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Denmark in the European Community: A Decade of Agricultural Change

Marshall H. Cohen

DENMARK IN THE EUROPEAN COMMUNITY: A DECADE OF AGRICULTURAL CHANGE, by Marshall H. Cohen, International Economics Division, Economic Research Service, U.S. Department of Agriculture. Staff Report No. AGES860612.

ABSTRACT

Denmark's membership in the European Community resulted in changes in nearly all sectors of its agricultural economy. Membership enabled Denmark to maintain tariff-free trade with other EC members, while EC export subsidies assisted in developing markets in non-EC countries. Farm size increased along with specialized farm production. The EC has encouraged production of peas, beans, rapeseed, and wheat resulting in greater self-sufficiency in feeds. Membership in the EC did not prevent a serious farm crisis due to high interest rates. The U.S. share of Danish agricultural imports declined from 17 percent to 8 percent since Denmark joined the EC, reflecting EC protection, greater Danish self-sufficiency, and fierce competition.

Keywords: Denmark, farm policy, European Community, U.S. trade.

NOTES

The Danish krone (Dkr) is Denmark's unit of currency (kroner, plural). There are 100 ore in one Dkr. This report uses the following exchange rates:

DKr per U.S. $1

1973	6.05	1979	5.26
1974	6.09	1980	5.64
1975	5.75	1981	7.12
1976	6.05	1982	8.33
1977	6.00	1983	9.14
1978	5.51	1984	10.34
		1985	10.59

This report uses metric units throughout. Metric tons are referred to as tons.

1 kilogram (kg) = 2.2046 pounds
1 metric ton = 2,204.6 pounds
1 liter (lt.) = 1.0567 liquid quarts
1 hectare (ha) = 2.471 acres
1 hectoliter (hl) = 100 liters

A Scandinavian feed unit (f.e.) is approximately equivalent to the nutritional value of 1 kg of barley.

1301 New York Ave., N.W.
Washington, D.C. 20008-4780

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PREFACE

This report analyzes the major agricultural developments in Denmark, emphasizing the impact on Denmark's production system and trade of membership in the European Community (EC). The study combines historical background and current information. This report includes an example of the operation of monetary compensatory amounts, because descriptions in English of the technical monetary arrangements after membership are scarce. A section on cooperatives is appropriate in view of their extreme importance in Denmark's market structure both prior to and during the period of EC membership. Also, implications for the United States have enlivened an interest in this analysis because of the extremely important relationship between the United States and the EC.

CONTENTS

GLOSSARY

Accession Compensatory Amount (ACA). Border taxes or subsidies on traded items applied on products of new members during their transition period to full membership in the European Community (EC).

Common Agricultural Policy of the European Community (CAP). Principal regulations affecting the EC's farm sector under Article 39 of the Rome Treaty which established the EC. The following objectives are assigned to the CAP: to increase productivity, to ensure a fair standard of living for the agricultural community, to stabilize markets, to assure supply, and to provide consumers goods at reasonable prices.

European Agricultural Guidance and Guarantee Fund (EAGGF). This portion of the EC budget finances all agricultural expenses and has two sections: a guidance section for financing agricultural structural improvements and a guarantee section for maintaining CAP price and income regulations.

European Currency Units (ECUs). Unit of account representing a basket of EC currencies. ECU's are converted to national currencies by a national exchange rate (called a green rate) used for agricultural goods protected under the CAP. All CAP support prices are quoted in ECUs. Since March 1984, a different ECU has been used for budget calculations than that used for price supports.

European Economic Community (EC). An economic and customs union of 12 countries started under the Rome Treaty in 1958:

Original members:
- Belgium
- Luxembourg
- France
- Italy
- West Germany
- The Netherlands

Members since January 1973:
- Denmark
- Ireland
- United Kingdom

Member since January 1981:
- Greece

Members since January 1986:
- Spain
- Portugal

European Free Trade Association (EFTA). An industrial free trade area created under the Stockholm Convention in 1960. Members are Austria, Finland (associate), Iceland, Norway, Portugal, Switzerland, and Sweden. Denmark and the U.K. were full members until January 1973 when they joined the EC.

European Free Trade System. All the EFTA members and 10 EC members. Free trade is defined as a system free of border protection (tariffs, etc.) for internationally traded goods.

European Monetary System (EMS). A common monetary arrangement introduced in March 1978 to stabilize EC exchange rates. The mechanisms used are compulsory intervention in order to maintain exchange rates within a specified range and credit. All EC members participate except the U.K., Greece, Spain, and Portugal.

General Agreement of Tariffs and Trade (GATT). An international agreement through which various countries agree to conditions conducive to freer international trade.

Monetary Compensatory Amounts (MCAs). Border taxes or subsidies that offset the divergence between green rates (see ECUs) and actual rates of exchange. They are designed to prevent distortions in trade when green rates and market rates diverge. When green rates are below market rates the MCA is positive (a levy on imports and subsidy on exports), a benefit to farmers. When green rates are above market rates, the MCA is negative (a subsidy on imports and levy on exports), a benefit to consumers. Variable MCAs, which may change weekly, are applied to member countries with freely floating currencies.

Price Supports. Policy devices legislated under the CAP to protect farm income. The most important price supports are intervention, target, and threshold prices (each term is listed individually in glossary):

> Intervention Prices. Levels below which market prices must fall for intervention agencies to purchase farm commodities. For some commodities, a "safety net" rather than intervention price is used. These are called reference, basic, or sluice-gate prices.
>
> Target Prices. Optimum prices, negotiated and fixed annually for individual products, that the farmer ought to receive. For some commodities, the prices are called guide or norm prices.
>
> Threshold Prices. Imports from non-EC countries may not enter the EC when they are below this price. When world market prices are below threshold prices, import prices are raised to threshold prices by an import duty or levy.

Value Added Tax (VAT). A general turnover tax that applies to all stages of transaction, including the import stage, and applies to all commercially-traded commodities and most services. In recent years, a 22-percent VAT has been in effect in Denmark.

SUMMARY

The U.S. market share of agricultural imports by Denmark has declined from 18 to 8 percent since Denmark joined the European Community (EC) in 1973. Imports of such commodities as grain, protected by EC variable levies, have dropped sharply as Danish self-sufficiency increased. Other EC partners benefit from their preferential relationship to Denmark and have gained in their market share of grains and fruits and vegetables at the expense of the United States.

Danish imports of U.S. high protein feeds, particularly soybeans and soybean meal (largely crushed in Western Europe), rose sharply following membership and an expansion in the hog sector. In recent years, however, direct imports of soybeans fell sharply due to the destruction of a main crushing facility. EC policies to encourage production of feeds such as peas, beans, and rapeseed, as well as sharply increased soft wheat production, have resulted in greater self-sufficiency in feeds in general. Nongrain feeds such as manioc and corn gluten which are largely imported have not been a significant ingredient in rations because of their relatively high transportation costs from ports outside Denmark.

Denmark, a net exporter of agricultural products, benefits from the farm programs (particularly export subsidies), the higher price supports, and the financial incentives of the EC. Membership in the EC since 1973 enables Danish exporters to at least sustain trade with important EC partners, especially West Germany and the United Kingdom, while also developing markets in EC and non-EC countries. The development of export markets in the Middle East and the Far East are examples of successful marketing strategies which are partially financed by EC export subsidies. Membership in an expanded EC did not prevent a serious farm crisis. During 1973-83, real farm income fell dramatically and record bankruptcies occurred as farm debt increased. EC price supports and increased productivity in certain sectors may have prevented a worse farm income situation.

The pattern of overall agricultural production has changed since 1973; barley production still dominates crop output, although wheat area and output have grown sharply, a response to EC price supports and other programs affecting wheat uses. Farm size has increased dramatically, and animal production is more specialized. These changes developed before 1973, but have been encouraged since EC membership to improve efficiency.

Membership in the EC has required Denmark to subjugate some national production decisions to meet broader EC-wide objectives. Most notably, an EC dairy quota system designed to reduce surplus milk output was implemented in Denmark in 1984. Danish market structure has not been significantly affected directly by EC regulations. Some cooperative marketing organizations have, however, broken away from the parent groups and are marketing livestock products independently, but this development is not related to EC membership.

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INTRODUCTION

This project was undertaken as a case study to provide historic perspective of the effects on an important agricultural producing country following its entry into a large customs union. Danish membership in the EC in 1973 may be described as the first wave of enlargement from a community of six to nine members. The second wave began with Greek membership in 1981, and terminated in 1986 when Spain and Portugal joined, creating a community of 12 members. Those interested in the effects of enlargement on U.S. trade and agricultural policy and marketing should benefit from examining the Danish experience.

Although Denmark is not a major market for U.S. farm products, the pattern of change away from grains, a traditional U.S. export, to oilseeds may be directly attributed to EC policies. This shift is highly relevant to trade issues between the United States and the EC during the second wave of enlargement.

Denmark, the United Kingdom (U.K.), and Ireland joined the EC on January 1, 1973. Denmark and the U.K. were charter members of the European Free Trade Association (EFTA), an industrial free trade bloc with no regime for agricultural free trade, as a holding action until membership in the EC was possible. 1/ The Danish Government accurately perceived that membership was necessary to at least sustain agricultural exports, particularly because West Germany, an EC partner, had traditionally been an important trading partner with Denmark. Political motives for Danish integration into a wider Europe reflected centuries of Danish historic ties to continental Europe and have been equally as important as economic considerations.

This study describes the changes in production systems and trade in Danish agriculture since 1973. The direct effects of EC membership on many developments in Danish agriculture during the past decade are very speculative as are assumptions of what might have happened if Denmark, as the other countries in Scandinavia (Sweden, Finland, and Norway) opted to remain in EFTA rather than join the EC. Nevertheless, the general economic support systems of the Common Agricultural Policy (CAP), with guaranteed regulated farm prices, and the protective umbrella of external tariffs are important

*The author is an economist with the Economic Research Service, U.S. Department of Agriculture.

1/ EFTA was formed in 1960 largely to offset the economic power of the EC.

advantages of membership. Many of these benefits were deflated by some of the adverse economic events of the past decade, a decade characterized by both enormous benefits to Danish agriculture and a serious farm debt crisis in Danish agriculture.

Many of the regulations in the CAP helped Denmark earn large net payments from the EC. For example, export restitutions (subsidies) paid by the EC have helped Denmark export agricultural products to third country markets, collectively larger than any single EC market. In addition, more specialized production, which began before membership, is partly due to a greater competition from other efficient EC producers, such as The Netherlands, and to the development of specialized export markets.

Although membership in the EC has not been a panacea for Danish farm problems, which were similar to those in the United States in recent years, most Danish voters still support membership. On February 27, 1986, a majority of Danes approved a national referendum providing for many EC reforms. The approval indicates strong public support for continued membership in the expanded European Community.

