, and to some neighboring countries in eastern or western Europe. Eastern European trade, especially with the USSR, was too some extend governed by long term bilateral agreements at fixed prices which were, with respect to the USSR, more or less pegged to the oil and gas exchange values (e.g. food for oil). The arrangement with the USSR was abolished in 1990 and replaced by hard currency basis of trade which in the short run, and depending on fuel prices, may be unfavorable to most eastern European countries. Export to the USSR has declined during the 1980's. For example the market share of USSR in the international markets for meats has declined from 53% in 1982 to around 33% in 1988; for dairy and eggs from 33% to 10% (see also
table 3). This decline has accelerated during 1989-1990; meat imports from Eastern Europe declined 20% in 1989, in part because of delays in payment and of the declining exchange rate of food/oil. Eastern Europe was looking at the EEC as a source of new markets, did sign some agreements to facilitate trade, but seems increasingly frustrated by the piecemeal dismantling of trade barriers. The EEC, traditionally an importer of meat, has become an exporter and a competitor. Import restrictions make it increasingly difficult to penetrate the EEC market, especially after 1992. Moreover, export subsidies on EEC products distort the world market and, as such, the competitive position of eastern Europe.

6. Most eastern European exports consist of raw products with little value added. This is illustrated in table 4; the ratio live animal/beef export is nearly 3\times higher in eastern Europe compared to selected EEC countries. Whereas the Eastern European market share of live cattle (including calves) during 1981-1987 was around 14%, their share of the beef market is only 8%. This trend is even more obvious in the small ruminant market where Bulgaria, Hungary, Poland and Romania's market share of live animal export was over 40% in 1981-87 compared to around 15% for lamb and mutton.

<table>
<thead>
<tr>
<th>Country Sales to</th>
<th>1982</th>
<th>1988</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hungary</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EEC</td>
<td>29.2</td>
<td>12.7</td>
</tr>
<tr>
<td>USSR</td>
<td>53.3</td>
<td>33.4</td>
</tr>
<tr>
<td>Middle East</td>
<td>1.5</td>
<td>8.8</td>
</tr>
<tr>
<td>Neighbors</td>
<td>4.9</td>
<td>24.2</td>
</tr>
<tr>
<td>Yugoslavia</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EEC*</td>
<td>33</td>
<td>54</td>
</tr>
<tr>
<td>USSR</td>
<td>-</td>
<td>4.8</td>
</tr>
<tr>
<td>Middle East</td>
<td>16.8</td>
<td>27.6</td>
</tr>
<tr>
<td>Neighbors*</td>
<td>32</td>
<td>19</td>
</tr>
</tbody>
</table>

* = mainly Italy, both an EEC member country and a neighbor
Source: National Statist. yearbooks

7. Value added milk products contribute significantly to agricultural output in only a limited number of countries. Cheese is the most commonly exported product (Yugoslavia, Romania, Bulgaria, Czechoslovakia and Poland), but the total export of all of eastern Europe is less than that of, for example, France. Butter and milk powder are mainly

1/ In some cases, however, this was related to an effort to increase foreign exchange earnings by selling livestock and fresh meat for export and use cheaper, lower quality, imported meats for the internal market.
exported by Poland and Czechoslovakia; casein by Poland. Many of these products were exported at discount prices because of poor quality; most cheese exported to Ireland, for instance, was mainly used as pizza topping.

8. The mechanism of external trade was distorted by oligopolistic traders; in Poland for example the agricultural export business was dominated by only five (state) enterprises. Liberalization of trade did, consequently, not directly result in increased competition and more efficient markets.

Table 3. Annual export of live animals and beef of selected countries (in MTx1000)

<table>
<thead>
<tr>
<th>Country</th>
<th>Live animal**</th>
<th>Ratio Live/Beef (81-87)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>'81-83</td>
<td>'84-86</td>
</tr>
<tr>
<td>Italy</td>
<td>48.5</td>
<td>108.3</td>
</tr>
<tr>
<td>Netherlands</td>
<td>231.5</td>
<td>292.8</td>
</tr>
<tr>
<td>Ireland</td>
<td>219.8</td>
<td>269.6</td>
</tr>
<tr>
<td>Austria</td>
<td>23.5</td>
<td>54.4</td>
</tr>
<tr>
<td>Yugoslavia</td>
<td>34.1</td>
<td>38.1</td>
</tr>
<tr>
<td>E. Europe*</td>
<td>131.5</td>
<td>175.9</td>
</tr>
<tr>
<td>All Europe</td>
<td>1727</td>
<td>2221</td>
</tr>
</tbody>
</table>