AGRICULTURAL BACKGROUND

The total area of Denmark is 4.3 million hectares, approximately one-third the size of Iowa. 2/ In 1983, 2.8 million hectares, or two-thirds of total land area, were farmland. Although nearly all of Denmark's agricultural area can be cultivated, a large percentage of area is either of poor soil quality or not suited for highly diversified agricultural production. The gray-brown podzolic soils, common in eastern Denmark, are highly fertile and very responsive to fertilizer. Jutland, Denmark's largest western peninsula where the dairy industry is based, has extensive pasture as well as areas of sandy, bog, or clay soil requiring heavy applications of fertilizer and frequent irrigation. Despite Denmark's high, northern altitude and weather extremes which may occur during the growing season, there are several compensating factors. The Gulf Stream is a warming influence, and the vast sea area relative to land mass results in little snowfall. The long summer days (an average of 17 hours of sunshine daily in June) is an important compensation for the long, dark winter. Nevertheless, the grass growing season is a relatively long 37 weeks in Jutland. Denmark's advanced seed technology enables plants to withstand both climatic extremes and heavy fertilizer use.

Grain and other cash crops account for 70 percent of total arable area. Barley has traditionally been the dominating crop, representing nearly 80 percent of grain area. The economic importance of barley has historically been due to its use as a hog feed and as an important ingredient in Denmark's brewing industry. Wheat, also an important cash crop, is second in importance to barley. Area sown to wheat has increased dramatically since Denmark joined the EC, rising to a record 334,000 hectares in 1984.

Grass and products derived from grass (pellets) are principal feeds in Denmark. Grass is grown largely as a rotation crop in Jutland. Seeds for industrial use are mainly rapeseed varieties used principally for oil although

2/ Greenland is a Danish possession under a home-rule arrangement. Greenland opted to leave the EC on February 1, 1985, for a variety of social and economic reasons, and will be associated with the EC as an overseas territory. This report largely refers only to continental Denmark, excluding both Greenland and the Faroe Islands.

rapeseed meal has been a growing ingredient in cattle rations. Area planted to rapeseed (largely spring rapeseed varieties, also called double-low or double-zero) has increased sharply from only 2 percent of grain and cash crop area in 1970-74 to around 8 percent by 1984. Rapeseed is a valuable rotating crop in Denmark. EC policy has encouraged the increase in rapeseed production. Animal husbandry is the principal source of farm income, with the value of livestock products accounting for 80 percent of total farm output value (44 billion Dkr--$4.7 billion--in 1983). The pig and dairy sectors are the most important income earners in Denmark, together accounting for 74 percent of the output value of livestock products in 1983, followed by beef and veal, poultry, and eggs.

The farm income situation in Denmark deteriorated severely in the late 1970's and early 1980's but improved in 1984 and 1985, reflecting export strength, reduced interest rates, and national aids to assist debt-ridden farmers. Enormous growth in interest expenditures in recent years has been an important factor in the sharp decline in average farm income, especially for young livestock producers. The deteriorating farm income situation which began during the late 1970's forced an increase in the already substantial off-farm work. "Part-time" farming is likely to continue to be a notable feature of Danish agriculture.

The number of farms in Denmark has been steadily declining since World War II, due to a variety of factors. Farms have become larger, more efficient, and specialized; industry has displaced agriculture in terms of employment and in its relative contribution to national output. In 1957, the share of industrial exports exceeded agricultural exports for the first time. In 1983, there were 95,100 agricultural holdings, compared with 196,000 in 1960. The average size of a farm has increased from 16 to 30 hectares during this period. Amalgamations of farms are permitted, but with rare exception up to only 75 hectares.

The number of farmers has also declined There are 146,700 farmers, including hired workers, in Denmark, representing 6 percent of the labor force. The average age of Danish farmers, at 53 years, compares with 47 years in the United States.

Danish farmers are among the world's most skilled and educated. Under Danish law, all purchasers of farmland must reside on the farm, have an agricultural education, and use the property as a viable farm. These regulations prevent the purchase of so called "hobby farms" and minimize the buying of farmland for speculation. However, new laws on farmownership are in process to ease purchasing of farms.

Trade is essential to Denmark's economic health. Exports as a percentage of gross domestic product (GDP) are 25 percent and imports 29 percent compared with below 10 percent for both in the United States. Nonagricultural exports account for nearly 70 percent of the total, but agricultural exports despite their lower share of the total are highly important, earning a record 38 billion Dkr in 1983.

Export subsidies accounted for 8 percent of total agricultural export value in 1983 and are paid by the European Community. Approximately two-thirds of agricultural exports are shipped to other EC markets, a share which has not changed significantly compared with the premembership period, although more exports are geared towards the original six members, especially West Germany, and less towards the United Kingdom. Pigmeat is by far the major agricultural

export followed by dairy products, at nearly 30 and 24 percent of the total. Beef and veal (including live animals for slaughter), grains, and furs follow as important exported agricultural items. Specific high value-added products such as feta cheese have been enjoying spectacular market growth in the Middle East. The United States is one of Denmark's major customers for canned meat, taking over one-third of Denmark's total export of this important product. The United States has been an important customer for other meat items such as spareribs.

AGRICULTURAL POLICY

Government support prices in Denmark mushroomed since they were introduced in 1958. Prior to 1958, support to agriculture largely consisted of advisory services, research and education programs, and grants for land reclamation and soil improvement. Virtually all farm prices were determined by export prices until 1961. In 1958, the Government reintroduced a post World War II grain support program for feed grains, including a system of both minimum producer prices and variable import levies. The policy was intended to support farm income, but also to control pork surpluses by inflating feed grain costs when necessary. Beginning in 1966, bread grains (wheat and rye) were also supported under identical regulations pertaining to feed grains. Regulations for bread grain supplemented milling requirements which specified the percentage of high quality grain to be used in bread manufacturing. Policy also provided for total grain import embargoes when domestic supplies were abundant.

Since 1961, grain prices have been calculated to reflect production costs because post-war inflation in Denmark had been relatively high. Guaranteed home market prices largely applied to only about one-third of agricultural output since two-thirds of farm production (largely livestock products) was exported at world market prices. Danish consumers financed a large percentage of support costs by paying a higher price for Danish goods than the price charged to customer countries.

The Government introduced in 1962 a "two price" system that subsidized exports of livestock products (beef, veal, pork, poultry meat, and eggs) to ensure contracts abroad. Minimum home market wholesale prices were set above export prices, and producers received a weighted average of domestic and export prices. A program for dairy products was structurally similar to that for meats and eggs but was administered by the private dairy organizations. Dairy support programs, introduced in 1961, included direct payments and payments based on milk deliveries and herd size. The Government also directly paid poultry and egg producers. Other programs rewarded dairy efficiency and assisted in market promotions.

A direct government subsidy to rapeseed producers went into effect in 1967 to encourage availability of rapeseed oil for industrial use. Rapeseed meal was an insignificant feed at the time. This program replaced an arrangement under which margarine manufacturers purchased rapeseed oil at a fixed price from the crushing plant.

On March 15, 1972, the Danish Parliament (Folketing) approved the bill regarding Denmark's accession to the EC. The bill authorized ratification of the Accession Treaty for EC membership which included accession to the European Coal and Steel Community and the European Atomic Energy Community. The accession legislation substantially modified the mechanisms used to

support the production, marketing, and trade of agricultural commodities and nullified most existing price and income support policies.

When Denmark joined the EC in January 1973, the CAP replaced the two-price support system and most other national policies. The legal requirements for membership meant far-reaching adjustments to the EC's farm programs, including adopting EC annual farm price guarantees, intervention purchasing, and receiving export and regional development subsidies, although the latter has been less important in Denmark than in other EC members.

Higher Prices After Membership

Membership in the EC in 1973 brought Danish producers the benefit of higher EC prices for commodities. Producers were scheduled to receive full EC prices following a 5-year (1973-78) transition period, although most of the increases occurred prior to 1978, and many the first year of membership. The expectation of supported higher farm prices over a longrun period was an important aspect of farmer support for membership. The magnitude of price changes for EC-supported products occurring immediately on membership is illustrated in table 1.

Table 1--Danish producer prices for selected CAP-supported products, fiscal years

Item	1966-70 average	1973	1974	Change from 1973 to 1974
	- - - Dkr per 100 kgs - - -			Pct.
Wheat	52.72	66.37	80.78	22
Barley	49.37	61.33	75.67	23
Oats	47.35	59.42	81.39	37
Milk (3.5 percent fat)	49.95	72.75	94.06	29
Butter (ex. dairy)	746.00	1,109.00	1,300.00	17
Bacon pigs (ex. slaughter house)	514.00	677.00	807.00	19
Broilers (first class)	317.00	361.00	454.00	26

Source: (15)

Although livestock product prices for CAP-supported products were strengthened when membership occurred, the rise in prices initially was more beneficial to grain producers. Higher grain prices resulted in increased production costs for livestock products, especially in the hog, poultry, and egg sectors, offsetting some of the price benefits of membership.

The price and income support apparatus inherited by Denmark upon membership included mechanisms designed to sustain high prices at levels (or targets) spelled out in the annual EC farm-price legislation. 3/ Price support programs under the CAP are applied to numerous products including grains, dairy products, beef, sugar, fruits, and vegetables.

3/ An explanation of the operation of the EC price system is in the Appendix.

EC Intervention Prices

The EC finances market intervention arrangements in Denmark for the major CAP-protected commodities (table 2). Intervention agencies in Denmark are authorized to purchase goods usually at intervention prices which are stipulated annually along with other support prices in the EC agricultural price review. Support prices vary in their construction and name (that is, basic prices for pigmeat, guide prices for beef and veal, target prices for butter, cheese, and skim milk powder) but are technically similar.

Table 2--Danish intervention expenses

EAGGF expenses	1973	1974	1975	1976	1977	1978
			Million Dkr			
Butter	0	0	20.8	25.6	48.8	95.7
Skim milk powder	0	0	16.1	130.7	34.6	145.7
Meat (beef only)	0	0	241.2	215.0	221.3	301.7
Grain	0	0	1.6	11.5	-.6	25.5
Rapeseed	0	0	0	.8	0	.2
Total	0	0	279.7	383.6	304.1	568.8
	1979	1980	1981	1982	1983	
			Million Dkr			
Butter	31.6	15.0	2.2	8.3	13.8	
Skim milk powder	97.9	0	8.5	-3.1	105.0	
Meat (beef only)	170.4	109.8	101.7	97.1	295.2	
Grain	37.7	37.7	44.4	118.5	252.7	
Rapeseed	1.6	10.4	13.0	-1.2	-25.2	
Total	339.2	172.9	169.7	219.6	641.5	

Source: (16)

Intervention price support has more than doubled since the first year it was administered (1975), reaching 642 million Dkr ($62 million) by 1983. Beef had been the major item supported under the ECs' intervention program in Denmark, although relatively small compared to large EC producing countries. The EC intervention support program for beef and veal reimbursed farmers, especially during periods when cattle slaughter was relatively large due to EC programs to reduce surplus dairy production. Since 1982, grain intervention has approached levels of support for beef. Denmark is by no means an important grain producer by EC standards, but shared a surplus problem since 1982 along with EC partners.

Unlike many EC butter-producing countries, butter has not been a major surplus problem, although large intervention purchases occurred in 1977 and 1978.

Butter traditionally had been produced for export, especially to the United Kingdom. Denmark's supply response to declining consumption in the U.K. in recent years has been to diversify exports and shift production away from butter to cheese. Similarly, intervention arrangements for skim milk powder have only been important in specific years when the market failed to clear the surplus even when the other programs such as animal feeding subsidies were in effect.

External Trade Measures

EC policy includes a variable import levy system designed to prevent imports of agricultural goods from non-EC (or third) countries from entering with a price advantage. Import levies change automatically with the fluctuations between EC threshold (minimum import) prices and world prices. Also, in order to maintain internal market prices and ease the pressure of surplus intervention stocks, the EC finances a system of export subsidies which are calculated frequently as world market prices fluctuate. As a major exporter of dairy and meat products, Denmark has benefited from the EC system of export subsidies applying to exports of farm goods to non-EC countries. Under EC regulations, export subsidies are based on the difference between EC and third country market prices, with considerations for transportation and marketing costs.

EC Programs Affecting the Dairy Sector

In addition to the mentioned mechanisms applying to other CAP protected products, an innovative program was implemented in the important dairy sector. For example, subsidies have periodically applied to skim milk and skim milk powder when used in animal feed. In 1979/80, Denmark opted for a general consumer subsidy for butter and fluid milk along with the United Kingdom, Ireland, and Luxembourg, with the EC contributing up to 75 percent of the cost. Table 3 indicates the magnitude of these consumer subsidies as well as other domestic programs financed by the EC since 1973. On January 1, 1985, the consumer subsidy arrangements for fluid milk ended.

In addition to a wide variety of complex price and income supports, membership in the EC included a Danish responsibility to participate in EC-wide programs to reduce dairy surpluses. These included nonmarketing schemes, cow slaughter premium schemes, and penalties paid on surplus milk deliveries. These programs, some of which began in the late 1970's, did not succeed in curbing surpluses and culminated with the 1984 dairy reform package. The first regulation imposed by the EC for overproduction of milk was a co-responsibility levy from mid-September 1977 to May 21, 1978, fixed at 1.5 percent of the milk target price. These co-responsibility levies have normally varied between 1.5 percent to 2.5 percent of the milk target price in Denmark.

In the 1984/85 dairy reform program, the EC legislated enormous penalties for surplus output amounting to either 75 percent or 100 percent of target prices, depending on whether the country opted for implementation at the farm gate, or, as in the Danish case, the dairy processing plant level (100 percent).

In an economizing shift from traditional policies which had encouraged output, the European Community implemented the quota system on dairy production in April 1984. The system is designed to remain in effect for 5 years, holding EC milk deliveries to 99 million tons in 1984/85 and to 98.2 million tons annually until the policy terminates in 1989/90. The quota is allocated among

Table 3--Domestic subsidies received from the EC's European Agricultural Guidance and Guarantee Fund

Type of subsidy	1973	1974	1975	1976	1977	1978
			Million Dkr			
Livestock products:						
Skimmed milk for feed	227.0	314.5	318.7	407.1	469.8	520.3
Consumer subsidies, butter, school milk	33.7	48.7	0	0	17.2	81.1
Meat	0	17.5	159.7	43.0	16.7	12.0
Other	4.0	7.8	61.3	70.6	62.8	88.5
Subtotal	264.7	388.5	539.7	520.7	566.5	701.9
Crops:						
Grains	20.6	2.7	0.4	0	0	4.2
Sugar	16.1	29.1	33.4	41.3	53.2	67.3
Seed for sowing	39.8	47.2	77.3	64.1	45.0	43.1
Oil seeds	4.3	.1	2.6	11.0	5.5	5.9
Grass, drying for feed	0	7.8	18.4	17.5	14.9	60.7
Peas and beans for feed	0	0	0	0	0	0
Other	5.8	14.1	7.5	9.1	14.4	21.4
Subtotal	86.6	101.0	139.6	143.0	133.0	202.6
Total	351.3	489.5	679.3	663.7	699.5	904.5

	1979	1980	1981	1982	1983
			Million Dkr		
Livestock products:					
Skimmed milk for feed	605.0	514.1	442.4	438.8	473.4
Consumer subsidies, butter, school milk	113.7	144.5	196.5	194.6	250.6
Meat	14.5	23.0	20.6	14.5	27.5
Other	120.3	143.8	185.0	231.9	319.1
Subtotal	853.5	825.4	844.5	861.8	1070.6
Crops:					
Grains	6.0	4.2	7.0	7.6	14.0
Sugar	70.9	82.2	94.9	113.1	147.1
Seed for sowing	72.6	60.9	66.6	76.8	102.4
Oil seeds	12.3	11.8	36.0	91.0	93.4
Grass, drying for feed	46.6	32.6	26.6	48.3	37.7
Peas and beans for feed	1.7	5.8	3.7	7.2	20.6
Other	21.4	21.4	24.1	28.9	29.3
Subtotal	231.5	218.9	258.9	372.9	444.5
Total	1,085.0	1,044.3	1,103.4	1,234.7	1,515.1

Source: (16)

all EC members. Reference quantities (quotas) are set for 12-month periods for each dairy producer with a super-levy applied to the target price for deliveries beyond quota levels.

Denmark, a relatively large consumer and a major exporter of dairy products, has not contributed significantly to the EC dairy surplus problem. Only small quantities of butter and skim milk powder have contributed to intervention stocks (table 2). Nevertheless, by June 1984, Denmark implemented the institutional structure for participating in the EC-wide program despite bouyant dairy exports. The dairy plant would pay the super-levy based on the quota amounting to 100 percent of the target price or 2.31 Dkr per liter (1984/85) if necessary.

Under the quota laws, Denmark was to reduce milk production by 5.6 percent of the 1983 level in 1984/85; thus, the quota system granted Danish milk producers a maximum of 4,932 million tons delivered at the dairies for the 1984/85 milk marketing year, and 4,882 million tons for the 4 successive years to 1989/90. Total milk output for the 1984/85 marketing year was slightly below the quota.

In order to efficiently administer the quota and minimize penalties as well as potential discrimination between dairies, a new voluntary dairy organization was formed: "De danske Mejeriers Maelkeudvalg," a national purchasing agent responsible for paying producers for their milk deliveries. This organization, a type of milk board, does not physically handle milk, but functions as a national accounting service at a "super dairy" level in order to average milk deliveries to minimize or avoid any penalty costs over the life of the quotas.

This procedure minimizes the penalty to any individual farmer by averaging the deliveries made by farmers to their dairy and by the individual dairies to the national organization. For example, a quota to a particular dairy may not be exceeded because farmers delivering below their quota offset those (normally large farmers) exceeding their delivery. The main purpose of the national buying society is to function similar to a local dairy on the national level, so that the total (national) cost of overproducing is minimized. The society "on paper" purchases from both over- and underproducing dairies to avoid overproduction by any dairy and the payment of a super levy. This procedure was legalized by the EC Agricultural Council in February 1985. 4/

The Effect of Dairy Reforms

As a result of the dairy reforms, Danish farmers slaughtered an estimated 80,000 cows in 1984 and an estimated 45,000 head in 1985. Thus, the immediate most observable effect of the dairy reforms was the reduction in cows. The quota program accelerated a downtrend of cow inventories which had already begun (table 12). Actual milk production in 1985 was below quota levels. Responsible forecasts indicate that cattle numbers will continue to decline until 1990 (9).

The economizing effect of the milk quota system may further encourage greater specialization of production of dairy products. The mix of dairy products has

4/ The decision was based on the U.K.'s facing a super-levy on excess production in Northern Ireland while output in Great Britain fell below the quota (31). Underscored numbers in parenthesis refer to sources cited in the Bibliography at the end of this report.

changed, notably an accelerated increase in cheese production and reduced output of butter. Butter production in 1984, 104,000 tons, was at the lowest level in decades, a desirable effect since butter consumption in the United Kingdom, Denmark's major export market, and in other markets has been declining rapidly. Alternatively, there has been a sharp rise in cheese output, reaching 295,000 tons in 1984, an increase of 144 percent over the 1970-72 average (table 11). Danish cheese exports have spectacularly grown in certain markets, stimulated by EC restitutions.

AGRIMONETARY FACTORS

Denmark's membership in the EC since 1973 required adoption of a number of monetary arrangements. These monetary adjustments in Denmark reflect the complexity of EC policy. All CAP-related farm support prices are quoted in standardized units of account, a system in effect since 1969 and designed to achieve price commonality throughout the community. These farm prices, currently quoted in ECUs and applying to all EC members, are converted to national currencies (Danish kroner) by a so-called green rate of exchange, set separately for each member country. Thus, the EC sets annual farm support prices (target, intervention, and threshold prices) for commodities regulated by a CAP regime, and producers receive their national currency (Danish kroner) based on these conversions. The EC's Council of Ministers may authorize a change in a country's green rate in order to raise or lower farm prices. This normally is decided during the annual price negotiations, or when the value of the ECU changes. Rate adjustments may occur for political and/or economic objectives. 5/

Unlike several EC member states, however, Denmark has by design held its green rate of exchange at or close to parity with the commercial exchange rate, thus minimizing the use of MCAs in its agricultural trade. This policy normally would keep the relationship between prices for agricultural products and other sectors relatively stable (particularly products not regulated by the CAP such as fertilizer and farm machinery), an important factor for Denmark which places a high priority on relative price stability in international trade.

In order to minimize financial distortions in trade flows between members of the EC due to divergences in exchange rates, a system of monetary compensatory amounts (MCAs) has been in effect since 1969. MCAs are, in effect, either export subsidies or import levies payable by traders at the border and reimbursed via EC budget funds. The calculation for MCAs until 1984 was based on intervention support prices and fluctuations between green rates and commercial exchange rates. In 1984, the formula was modified using grain producer prices rather than intervention prices in order to reduce MCAs throughout the EC. Denmark reluctantly agreed to this change, arguing that the intervention price was a superior measure for calculating MCAs since grain was only one of the many production costs. This was a specific EC ruling, not related to the reforms of the CAP which began with the 1984 dairy program.

The system originated in 1969 to prevent a potentially disruptive series of trade movements. At that time, France devalued its franc by 11.11 percent and West Germany revalued the mark by 9.29 percent. The green rates were altered by the same percentage. These actions would normally have resulted in a sharp rise in French farm prices and a decline in farm prices in West Germany had not the EC authorities permitted both countries to phase in the "new" prices gradually.

5/ Regulations pertaining to the monetary system in the European Community, its history, and intent are found in The CAP Monitor (4).

Table 4--Danish average monthly bacon prices in the U.K., 1984

Month	British pounds 1/	Dkr/ton	MCAs Dkr/ton 2/	Net price Dkr/ton 3/
	(1)	(2)	(3)	(4)
January	1,385	19,551	-1,092	18,460
February	1,408	19,678	-1,002	18,680
March	1,438	19,627	-664	18,960
April	1,490	20,271	-432	19,840
May	1,552	21,370	-550	20,820
June	1,550	21,132	-417	20,720
July	1,520	20,578	-399	20,180
August	1,520	20,690	-453	20,240
September	1,495	20,306	-472	19,830
October	1,525	20,319	-352	19,970
November	1,546	20,433	0	20,430
December	1,570	20,442	0	20,440

1/ Danish average monthly wholesale prices fixed in London by the Danish cooperatives and shippers. Column 2 is this price converted to Danish kroner.