* = Bulgaria, Romania, Hungary, Czechoslovakia and Poland.
** = calculated, assuming a slaughter weight of 220 kg for EEC and 200 kg for Eastern European countries.
Source: FAO trade year book

Early changes (1988-1991)

9. The transition period, of which the timing varied slightly by country, was characterized by major changes and volatilities in the markets. The restructuring of demand, as well as of feed supplies, including a limitation of feed imports, changed the outlook of livestock production considerably, especially in the larger state farms and cooperatives, resulting in a sell-off of stock. The number of cows kept on state and

2/ The suddenly opened borders provided traders a chance to export live animals to the EEC. This loophole was closed by new EEC trade barriers which also cover exports to (eastern) Germany.
cooperative farms in Poland for example dropped 5% from 1989 to 1990; more drastic reductions occurred in most east European countries in 1990-1991.

10. Insecurity, inefficient marketing and processing, decline in real wages, and increasing unemployment reduced the purchasing power of consumers, resulting in a contraction of the internal markets for animal products. Especially in 1990 and 1991 most countries were having a serious overcapacity problem in their livestock sector, and tried to reduce it by selling off stock. In some countries these sales were supported by incentive payments such as export subsidies. The eastern European output of red meat for example declined nearly 10% in 1990, and cattle inventories are expected to continue their downward slide well into 1992. This decrease will also have an effect on the rural labor market adding to unemployment. Unemployment, increasing cost of living and, relatively, declining pension payments may in some countries (Poland, Yugoslavia) lead to a "return" to the farm, and dependence of subsistent farm produce and income.

Future projections (Short term)

11. The political volatility in eastern Europe will, at least in the short run, continue to affect the trade in food. Anticipated food aid to the USSR in 1991-92 may affect exports of most eastern European countries somewhat. Short term projections are also affected by traditional considerations such as demographics, by EEC policies, the outcome of the GATT negotiations and, to a lesser extent, the developments in the Middle East. The new economic order in the former USSR will also lead to re-arrangements in trade, with the agriculture surplus states (Ukraine, Belarus and the Baltics) emerging as competitors for the Eastern European countries, both in the East and in the West.

Demographics. The projection of demand in Europe is influenced by population dynamics and by changing dietary preferences. Population growth has stagnated in most of eastern and western Europe. The growth in total food demand (volume) till the year 2000 is estimated to be less than .3% in western Europe, slightly higher in the southern parts and around 1% in eastern Europe. Milk consumption is expected to rise approximately .4, .9 and .5 % in respectively the EEC, eastern Europe and in the USSR; the expected annual rise in meat consumption till the year 2000 is respectively .6, .9 and .7 %.

3/ From FAO, 1988. These data generated in 1988 may be too optimistic for eastern Europe where recent changes have depressed production and demand. However changing consumption patterns may have a positive affect on certain commodities (increased demand for yoghurts or pizza would affect the demand for milk, for example).
Food aid. Short term the food aid plans of the US and Europe may affect the market for agricultural produce. Direct food aid to the USSR may make in-roads into the traditional market of eastern Europe, and may well be followed by soft trade deals thereby affecting the long term markets position. Indirect food aid, through purchases from eastern Europe as planned by the EEC, may alleviate the eastern European country from surpluses and provide some cash to modernize their agricultural infrastructure. On the other hand this temporary relief may give wrong signals to the market.

Effect of "western" policies. Changing "western" trade policies are very relevant to eastern European countries, which try to compete in the EEC/EFTA region and in the US market, as well as in the world market. The US, Japanese, and western European farm policies have been, and will continue to be, dominated by the "family farm" issue. Consequently there may be limited support for large scale farming as presently done on eastern European state farms and cooperatives. At present there appears to be some reluctance to a rapid changeover in most eastern European countries, as well as in the newly formed Soviet bloc countries.