2/ MCAs are applied at the U.K. border and compensate for changes in the rates of exchange between Denmark and the U.K. This portion of the price is subsidized by the EC.

3/ Effective market price in the United Kingdom, paid by the importer.

Source: (2)

If no MCA system had been put into effect at that time, Danish (and other EC farmers) would have shipped goods to West Germany where intervention support prices would have been relatively high, while diverting imports of some goods to France, where relative prices were lower. The intent of the MCAs since inception has been to prevent such trade distortions and assure that competitive conditions remain relatively constant; thus, agricultural prices are protected despite divergences in exchange rates. Nevertheless, a country whose currency is strengthening in value can attract storeable commodities despite MCAs. For example, during 1975-80, skimmed milk powder was transferred to West Germany for storage (32).

The EC Commission has proposed eliminating MCAs since 1976. In 1984, an agreement provided for eliminating MCAs in three stages, the first in 1984, and successive phases in 1985 and 1987. This policy would eliminate the budget cost burden of financing MCAs, one aim of the EC.

The share of traded products under a CAP regime for which MCAs apply in Denmark is a high 85 percent of the value of production, the highest in the EC (11). Table 4 illustrates a practical example of the MCA function applying to bacon exports to the United Kingdom in 1984. Denmark supplied approximately 40 percent of the U.K.'s total bacon supply in recent years, underscoring the importance of this trade. The average unadjusted London wholesale price (column 1) is fixed by the Danish cooperatives and private wholesalers. This price is converted to Danish currency, the transaction currency paid to the

exporter (for some commodities a trading company may actually handle the movements of goods between countries).

The price in column 2 would be the final price required by the Danish exporter in the absence of MCAs; for example, 19,551 Dkr per ton in January 1984. Due to relative changes in green rates between Denmark and the United Kingdom, that Danish price would be too high for the U.K. market resulting in a demand decline. The MCA of 1,092 Dkr/ton (col. 3, table 4) subsidizes the import, lowering the price to the importer to 18,460 Dkr/ton (column 4). The subsidy is reimbursed by the EC to the importer.

Since the MCAs applied on the Danish border have been either zero or, since 1984, relatively small, their effect on either domestic prices or production decisions has been insignificant. This, in effect, was the theoretical intent of MCAs. As the example cited implies, however, Danish exporters of products such as bacon benefited by the subsidy received at the U.K. border which made this product affordable. Danish exporters of some livestock products to West Germany have been displeased with relatively high import taxes on their products in recent years, reflecting West Germany's relatively high prices and strong currency. Although the MCA system is designed to prevent an advantage or disadvantage due to changes in exchange rates, the system does provide for some speculation by permitting the pre-fixing of MCAs by traders or trading companies. Furthermore, in countries such as West Germany, relatively high, positive MCAs become production incentives since they provide both import duties and export subsidies.

FEEDS AND FEEDING

There have been many long range shifts in the relative importance between imported and home-produced feeds in Denmark. During the late 19th century, when feed grains from the United States were relatively cheap and the demand for Danish livestock products from the United Kingdom--then one of the world's most highly industrial countries--grew sharply, an intensive transition to animal production from grain occurred in Denmark. During 1875 to 1895, Denmark's grain imports rose by 233 percent, and other feeds by 275 percent (6).

The rising export demand for Danish livestock products continued to grow in the 20th century, especially for live cattle to Germany and both butter and pigmeat to the United Kingdom. Industrial demand for new crops such as rapeseed occurred, as did the need for more variety in the feed mix. Rapid changes in feed needs resulted in organizational innovation as well. A "Jutland Feeding Stuff Cooperative" was organized in the late 19th century to expedite purchases and deliveries of feeds (cooperatives are discussed elsewhere).

From 1900 to 1950, there were a series of global political and economic crises, for example World Wars I and II, and a number of international financial and trade problems which affected both the prices and supplies of imported feeds. These events resulted in a reduced longrun dependance on imported grain and an expansion in domestic grain area, especially barley.

Since 1950, technical innovations such as greater use of tractors and combines and the replacement of manure with artificial fertilizers (cattle were no longer needed on grain farms) encouraged widespread growth in barley production in combination with pig raising.

Domestically grown barley (largely hearty, spring-grown varieties) and grass have been Denmark's most important feeds, and their availability has played a major role in the development of Denmark's hog and cattle sectors. Nevertheless, barley area, although a large percentage of total grain, has declined since the late 1970's, partly replaced by wheat.

Denmark is approximately 75 percent self-sufficient in feeds, with home-grown grains, pulses, protein feeds, grass, and root crops supplying the bulk of total feeds. Since Denmark joined the EC, imports of feeds, particularly protein and nongrain feeds, have increased as a percentage of total feeds. In 1983/84, imports as a percentage of total feeds consumed were 25 percent, compared with 14 percent in 1973/74 (table 5). Most of the increase displaced feed use of root crops (beets and tops for example) and milk and milk products with relatively cheaper and higher protein imports. GATT zero bindings on imported soybeans and soybean meal have normally favored their use relative to artificially high-priced EC grain. Soybean meal derived entirely from imports has by far been the most important nongrain source of protein used in commercial feeds in Denmark. And although soybean meal accounted for only 11 percent of total feed units consumed in 1983/84, it contributed approximately 27 percent of the total protein consumed, more than any other single feed.

Tables 5 and 6 provide an overview of the relative nutritional (in terms of feed units) and quantitive importance of various feeds consumed. The increased diversity of feeds used since 1970 partly reflects the availability and demand for imported protein feeds. A more varied feed mix is also due to the widespread use of computer technology and the refinement of least-cost feed formulation models by feed supply cooperatives and private farmers. Both tables describe the following important feed use patterns since Denmark joined the European Community:

- Grain is by far the most important feed, although total consumption has fallen in the long run along with total feed consumption.

- A sharp increase in the consumption of protein feeds occurred since EC membership. Consumption of soybean meal more than doubled from 1973/74 to 1983/84.

- The importance of dairy products in feed rations declined sharply since 1973/74. However, consumption has been relatively stable in recent years. EC subsidies for feeding skim milk powder have been only mildly effective.

- The use of nongrain feeds increased from negligible levels prior to membership to 237,000 tons by the end of the transition period (1978). A downtrend in its use had occurred from its peak in 1978/79 to 1982/83, when a sharp decline in compound feeds occurred due to reduced cattle numbers and Denmark's foot-and-mouth disease crisis.

- Imports as a percentage of total feeds consumed have risen from 14 to 25 percent from 1973/74 to 1983/84. Availability of relatively low-priced U.S.-supplied soybeans, and soybean meal extensively produced from U.S. beans crushed in West Germany, largely contributed to this increase. However, imports of soybeans dropped by over 50 percent since 1980 when a crushing plant in Copenhagen was destroyed. Capacity in the remaining plant is about 300,000 tons annually.

No major shift to nongrain feed (manioc, citrus pulp, guarmeal) occurred in Denmark immediately following its membership in the European Community. This

Table 5--Denmark's consumption of feeds by feed units

Item	1972/73	1973/74	1978/79	1979/80	1980/81	1981/82	1982/83	1983/84
	1,000 feed units 1/							
Grains	5,634	5,842	5,386	5,644	5,874	5,712	5,436	5,448
Bran and grain byproducts	172	217	155	141	127	106	89	97
Mash and molasses	85	111	541	434	311	358	414	38
Nongrain feeds 2/	4	3/	237	153	130	178	244	495
Milk and milk products	412	421	373	362	305	282	266	280
Protein feeds 4/	1,501	1,408	2,663	2,634	2,771	2,798	2,804	2,506
Soybean meal	753	734	1,300	1,302	1,389	1,523	1,594	1,611
Field crops 5/	1,852	1,757	1,601	1,586	1,401	1,533	1,386	1,414
Grass crops	3,392	3,059	3,449	3,515	3,621	3,725	3,393	3,250
Straw	572	400	418	500	500	360	300	281
Total feed consumption	13,624	13,215	14,823	14,960	15,040	15,032	14,132	13,809
of which imported	1,927	1,882	3,628	3,355	3,465	3,475	3,226	3,476
				Percent				
Imports as a percentage of the total	14	14	24	22	23	23	23	25

1/ A feed unit is the nutritional equivalent of 1 kg of barley.
2/ Manioc, citrus pulp, guarmeal.
3/ Negligible.
4/ Includes oil cakes, fishmeal, meat, bone meal.
5/ Root crops, potatoes, turnips.

Sources: (15, 16)

Table 6--Denmark's consumption of feed by ton

Item	1972/73	1973/74	1978/79	1979/80	1980/81	1981/82	1982/83	1983/84
				1,000 tons				
Grains	6,102	5,733	5,402	5,655	5,883	5,722	5,453	5,451
Bran and grain byproducts	171	239	186	170	150	125	103	85
Mash and molasses	181	284	814	678	522	583	665	184
Nongrain feeds 1/	2/	2/	239	153	133	180	45	635
Milk and milk products	2,720	2,805	2,813	2,787	2,523	2,331	2,241	2,421
Protein feeds 3/	1,337	1,209	2,302	2,400	2,400	2,403	2,400	2,106
Soybean meal	627	587	1,039	1,042	1,112	1,219	1,275	1,285
Field crops 4/	11,600	13,286	11,860	12,106	12,173	12,841	13,679	10,261
Grass crops	25,717	22,681	25,084	20,685	21,251	21,940	20,231	17,788
Straw	3,024	1,598	1,670	2,000	2,000	1,440	1,200	1,125

1/ Manioc, citrus pulp, guarmeal.
2/ Negligible.
3/ Includes oil cakes, fishmeal, meat, bone meal.
4/ Root crops, potatoes, turnips. Although this is a high bulk category, its feed value is relatively low at 14 percent of the volume in 1983/84.

Sources: (15, 16)

was the case in the Netherlands, for example, where a strong substitution to nongrain imports occurred as a reaction to higher priced, levy-protected feed grains. Manioc, although a small percentage of total feeds, has increased in use in Denmark following membership. Manioc use is complemented by higher consumption of protein rich soybean meal (manioc is a starch with negligible protein content). Manioc had largely been used in cattle rations and to a lesser extent in hog rations since Danish regulations put an 8-percent limit (in terms of feed units) on its use in compound feeds. Manioc has been relatively cheap, partly due to its low 6 percent import tariff bound in GATT; many other nongrain feeds such as citrus pulp have enjoyed either zero or low tariffs.