Convertibility. Trade opportunities would greatly improve eastern Europe would attain full currency convertibility. If not, they would continue to be depending on barter and counterbarter arrangements which generally is an inefficient mode of trade and may lead to distorted production systems.

Future projections (long term)

12. Many of the issues affecting short term trade development will linger. The modernization of the livestock industry, marketing, transportation and processing will require considerable investment, a sound stratification plan and increasing flexibility. Among the factors that may influence this process are the development of a competitive product line, improvement in processing, marketing and management, utilizing comparative advantages (mild climate, soils and topography, cheap labor).

Marketing considerations

13. To date the export from eastern Europe to the rest of the world has been small, in the middle eighties only .2 % of total production. Developing countries will be net

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4/ Short term, however, the prices are so low in eastern Europe that, apart from dumping, most western countries will not be able to penetrate the local markets in eastern Europe.
importers of meat with an expected growth rate of about 2%. An important part of this demand will consist of small ruminants and poultry. This indicates that, although the overall export market may be fairly depressed and, as long as EEC surpluses exist, highly competitive, there may be a niche for specialty products. Examples may be the Polish hams and sausage (which have some name recognition) or small ruminant products (including cheese). There exist a relatively larger market for live sheep and goats in which Hungary, Bulgaria and Turkey are the major suppliers and Italy and West Germany the major consumers.

Potential markets:

14. **Neighbors:** A country’s major trade partners, especially of semi perishable products such as the majority of livestock related commodities, are its neighbors (table 2). Any trade strategy of eastern European countries should include further development of across the border trade.

15. **EEC:** There has been considerable expectation within eastern Europe that the EEC would provide easy terms of trade. Recent events however have demonstrated the difficulty the EEC has to overcome for any special trade deal in the agricultural sector without an internal backlash from affected farm groups. This is demonstrated by association treaties between the EEC and respectively Czechoslovakia, Hungary and Poland. For animal products the treaties specify:

   (a) An increase of the reduced tariff quota on meat from 135,000 ton in 1992 to 179,000 ton in 1996 (i.e. an increase of 5.2 percent per year). Within these quota, tariffs and levies will be reduced by 60 percent over three years.

   (b) An increase in the reduced tariff quota for live animals (180 - 300 kg liveweight) from 217,000 in 1992 to 297,000 cattle in 1996 (i.e. 6 percent per year). Within this quota, the levy reduction is 25 percent. However, following a surge in export in live animals from Poland in 1990 (1,000,000 head of cattle) which upset internal EEC markets, EEC imposed an import ceiling on the total number of live animals of 425,000 head per year.

   (c) Import concessions on 4000 ton cheese, 2000 ton butter and 5500 ton milk powder.
Table 4. Major suppliers of agricultural commodities to the USSR (1988/89).

<table>
<thead>
<tr>
<th>Commodity</th>
<th>Import volume (MT x 1000)</th>
<th>Major suppliers and percentage of the market.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coarse grain</td>
<td>22.888</td>
<td>USA (76%), EEC (14%), China (5%), others (5%)</td>
</tr>
<tr>
<td>Soybeans and meal</td>
<td>4.448</td>
<td>USA (41%), Argentina (33%), China (11%), Brazil (10%)</td>
</tr>
<tr>
<td>Fresh and frozen</td>
<td>406</td>
<td>China (31%), France (17%), Hungary (16%), N.Zealand (9%)</td>
</tr>
<tr>
<td>meat</td>
<td></td>
<td>Romania (8%), Mongolia (7%), other (12%)</td>
</tr>
<tr>
<td>Poultry</td>
<td>136</td>
<td>N.Zealand, Netherlands, Ireland (12% each), FRG (11%), Finland (3%), Hungary (2%), other (48%)</td>
</tr>
<tr>
<td>Butter</td>
<td>247</td>
<td>Australia (66%), N.Zealand (22%), Uruguay (5%), Mongolia (5%), other (4%)</td>
</tr>
<tr>
<td>Wool</td>
<td>128</td>
<td></td>
</tr>
</tbody>
</table>

Source: USDA

The treaties offers possibilities for "triangular" sales (Purchase of EEC financed food for the former USSR); such sales, however, will reduce the above mentioned imports quotas. Similar association treaties are being prepared with the remaining East European countries. While important, these concessions will have only a limited impact. For the three countries together, the 1992 meat and the live animal quota would cover only three percent of their total 1989 production and twenty percent of their meat exports. Besides, most of the meat concessions concern pork, which have to gain access to the highly competitive European market. For the EEC, they compare somewhat meager with the reported 200,000 ton meat import quota's of, for example, New Zealand.