Corn gluten has not been a popular feed in Denmark, primarily due to the higher price resulting from transportation costs from continental suppliers. Imports of corn gluten feed have been negligible, averaging only 3,700 tons in 1980-82. However, imports increased sharply, reaching over 50,000 tons in 1984. Reasons for the increased interest in corn gluten have been favorable prices, and also an upward adjustment in its officially recommended feed value. The rise in 1984 also reflects a sharp rise in the price of competitive feeds such as refined animal fat (largely in cattle rations) from 2.7 Dkr per kg (Jan. 1983) to 5.5 Dkr in 1984 a year later. Much of the corn gluten fed in Denmark is contained in imports of compound feeds produced in West Germany, a major importer and processor of corn gluten in the European Community (over 1 million tons is processed annually). In 1984, West German compound feed exporters received an export subsidy due to positive MCAs which enhanced price competitiveness on the Danish market. However, over the long run, rapeseed meal, sunflower seed meal, and cottonseed meal have had a least-cost advantage over corn gluten where combined in cattle rations in Denmark. In the long run, neither manioc nor corn gluten are expected to be competitive with these feeds or Danish grown feeds such as field peas and pulses. Most corn gluten is used in dairy cow rations because its nutritional value relative to barley is high (1.04 feed units per kilogram) compared with other livestock categories (19).

Consumption of oilcakes rose significantly, especially after Denmark joined the community (table 7). A sharp increase in the consumption of oilcakes reflected an expansion in the livestock (largely hog) sector. Also, duty-free status in the community for soybeans stimulated both imports and consumption (customs duties do apply to crude and refined vegetable oils, however). In 1960/61, oilcake consumption was 1.1 billion feed units. By 1970, consumption increased only modestly to 1.2 units, but skyrocketed during the following decade to 2.5 billion units and to 2.6 billion by 1982/83. 6/ The share of imported feed protein to total protein feed use grew enormously during this period.

The increased availability and use of nongrain feeds such as protein rich oilcakes partly explain Denmark's becoming a net grain exporter since 1974, although the improvement in grain technology is an important factor related to the growth in that sector.

Rapeseed is Denmark's major domestically produced oilseed. Ninety percent of output is the spring grown varieties which are low or zero in both erucic acid and glucosinolates. Spring grown varieties are largely grown in rotation with wheat and barley, a practice resulting in higher grain yields as well.

6/ A detailed analysis of Denmark's feed-livestock situation during the period prior to EC membership may be found in (8).

Table 7--Denmark's consumption of feeds by percentage of concentrates and coarse feeds

Year	Concentrates							
	Grains	Brans, other meals	Oil cakes	Grass meal	Non-grain feeds 1/	Meal from meat, bones and fish	Dairy products	Total concentrates
					Percent			
1972/73	42.5	1.1	9.8	0.5	0.7	1.3	3.1	59.0
1982/83	37.6	.6	17.9	.2	3.3	1.4	1.8	62.8
1983/84	39.0	.6	18	.1	3.8	1.6	1.7	64.9

	Coarse feeds					
	Roots	Beet crops	Grass	Straw	Total coarse feeds	Total
1972/73	10.1	2.8	23.8	4.3	41.0	100.0
1982/83	9.6	2.1	23.4	2.1	37.2	100.0
1983/84	8.3	1.7	23.1	2.0	32.1	100.0

1/ Includes manioc, citrus pulp, guarmeal, molasses, and various industrial byproducts.

Source: (16)

Rapeseed was first produced commercially in 1949, but area sown has grown markedly since Denmark joined the EC, encouraged by EC subsidy programs. Area sown to rapeseed rose from 56,000 hectares in 1973 to 118,000 by 1985. Forecasts project further increases in area to an upper limit of 232,000 hectares by 1990 (17).

The EC's relatively low self-sufficiency in both protein and oilcake feeds and a surplus of grains prompted EC policy to encourage rapeseed production. Denmark, producing approximately 14 percent of the EC's rapeseed crop, is one-third self-sufficient in rapeseed meal (1983). This need was dramatized during the 1970's when world prices of protein feeds soared due to unforeseen scarcity and relatively high global demand. High EC price supports encouraged the production, crushing, and use of low erucic acid and low gluosinolate spring rapeseed varieties for which Denmark, along with Sweden, has a natural climatic advantage.

The sharp rise in both area and production of rapeseed in Denmark primarily has reflected the development of the new rapeseed varieties and favorable rapeseed oil demand from principal export markets for industrial use, especially from West Germany. As a result of the development of low erucic acid varieties in Denmark, more rapeseed oil has been used by the West European food industry, particularly for salad oil and margarine. The low level of glucosinolates in rapeseed meal has not been a significant

factor in animal (especially cattle) feeds; rapeseed meal has not been used in pig and poultry rations (table 8) because soybean meal's greater feed value gave it a cost advantage. 7/

Table 8--Denmark's consumption of feeds by type of livestock, July 1, 1982, to June 30, 1983

Type of feed	Horses	Cattle	Pigs	Sheep	Poultry	Total 1/
	Million feed units					
Concentrates:						
Grain	25.1	462.3	4,561.2	2.6	365.7	5,416.9
Bran, pulses	3.3	26.1	63.2	1.0	7.8	101.4
Oilseeds	3.7	1,608.2	802.1	1.7	176.3	2,592.0
Rapeseed	0	144.6	0	0	0	144.6
Soybean meal	0	623.9	797.3	1.5	168.1	1,590.8
Grass meal and pellets	.6	12.4	2.7	0	6.4	22.1
Mash (brewery byproduct)	.1	30.6	9.1	0	0	39.8
Manioc and other feeds 2/	1.4	361.2	45.1	0	10.7	418.4
Meat, bone, fish meal	1.0	4.9	144.1	.2	47.5	197.5
Milk and whey	1.0	111.0	158.9	0	0	270.9
Total	36.2	2,616.7	5,786.4	5.5	614.4	9,059.2
Coarse feeds:						
Potatoes	0	0	49.4	0	0	49.4
Beets, beet pulp, and tops	1.2	1,628.2	11.6	2.2	0	1,643.2
Hay, silage, straw	54.9	3,623.0	4.1	10.6	.8	3,693.4
Total	56.1	5,251.2	65.1	12.8	.8	5,386.0
Total feeds:						
1982/83	92.3	7,867.9	5,851.5	18.3	615.2	14,445.2
1981/82	104.1	8,246.5	6,033.2	18.5	619.6	15,051.9
1980/81	128.7	8,113.5	6,132.1	18.0	619.5	15,040.5
1979/80	144.4	8,338.0	5,841.8	17.7	598.3	14,968.7
1978/79	147.8	8,496.5	5,539.2	17.7	593.3	14,822.5
1973/74	195.9	7,993.0	4,452.8	22.5	586.1	13,164.3

1/ Totals include feeds for fur animals and canines.
2/ Citrus meal, molasses, etc.

Source: (16)

7/ Rapeseed meal was substituted for cottonseed meal in cattle rations in 1984 due to aflotoxin. Also, Danish research indicated that rapeseed meal can be mixed with soybean meal in pig rations up to 6-8 percent, higher levels than previously (19). Experiments are also underway in Denmark to use rapeseed oil as a substitute for diesel fuel. However, the current rapeseed area would have to rise significantly for production to be feasible.

Dairy products, once highly important feeds (milk, skimmed milk powder, and whey), have diminished in importance. 8/ Consumption of dairy products for feed as a percentage of concentrate feeds declined from 3.1 in 1972/73 to 1.7 percent in 1983/84 (table 7). Consumption of dairy products also declined in absolute terms, falling to 280 million feed units in 1983/84 compared with over 400 million prior to EC membership (table 5).

EC subsidies for the feeding of dairy products have been applied irregularly, primarily during periods when dairy intervention stocks were extremely large and expensive. These aids were suspended from October 1979 to July 1982 when SMP (skimmed milk powder) stocks were declining. However, since Denmark has not contributed significantly to dairy surpluses in the EC, these subsidies have had a negligible impact. In 1984, when dairy quotas were introduced and Denmark had difficulty finding supplies to maintain exports, the feeding of dairy products declined further.

Relative prices in the EC have played an important role in shifting feed grain and oilcake consumption, largely because grain prices were set relatively high after Danish accession and cheaper grain imports from outside the EC faced high import levies. The average price of grains increased 25 percent during Denmark's first year of membership in the EC, and was about half the price of soybean meal at that time. By 1982/83, soybean meal prices also had risen nearly 50 percent (to 223.38 Dkr per 100 kgs), while feedgrain prices rose 200 percent. In 1982/83, the feedgrain/soybean meal price ratio was 0.9 percent. Thus, the rising percentage of feed concentrates to total feed consumption was largely due to a surge in the use of oilcakes while feed grain use, although extremely significant, declined in importance (tables 6 and 7). This trend was of great benefit to the U.S. soybean sector, Denmark's principal supplier of soybeans.

EC Policies Affect Feed Production and Use

EC policies have provided direct and indirect incentives to expand the area and output of oilseeds, principally rapeseed and rapeseed byproducts. EC price supports for oilseeds are payable when world market prices fall below fixed target prices. Imports of rapeseed (or any oilseed) are not subject to import duties, and intervention purchasing has not been significant in Denmark since 1973, although some purchases occurred from 1980 to 1984. Market prices are set by the price of oilseed imports. Thus, the longrun increase in the prices for imported soybeans and soybean meal "pulled up" rapeseed prices, a contributing factor toward increased rapeseed area.

Crushing subsidies are another form of EC support which benefit oilseed producers although they are not currently in effect. These aids are normally set weekly, calculated as the difference between target and world prices. In 1982/83, limitations on subsidies to a specified level of production (production thresholds) were introduced by the EC. Crushing subsidies averaged 2 Dkr per kg in 1983 and 0.75 ore per kg in

8/ An important rule established by the cooperative dairies in their early development was that surplus milk, especially skimmed milk, would be returned to members for pig feed (27).

1984. Under the EC regulations, oilseed crushers can use either a current rate or "pre-fix" the crushing rate in order to stabilize costs.

Due to increased soft wheat surpluses, EC policies have encouraged a sharp increase in use of wheat for food. Wheat used in commercial feeds has increased markedly, from a negligible 176,000 tons in 1980/81 to 1.1 million tons by 1983/84.

A poor barley crop in 1983 contributed to greater use of wheat for feed at that time but farmers have continued to feed high volumes of wheat (1.3 million tons in 1985/86) at the expense of barley. Also, some commercially prepared feeds have increased the proportion of wheat used at the expense of soybean meal and barley. Barley will continue to remain Denmark's most important feed grain which is largely fed on farms specializing in pig production. EC proposals to reduce grain price supports could, if implemented, restrain both barley and wheat area. Producers will continue to opt for a larger output of feed peas and pulses as complementary feed crops if EC supports continue at viable levels.

Expansion in the production and use of feed peas and beans has occurred. In addition to basic EC producer supports, namely the fixing of minimum growing prices for peas and beans, crushers received a subsidy for peas and beans used in compound feeds beginning in 1984. One purpose is to render home-grown peas and beans, both high in protein, competitive with imported soybean meal and substitutable for grains or soybean meal in hog rations. The EC subsidy, calculated monthly, will reflect variations in world market soybean meal prices.

Between January and June 1984, the EC subsidy to Danish producers of peas and beans averaged 100 Dkr per 100 kgs, which was approximately 41 percent of the contract price of 243 Dkr per kgs paid by cooperative feed manufacturers to farmers.

There is likely to be increased competition from domestically produced feeds such as peas and beans, wheat, and rapeseed meal, for soybean meal. Consumption of soybean meal could remain over 1 million tons annually to 1990 as long as quality and relative prices remain favorable. Increased use of high protein peas is expected to reduce use of soybean meal in hog rations. Greater use of peas has also occurred in cattle feeding, substituting mainly for cottonseed meal because of aflatoxin problems. Also, successful mink feeding trials are likely to result in greater use of soybean meal by that industry.

The intention to expand output of nontraditional sources of protein is not without precedent. Early studies pointed to a rapid rise in plantings of horsebeans, a relatively high protein pulse. A 1969 forecast projected horsebean area to increase from a negligible area to 60,000 hectares by 1980 if Denmark joined the EC (26). However, horsebean production was abandoned due to problems of disease and excessive moisture in the crop during harvest. The latter problem with field peas occurred in 1985. Also, the incentive to grow a protein substitute was inhibited by the relatively cheap price on a protein basis of imported soybeans and soybean meal. Although a strong dollar exchange rate pushed U.S. prices of these feeds to high levels in 1984/85, consumption remained relatively high with Latin American suppliers enjoying an increased market share.

A sharp rise in feed consumption since Danish membership in the EC (table 8) has been observed in the hog sector, largely reflecting greater specialization of production and more intensive feeding. Most of the increase in soybean meal consumption may be attributed to the sharp rise in demand from the hog sector. Feed use in the hog sector increased from 4,453 million feed units in 1973/74 to 5,852 million in 1982/83, a rise of 31 percent. As table 8 indicates, a discernable increase in consumption was visible in the cattle sector until 1981/82 with a sharp rise occurring during Denmark's transition period (1973-1978). A decline of total consumption in the cattle sector in 1982/83 of 12 percent was due to reduced use of barley and nongrain feeds in compound feeds.

The Effect of Dairy Reforms on Feed Use

The 5.3-percent reduction in milk deliveries imposed by EC efforts to curtail milk production under the quota program has resulted in modification of feeding practices since 1984. Farmer's alternatives are:

(a) Continue to reduce cow herds and feed more roughage and less commercial feedstuffs.

(b) Maintain a relatively constant herd size but decrease feed rations and produce less milk.

(c) Reduce cow inventories sharply and increase consumption of commercial feeds and roughage to sustain milk output (farmers would invest revenues from cow sales into more profitable avenues).

(d) Increase feed use of milk for calves and hogs and decrease consumption of commercial milk replacers.

Preliminary indications for 1985 are that both cow inventories and compound feeding have declined (alternative a). However, the demand for any feed ingredient will vary with changes in relative prices. Sharp increases in 1984/85 soybean prices due to the strong U.S. dollar and the availability of other competitive feeds contributed to reduced use of soybean meal in the dairy sector, while use of rapeseed meal and corn gluten feed increased. 9/

The combined effect of fewer cows and greater consumption of substitutes such as rapeseed meal and feed peas could result in a decline in consumption of soybean meal in that sector. 10/

Due to a combination of more intensive livestock production and the need to cut costs, an increasing number of farmers have found it profitable to purchase soybean meal and minerals for onfarm mixing rather than purchase the complete compound feeds from a manufacturer. This development occurred for the first time in 1984. This process could also reflect

9/ Corn gluten has a higher feed value than barley in cow rations and is a nutritionally efficient substitute. The opposite is true in hog rations (19).

10/ For example, an estimate of the decline in consumption of 96,000 tons of soybean meal in the cattle sector for 1984/85 based only on reduced cow inventories was calculated by multiplying average annual animal consumption in the early 1980's (1.2 tons) by the decline in cows (80,000) in 1984/85.

producers' efforts to feed more roughage and protein, thereby sustaining production at quota levels while reducing cow inventories.

A 1984 report coauthored by a committee of experts concluded that economic conditions within Denmark--aside from the influence of the dairy quota regulations--would result in a strong decline in both cow numbers and milk production by 1990 largely because higher costs, including interest costs, have reduced profitable investment in dairying (23). Adjustment to the price-reducing effect of a more market-oriented price structure in the future would not improve the dairy sector even though the Danish dairy sector is one of the most efficient in the community. According to the report, the Danish dairy industry would suffer from inevitably lower prices, and its competitive position could worsen if member countries received greater amounts of national support.

FARM STRUCTURE

Many of the structural changes in Danish agriculture, especially the tendency toward larger and more specialized units, occurred prior to EC membership. In a manner similar to many countries in Western Europe, economic growth and the industrialization of agriculture resulted in larger and more capital intensive farms since World War II.

However, EC membership has been a catalyst toward greater specialization of production for Denmark and other EC members exporting livestock products. Factors such as duty-free access to EC markets resulted in more Danish exports of specialized animal and animal products targeted for specific countries such as larger and fatter pigs to West Germany and cattle for veal production to Italy. These commodities are more efficiently produced on larger units.

The EC Guidance Sector, which provides funds to improve the infrastructure of agriculture and the marketing of certain products has been an important resource for some meat and fish products. However, Denmark only receives a relatively small percent of the total EC allocation under the guidance sector. Under other EC programs within the EAGGF, total support was budgeted at 252 ($27.6 million) and 233 million Dkr ($22.5 million) in 1983 and 1984. 11/ Denmark's Farm Modernization Act, implemented in 1973, provided national aids for over 1.2 billion Dkr ($198 million) in subsidies and guaranteed loans for investments in farm modernization. EAGGF reimburses the Danish Government for 25 percent of these subsidy payments.

A number of new EC structural aid programs will begin to go into effect in 1986, aimed at low-income, full-time farmers. Aid may be provided for reducing production costs, conserving energy, and improving farm management. No aid will be provided which may adversely affect the dairy reforms, such as increasing cow herds which could result in greater output of milk. The programs represent a new direction, namely aiding investments designed to improve net returns for production in line with market requirements (12).

11/ As a result of Greenland's withdrawal from the EC, funds normally allocated for structural improvement in Greenland will be used in Denmark. Also, exports of agricultural products from the EC (including Denmark) to Greenland will receive export subsidies.

Fewer Farms, Greater Specialization

There has been a continuing decline in the number of farms in Denmark, while average farm size has increased. A reduction of about 6,000 holdings occurred annually during the 1960's. This rate of decline slowed during the decade of the 1970's to 2,600 annually. In 1981 and 1982, the total reduction was 3,200 farms or 1,600 each year, a slowdown partly due to the difficulty of selling farms due to relatively high interest rates. The average size of a farm has risen from 21 hectares in 1970 to nearly 30 hectares today.

The reduction in the number of farms is forecast to continue to decline from 1985 to 1990 by an average of over 2,000 annually. Small-sized units will be particularly affected (17). However, the leasing rather than purchasing of land has increased in recent decades and is likely to continue. In 1966, only 7 percent of agricultural areas was tenanted, rising to 18.2 percent in 1984.

Along with the decline in farm units, a tendency towards specialization has been highly pronounced. As table 9 indicates, holdings with both cattle and pigs declined sharply since 1967, when 78.1 percent of farms held both. By 1972, the percentage fell to 60.9 percent, and by 1983 dipped sharply to 29.7 percent. Units holding cattle alone rose from 4.2 percent in 1967 to 22.5 percent by 1983, while specialized pig holdings increased from 9.6 to 22.6 percent. In 1967, cow holdings of over 30 cows were below 5 percent of the number of herds. By 1983, this percentage rose to 33.2 percent.

Hen flocks, largely found in medium-sized units, are gradually giving way to large holdings of 20,000 and over, the latter now representing 45 percent of the flock. Broiler production is largely on large units. In 1983, 82 percent of broilers were produced on holdings with over 25,000 birds. In 1970, only 30 percent percent were in this category.

Table 9--Composition of Danish cattle and pig holdings

Type of holding	1967	1972	1982	1983
		Percent		
Cattle and pigs	78.1	60.9	28.6	29.7
Cattle only	4.2	6.7	20.9	22.5
Pigs only	9.6	20.0	22.3	22.6
No livestock	8.1	12.4	28.2	25.2
Total	100.0	100.0	100.0	100.0
		1,000 holdings		
Total holdings	159.3	134.0	112.4	98.7

Source: (15)

Table 10 illustrates the phenomenal size increase in average herd size from 1970 to 1983. Most major categories of livestock more than doubled, with notable increases in the pig and poultry sectors. Along with the increase in average herd size of cows, from 12 cows per holding in 1970 to 25 by 1983, a significant shift in breeds has also occurred towards higher yielding milk cows.

Table 10--Denmark's average number of animals per farm, June census

Type of livestock	1970	1978	1979	1980	1981	1982	1983 1/
	No. per holding						
Cows	12.0	19.4	20.7	21.8	22.6	23.2	24.7
Cattle, total	27.5	44.0	46.2	48.3	50.0	51.6	55.4
Sows	10.5	17.7	20.1	22.3	22.5	23.6	25.4
Pigs over 50 kgs	--	43.2	47.5	54.6	60.1	61.4	66.4
Pigs, total	70.1	114.6	127.4	141.1	157.9	163.0	179.4
Hens (over 6 months old):	91.8	148.8	160.7	172.4	181.7	196.8	220.6
Broilers (over 5,000)	16,482	30,500	33,721	32,610	35,822	39,167	37,236

-- = Not available.
1/ Census data for 1983 includes only holdings greater than 5 ha and farms below 5 ha whose gross returns exceed 2,000 ECUs.

Source: (15)

Shifts in Livestock Breeds

Despite the sharp decline in the number of farms holding cows which has occurred since Denmark joined the EC--from 78,605 in 1973 to 33,000 a decade later--and a continuing decline in cow numbers, total output has remained relatively stable to satisfy domestic and especially export demand. This has been due to average yield increases from 4,805 kgs per cow in 1973 to 5,745 kgs in 1983. A major factor resulting in this increase is the structural change within the cow population. The two major milk breeds in Denmark are the Danish Red (RDM), a dairy breed with excellent traits for beef production, and the Black and White, whose progeny is increasingly exported. The Red and White, a high quality dual-purpose animal, and the Jersey (producing the highest percent of butterfat at 6.17 percent) are important breeding animals, but together account for only under 20 percent of total cows. Cross breeds represent under 10 percent of total cow inventories. Since joining the EC, the Danish preference has shifted to the relatively higher yielding Black and

White (5,799 kgs average yield in 1981/82) from the Danish Red (5,558 kgs). The Black and White, also a superior beef animal, now represents over 50 percent of the cow herd (compared with one-third prior to EC membership), while the Red Danish has declined to 20 percent of the cow herd from 40 percent.

The major hog breed in Denmark is the Landrace, or the so-called Danish "bacon pig," a fast-growing lean pig (the Landrace reaches a 200-pound slaughter weight in about 6 months). This breed was developed primarily for the U.K. bacon market which takes over 95 percent of Denmark's bacon exports to the EC. Since Denmark joined the EC, more cross-breeding has occurred in order to produce a fatter pig for markets other than the United Kingdom and to increase more vitality into hog strains. Landrace pigs have been crossed with Yorkshire, Duroc, and New Hampshire breeds during the past decade, a development expected to continue. A few farms have also been experimenting with controlled environment pens or so-called "pigiboxes" in order to shorten the weaning age, thus enabling sows to produce another litter earlier than normal.