16. **CIS states:** The Soviet Union used to be the major trade partner of most Eastern European countries. Still from a Soviet viewpoint few of the eastern European countries were essential suppliers (table 5).

Eastern Europe has a comparative advantage in terms of distance, familiarity with culture and language, and experience with transportation of produce (trucking etc.). On the other hand the new western republics (Ukraine, Baltics, Belarus, Moldavia) are already net exporters of milk and meat to the rest of the former Soviet republics, and may become potential competitors as well as important trade partners.

17. **Far East.** A major expansion of the market of livestock products is taking place in Korea, Taiwan and, although heavily regulated, Japan. Poultry meat consumption in PR China for instance has doubled since 1987.
Table 5. Annual external trade in poultry meat of selected European countries and Eastern Europe (in MT X 1000)

<table>
<thead>
<tr>
<th></th>
<th>EXPORT</th>
<th></th>
<th></th>
<th></th>
<th>IMPORT</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>'84-'86</td>
<td>'86-'87</td>
<td>'88</td>
<td>'89</td>
<td>'90</td>
<td>'84-'86</td>
<td>'86-'87</td>
<td>'88</td>
<td>'89</td>
<td>'90</td>
</tr>
<tr>
<td>Italy</td>
<td>9.1</td>
<td>12.3</td>
<td>18.</td>
<td>19.</td>
<td>30</td>
<td>25.2</td>
<td>24.7</td>
<td>35.7</td>
<td>41.5</td>
<td>30</td>
</tr>
<tr>
<td>Nether</td>
<td>203.9</td>
<td>219.6</td>
<td>252.7</td>
<td>259.1</td>
<td>100E</td>
<td>24.2</td>
<td>31.9</td>
<td>48.</td>
<td>51.3</td>
<td>20</td>
</tr>
<tr>
<td>Ireland</td>
<td>3.0</td>
<td>4.2</td>
<td>5</td>
<td>5</td>
<td>4</td>
<td>7.8</td>
<td>8.9</td>
<td>8</td>
<td>8</td>
<td>8E</td>
</tr>
<tr>
<td>Austria</td>
<td>nd</td>
<td>44.3</td>
<td>56.6</td>
<td>63.3</td>
<td></td>
<td>13.1</td>
<td>15.5</td>
<td>14.8</td>
<td>16.7</td>
<td>15</td>
</tr>
<tr>
<td>Sweden</td>
<td>2.5</td>
<td>1.5</td>
<td>1</td>
<td>1</td>
<td></td>
<td>33.1</td>
<td>37.7</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Poland</td>
<td>14.</td>
<td>16</td>
<td>16.7</td>
<td>19.9</td>
<td>20E</td>
<td>7</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Czech</td>
<td>nd</td>
<td>14</td>
<td>16</td>
<td>14</td>
<td>10</td>
<td>-</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>Hungary</td>
<td>nd</td>
<td>195</td>
<td>238.2</td>
<td>178.1</td>
<td>174</td>
<td>-</td>
<td>.1</td>
<td>.1</td>
<td>.1</td>
<td>-</td>
</tr>
<tr>
<td>Romania</td>
<td>35</td>
<td>43</td>
<td>110E</td>
<td>120E</td>
<td>0</td>
<td>1.2</td>
<td>2.5</td>
<td>3.7</td>
<td>7</td>
<td>48</td>
</tr>
<tr>
<td>Bulgaria</td>
<td>24</td>
<td>38.5</td>
<td>34.6</td>
<td>30</td>
<td>30</td>
<td>-</td>
<td>1.7</td>
<td>1</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Albania</td>
<td>nd</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1.7</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Yugoslavia</td>
<td>17.4</td>
<td>16.6</td>
<td>15.1</td>
<td>15</td>
<td>11</td>
<td>-</td>
<td>.8</td>
<td>1</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>E. Europe</td>
<td>226.7</td>
<td>277.4</td>
<td>318.5</td>
<td>232.2</td>
<td>-</td>
<td>11.7</td>
<td>5</td>
<td>8.5</td>
<td>8E</td>
<td>-</td>
</tr>
<tr>
<td>USSR</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>nd</td>
<td>235</td>
<td>178.6</td>
<td>138.1</td>
<td>90</td>
</tr>
</tbody>
</table>

Source: FAO trade yearbook ** hungary (mainly), Bulgaria, Czechoslovakia and Romania.