Changes in Crop Structure

Although traditional cropping patterns still characterize Danish farms, some longrun changes have occurred. The decline in total agricultural area has been more gradual in Denmark than in many industrial countries. The integrity of rural Denmark since World War II has been retained despite rapid industrialization due to strict zoning regulations and regional industrial planning. Thus, agricultural area as a percentage of total land area, 67.7 percent in 1970-74, declined only moderately to 67 percent in 1983 (2.8 million hectares). This decline is significant in such a small country. The Government forecasts a modest decline in total agricultural area for the balance of the 1980's of about 50,000 hectares, largely reflecting a decline in barley, and to a lesser extent, grassland area. A greater emphasis will be placed on other feeds such as wheat, peas, beans, and rapeseed meal whose areas are forecast to rise by 1990 (17). The near tripling of wheat area since 1970-74 has reflected stronger EC support prices, the availability of export markets 12/ (albeit small by total EC standards), and greater use of wheat in certain animal rations. The rise in oilseed and pulse area is directly linked to EC supports along with Denmark's natural advantage for growing spring rapeseed varieties.

Until the 1950's, a typical farm structure was a seven-field system with many crops in rotation combined with mixed livestock production. The primary reasons for this system were to maximize the use of an increasingly scarce labor force and, since no price supports existed, to spread risks by hedging price shifts between commodities (6). By the end of the 1950's, grain prices had fallen sharply, prices of other commodities stagnated, and costs increased. Grain support programs were initiated and increased crop (and animal) specialization resulted. A three-field system replaced the seven-field format. Barley, then as today, was the dominant crop (table 13) since it was, and remains, the most important pig and poultry feed.

An economic objective since membership occurred has been that the farm be efficiently managed by one farm family. Denmark has succeeded in achieving this by increasing production efficiency via the choice of crops, the use of rotations, drainage, irrigation (on sandy soils), and the renovation of soil

12/ Denmark was a net importer of grain prior to membership in the EC.

with heavy applications of fertilizer. These efforts have been supported by both national and EC price, income, and structural aids.

AGRICULTURAL PRODUCTION

Livestock

Due to relatively high EC tariffs which adversely affected Danish exports prior to EC membership, and rising self-sufficiency in butter in Denmark's major export markets, milk production and dairy cows declined sharply from 1960-64 to 1970-72 (tables 11 and 12). Dairy cow numbers have decreased since membership occurred, and will continue to decline as a result of the EC milk quotas. However, milk production rebounded during the transition period, reflecting higher cow yields, duty-free access to EC markets, and subsidies applying to dairy products shipped to non-EC customers. Since 1978, production has been at a relatively high level, although year-to-year variations have largely been due to pasture conditions rather than EC prices.

Table 11--Denmark's production of livestock products

Item	1960-64	1970-72	1978	1981	1982	1983	1984
				1,000 tons			
Total milk production	5,319	4,657	5,324	5,037	5,217	5,427	5,034
Butter	162	130	140	109	121	131	104
Cheese	119	121	183	243	245	251	295
Beef and veal	264	220	257	255	247	257	247
Pigmeat	687	801	855	1,049	1,040	1,102	1,034
Lard	36	41	39	48	37	39	39
Horsemeat	10	2	3	2	1	1	1
Mutton and lamb	1	2	1	1	1	1	1
Poultry meat	65	81	98	104	110	112	110
Eggs	117	78	71	79	83	81	77

Source: (15)

Danish production decisions are closely linked to exports, particularly in the dairy and hog sectors. Together, these sectors account for over half the value of total farm income (1984) and nearly three-fourths of the value of income generated from sales of livestock. However, EC programs have encouraged production of field crops such as wheat, rapeseed, and sugarbeets.

The major commercial use of fluid milk has been for butter production. In 1984, 40 percent of fluid milk was used to produce butter and 32 percent of milk use was for cheese. However, the relative importance of butter and cheese has shifted since the early 1970's when nearly 60 percent of milk was used for butter and less than 20 percent for cheese. Declining butter consumption and

rising cheese consumption in customer countries largely explain the turnaround. 13/ Use of milk for feed has declined by about 50 percent since Denmark joined the EC due to more profitable commercial alternatives for milk, even during periods of EC financed subsidization of SMP and fluid skim milk for feed.

Table 12--Denmark's livestock numbers, June census

Item	1960-64	1970-72	1978	1981	1982	1983	1984
				Thousands			
Horses	108	47	61	44	41	33	33
Bulls and bullocks	123	47	81	85	82	86	79
Cows	1,434	1,127	1,127	1,082	1,059	1,061	1,010
Heifers over 1 yr. old	746	633	679	627	626	619	600
Calves less than 1 yr. old	1,120	974	1,108	1,120	1,093	1,086	1,061
Total cattle	3,423	2,828	3,010	2,914	2,862	2,852	2,750
Sows	806	923	1014	987	966	937	893
Total pigs	7,154	8,638	8,758	9,799	9,319	9,253	8,717
Sheep	55	60	55	55	58	52	55
Broilers	10,242	8,040	8,795	8,611	8,608	8,304	8,693
Total fowl	26,874	17,495	15,331	15,339	15,185	14,766	14,415
Minks (breeding females)	573	952	954	1,174	1,301	1,466	1,597

Source: (15, 16)

Denmark, as in many West European countries, produces beef primarily as a byproduct of dairy herds (beef breeds are only 3 percent of total cattle). Therefore, the number of milk cows is a determinant of beef as well as dairy output. The quantity of beef and veal produced since Denmark joined the EC has increased 12 percent from a 1970-72 average of 220,000 tons to 247,000 tons in 1984 (table 11). Heavy slaughter after the introduction of milk quotas pushed up production in 1985 and encouraged Danish exports of EC-subsidized beef to non-EC countries which had been closed to Denmark due to foot-and-mouth disease outbreaks in 1982 and 1983. Approximately two-thirds of total beef and veal production is exported. Italy has emerged as a major market for young bulls which are slaughtered at 12-14 months.

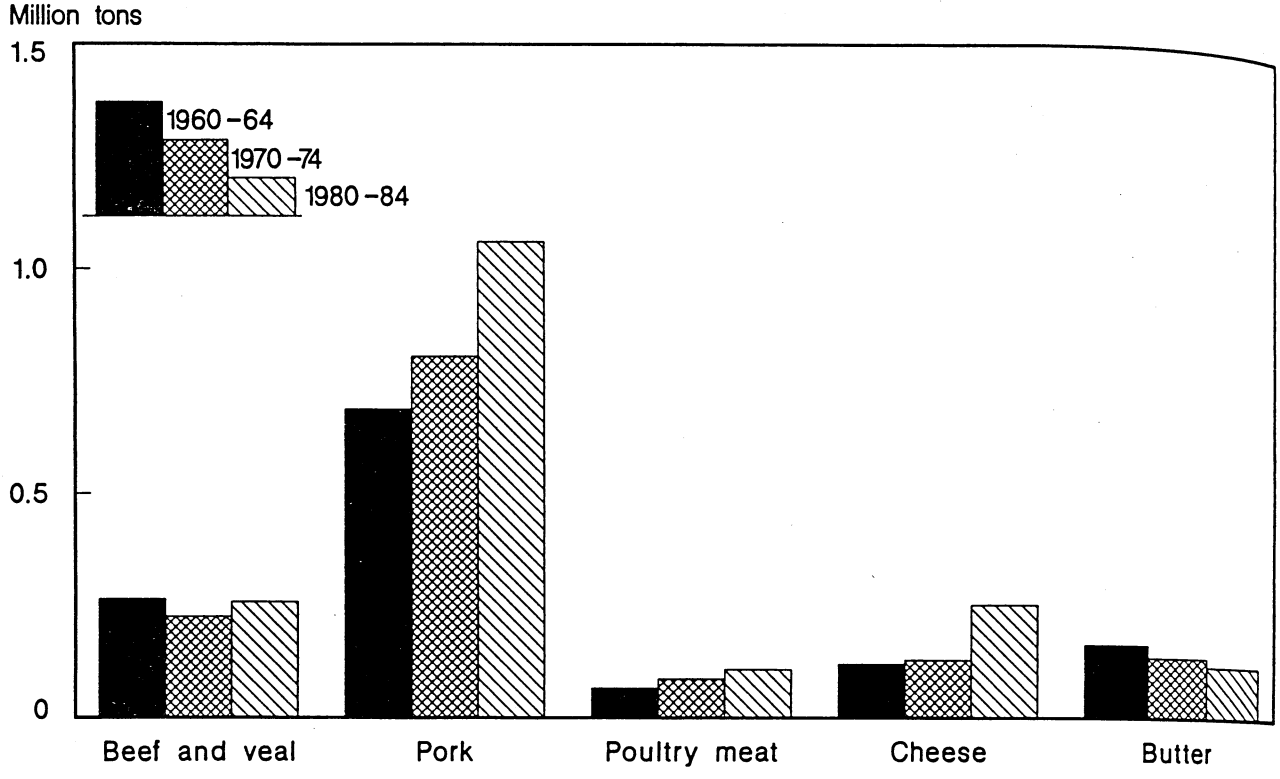
Cattle hides are also an important byproduct of the cattle industry. Slaughterhouses prepare hides as well as animal innards used for pharmaceuticals, lacquers, and paints for export and domestic use.

13/ The downtrend in butter consumption in Denmark's major customer country, the United Kingdom, was a significant factor affecting Danish production and exports of butter. Per capita butter consumption in the U.K. at 5.1 kgs per person in 1983 was 40 percent below the 1970-73 average (32).

Denmark enjoys a highly developed infrastructure for producing, processing, and exporting pigmeat products. Farmers anticipated that their comparative advantage over other EC members would result in expanded exports and production following EC membership (fig. 1). However, relatively high costs of production during Denmark's transition period slowed the rate of increase in hog production which had been strong (21 percent) from 1960-64 to 1970-72 (table 12). During the 1973 to 1978 transition period, feed grain prices rose faster than pigmeat prices.

Figure 1

Danish Livestock Production



Compared with the pre-EC period, the increase in hog inventories was more moderate at 7 percent during the early 1980's (1981-84 average) compared with 1970-72. Factors adversely affecting pigmeat production in recent years include a serious financial squeeze particularly among young farmers, largely due to high interest debt. Also, bacon exports to the United Kingdom declined due to reduced consumption of breakfast bacon and the U.K.'s increased production.

Since 1981, a moderate decline in numbers has been due to a normal trough in the hog cycle, as well as a foot-and-mouth disease outbreak in 1982 and 1983 which resulted in a temporary ban on Danish fresh and frozen pigmeat by Japan, the United States, and other potential markets.

Fowl numbers have also declined continually since 1960, but fell more sharply from 1960-64 to 1970-72 than from that time to 1984 (table 12). Broiler population has, however, risen from 8 million in 1970-72 to 8.7 million by 1984 due largely to increased exports.

Sheep herding is relatively small in Denmark with inventories at 55,000 in 1984, only slightly below numbers in 1970-72 (60,000). Mink raising is highly important in Denmark, the world's largest producer. The total stock of breeding females rose from 952,000 to 1.6 million from 1970-72 to 1984. The principal purchasers at mink pelt auctions are firms in the United States, West Germany, Switzerland, and Hong Kong.