Poultry meat imports during 1987-1990 increased 72 and 63% in respectively Hongkong and Japan. The competition for this market is fairly heavy. New Zealand, Australia and Thailand have a comparative advantage in terms of geography, the EEC and US in terms of quality as well as in special interest<sup>5</sup>. Thailand’s broiler production has doubled since 1986; over 70% of its exports go to Japan. Other major competitors in the area are the United States, China and Brazil. China is a major supplier of meat to Russia and other bordering republics where it has a geographical competitive advantage.

18. **Middle East** For some of the southern countries such across the border trade may include trade with Middle Eastern, Central Asian and north African countries. The fairly lucrative market for eggs and poultry products is highly competitive (Brazil, France and other EEC countries are major suppliers) but is declining somewhat as these countries are developing their own production systems. The market for beef and live sheep will be stronger but competitive. Especially the southern countries in eastern Europe may do well in this market if competing on a "no dumping" basis.

<sup>5</sup> Japan has increased its ownership of farms or processing in Thailand, Australia and in the US.
Agricultural support

19. **End of state monopoly.** The state will have to end its monopoly in trade in agricultural inputs and products. The transfer to a free market system may require some thought and time; there are already some indications that transfer to a few privileged private owners will neither improve the market nor the production and productivity.

20. **Farm support.** Most producer subsidies, which were substantial in some countries, have been removed or are being removed. In many countries, Poland for example, this process has been fairly traumatic, and political pressures continue to consider reinstatement of at least some protection. Given the high proportion of the population still employed in agriculture, governments may be tempted give in to demands from the agricultural sector. This will slow the transformation process but may provide some social safety to a substantial part of the rural population.

21. **Border pricing.** Border levies vary in eastern Europe and, in some countries, have been lowered or removed during 1990. However some tariffs and quota’s were reintroduced or increased in 1991. The effects, internally as well as externally, depend to some extend on the outcome of the GATT negotiations; competition in an in perfect market influenced by subsidized goods from the EEC is difficult. At present the pricing structure of eastern European countries is so low that, from a viewpoint of price, little competition will occur in the internal market. The exports market, however, is affected by variable border levies (of the EEC and others); unfortunately poor quality of eastern European products have a far larger effect on the slow penetration that market than levies etc. If the EEC will lower their internal farm produce pricing, and recent events may give some credence to such a move, then low input farming may expand, and in a market based on forage-based production of meat and milk there may be some opportunities for eastern European countries. Overall however it has to be expected that the volatility of the market continue for some time.
CONCLUSIONS

1. The internal market in the eastern European countries is substantial but will not expand much; it is more likely to contract during the next two years. In the short term little competition will occur from outside the former East block, provided that the infrastructure allows an efficient market and that no dumping (by EEC and others) occurs.

2. Competing in the world market may in the short term be difficult because of the generally poor quality of products, and of the export subsidization of the EEC for its products. There may be a narrow window for specialty products and small short term opportunities when EEC allows importation of defined quota of specific products. In the long term the EEC may have solved their over-production/surplus problem and become an interesting trade partner.

3. Trade with the former Soviet States will, in the future, with respect to livestock products, be mainly with Russia. The, then also exporting, western republics such as the Baltic states, the Ukraine and Belarus may have a geographical advantage, as has China in the east. The development of this market may take some time as the Russian market will, at least for the time being, continue to contract.

4. In the long run eastern European could be competitive if they are able to develop a simple grassland based production system or, in the southern areas, an efficient production of corn and soybeans.

5. These still speculative predictions assume the development of an efficient marketing, storage and transportation system, and further diversification of the product line; improving these systems require considerable investment and improvement in management before they are able to efficiently "market" the output of the livestock producers.
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