Crops

Tables 13 and 14 indicate area and production trends prior to and following Danish membership in the community. Agricultural area has been declining since 1960 and more gradually following membership, reflecting competition from both urban sprawl and industry in some regions. Larger areas planted to crops such as wheat, oilseeds, and sugar beets--commodities enjoying EC farm supports--have replaced declining area for barley, roughage, and other feed crops. Increasing productivity of many of these crops compensated for their declining areas.

Prior to EC membership, there was a strong expansion in barley area, while wheat area remained static. Wheat production was geared for the domestic food industry. Productivity in other grains had risen, but increases in barley area and production to support the growing pig sector was a priority. Since Danish membership in the EC, grain production has shifted. Higher yields have resulted in relatively high barley output, but below the level at the close of the transition period. Wheat production was stimulated by EC supports, including subsidies for processing and use of wheat for feed, in addition to export subsidies for export to non-EC countries. These incentives to increase wheat area and the use of high-yielding seeds resulted in a dramatic rise in wheat output, from 639,000 tons in 1978 to 2.4 million tons in 1984. In contrast to wheat utilization prior to EC membership, more wheat has been earmarked for export and feed use in recent years, a development likely to continue unless EC reforms for grains, currently under discussion, are implemented.

Price policy has played an important role in the expansion of grain area (wheat and rye) following EC membership. Relatively high price support under the CAP was a strong incentive for expanding wheat area. From 1966 until 1973 Danish feed grain price supports were fixed at identical amounts for all grains and favored feed grains (largely barley) which were heartier and more profitable. Some critics of grain support policy prior to EC membership argued that relatively high grain prices would encourage compounders to use more imported duty-free oilseeds and oilcakes. This development did occur, but due to higher protein demand, as well as to grain prices.

Production of oats has dropped along with the decline in the number of draft horses and declining use by manufacturers. However, production of rye (used extensively in bread production), having dropped sharply prior to EC membership, was stimulated by relatively high price supports until the close of Denmark's transition period. The sharp increase in area in recent years may be linked to a rising interest in production of high-fiber breads. However, the near doubling of output in 1984 was largely due to higher yields due to good weather.

Output of other cash crops has had a mixed history. Potato production declined sharply prior to membership, largely reflecting decreasing feed use. 14/ Production trended higher after 1973, due to an increase in productivity and greater demand from flour manufacturers.

14/ About 20 percent of potato production is fed to hogs.

Table 13--Denmark's agricultural area by crop

Item	1960-64	1970-72	1978	1981	1982	1983	1984
				1,000 ha			
Grains:							
Wheat	121	123	121	150	181	242	334
Rye	144	41	84	50	55	77	123
Barley	855	1,376	1,566	1,541	1,485	1,347	1,191
Oats	191	178	61	42	43	29	31
Mixed grains	221	38	8	4	4	3	3
Total	1,532	1,756	1,840	1,784	1,768	1,698	1,682
Cash crops:							
Potatoes	69	33	34	36	35	30	31
Beets (for refining)	58	51	79	78	77	72	74
Seeds (for sowing)	59	59	50	45	42	45	47
Seeds (for crushing)	30	30	51	130	156	166	167
Total grain and cash crops	1,748	1,929	2,054	2,076	2,078	2,011	2,001
Feed crops:							
Swedes	167	39	16	13	10	9	--
Beets	188	153	136	117	120	121	--
Mangolds, turnips, carrots	11	3	1	1	1	1	1
Total	366	195	153	131	131	131	133
Roughage:							
Grass and green fodder	947	767	678	656	640	636	626
In rotation	606	474	410	410	397	400	--
Permanent grassland	341	293	268	246	243	236	--
Total feed crops	1,313	962	831	787	771	757	759
Pulses	8	22	4	4	9	22	57
Horticultural products	13	10	11	26	27	27	25
Fallow	4	2	2	4	2	28	3
Total agr. area	3,086	2,925	2,902	2,897	2,887	2,845	2,845
				Percent			
Agr. area as a percentage of total land area	71.7	68.5	67.4	67.3	67.1	67.0	67.0

-- = Not available.

Source: (15)

Table 14--Denmark's crop production

Item	1960-64	1970-72	1978	1981	1982	1983	1984
				1,000 tons			
Grains:							
Wheat	487	565	639	834	1,207	1,548	2,446
Rye	418	149	324	208	235	315	608
Barley	3,241	5,448	6,300	6,044	6,357	4,423	6,072
Oats	693	577	206	177	178	85	121
Mixed grains	697	105	28	14	16	8	12
Total	5,536	6,844	7,492	7,276	7,993	6,379	9,259
Cash crops:							
Potatoes	1,432	828	932	1,053	1,229	853	1,121
Beets (for refining)	2,164	2,254	3,056	3,225	3,624	2,616	3,614
Seeds (total) 1/	2/60	123	139	312	382	389	404
Pasture and grass for feed	--	26,927	26,712	23,395	23,310	19,376	22,371

-- = Not available.

1/ Largely rapeseed, but includes small quantities of mustard, caraway, and poppy seeds.

2/ 1960 data.

Source: (15)

Strong growth in oilseed production, especially since 1981, indicates Denmark's advantage in growing rapeseed, stimulated by increased demand for oil from the industrial sector (for margarine and salad oils) and meal for feeds. The expanded rapeseed area, especially for double-low spring varieties, also is due to greater use for this crop in rotation with wheat and barley. 15/

PRODUCTIVITY

Denmark ranks among the EC's most advanced agricultural producers. Employing only 6 percent of the labor force, the agricultural sector exports approximately two-thirds of total output and has consistently achieved self-sufficiency rates of over 400 percent for beef and veal, pigmeat, and cheese, indications of highly productive resource management.

Certain measures of productivity indicate that improvements in technology, such as advanced breeding practices and new seed varieties, account for much of the change in productivity since Denmark joined the EC.

Labor productivity in Denmark had already risen relatively high by the time of membership. A study by The Agricultural Economics Institute in Denmark measured aggregate changes in an index of labor productivity for the 1958 to 1980 period

15/ Double-low rapeseed refers to varieties with small amounts of erucic acids and glucosinates. Some new double-zero varieties are totally free of these substances.

(29). 16/ An uptrend in productivity was observed over the entire period (with year-to-year variations due to weather), but the increase in the index following membership in the EC (1973 to 1980) was higher (39 percent) than the relatively sharp rise which preceeded membership (33 percent, 1963 to 1973). The index rose more sharply toward the close of the transition period, reflecting more intensive use of inputs following the global economic crisis during the mid-1970's which resulted in sharply higher raw material costs.

Other measures of labor productivity are provided in table 15, comparing labor input with output for four commodities supported under various EC programs, namely grains, sugar beets, dairy cows, and bacon pigs.

The dairy cow and bacon pig sectors, both relatively labor intensive, demonstrated strong improvements in productivity from 1974/75 to 1981/82, sugar beets improved moderately, while grains, a relatively capital intensive sector, improved only slightly.

Table 15--Labor input needed to produce selected agricultural commodities in Denmark

Labor input	1974-75	1979-80	1980-81	1981-82
		Hours		
Hours to produce--				
1 hectare of grain	22	22	21	21
1 hectare of beets	91	98	89	81
1 dairy cow per year	77	70	67	64
1 bacon pig	1.67	1.17	1.07	1.04

Source: (15)

Other measures of agricultural efficiency are found in table 16. Milk yields, which rose by 12 percent during the decade prior to membership, skyrocketed by 36 percent during the following 10 years. Despite declining cow numbers, a combination of shifts in cow breeds and more intensive feeding was largely responsible for the increase. EC price supports and export subsidies for cheese and butter also were positive influences on dairy output. Although the intervention system, theoretically an "open mouthed" consumer, guarantees to clear the market at pre-specified support prices, it has not had as significant an impact on production decisions in Denmark as exports.

Improved feeding techniques and increased feed quality have contributed toward greater efficiency in the hog and poultry sectors in the long run. Table 16, however, indicates stronger feed conversion improvements prior to EC

16/ Productivity measured the ratio of labor's net product to input costs of labor and capital, excluding maintenance and depreciation.

membership than afterward for hogs (a 19-percent decline in the ratio of feed units required per unit of weight gain). A myriad of factors contributed toward the slowdown in the rate of improvement in feeding rates; relatively high feed grain prices under the CAP, breed shifts, and rigid requirements to maintain export quality are likely factors.

Productivity has risen impressively in Denmark's hog sector since membership. One indicator of productivity, piglets per litter per year, improved markedly (table 17). In 1976 Danish sows each produced an average of 11.7 piglets, the lowest rate among the major EC producers: France, West Germany, Holland, and the United Kingdom. By 1983 the rate improved to 17.9, a 53-percent increase over 1976. Less inbreeding and more specialized hog production were major factors responsible for the improvement in productivity. Farms producing both slaughter pigs and sows were very high prior to EC membership, but by 1983 there were fewer farms producing hogs on mixed operations. The number of units holding hogs declined sharply since EC membership while average size increased. Units holding both sows and slaughter hogs declined from 31,300 in 1976 to 21,700 in 1982. The effect of EC accession certainly streamlined hog production. Farms producing both slaughter pigs and sows numbered as high as 74,300 in 1965.

Table 16--Selected indicators of agricultural efficiency

Item	1960-64	1970-74	1980-83	Percentage change-- 1970-74/ 1960-64	1980-83/ 1970-74
				Percent	
Milk yields 1/	3,709	4,142	5,649	12	36
Wheat yields 2/	40.2	46.8	62.3	16	33
Barley yields 2/	37.8	38.9	38.2	3	-1
Slaughter calves, feeding rates 3/	4.42	4/4.84	5.44	10	12
Slaughter hog, feeding rates 3/	4.10	4/3.33	3.26	-19	-2
Broilers, feeding rates 3/	3.23	4/2.12	1.93	-34	-9

1/ Kilograms per cow per year, 4-percent milk fat.
2/ 100 kilograms per hectare. Barley yields for 1980-82 equalled 40.1. Yields of barley were reduced 16 percent in 1983 due to poor weather.
3/ Feed units per kg. of weight gain.
4/ 1975/76 data.

Sources: (16, 26, 29)

Wheat yields have also demonstrated an extremely strong rise following Danish EC membership (table 16). The 33-percent rise in wheat yields (1980-83/1970-74) was more than double that of the decade preceding membership, largely reflecting the success of the new winter wheats, the Longbow and Norman varieties, imported from the United Kingdom. Farmers' incentives for planting wheat have been stimulated by rising sales for subsidized exports, and to a lesser extent for use as a feed.

Table 17--Piglets per sow in select EC countries

Country	1967	1979	1982	1983	Annual rate of change
	Piglets per sow				Percent
West Germany	15.4	15.2	15.3	--	-0.2
France	14.2	18.4	18.9	--	+4.19
Holland	15.3	15.6	16.0	--	+.43
United Kingdom	15.8	17.6	18.3	--	+2.72
Denmark	11.7	13.7	15.1	17.9	+4.35

Source: Data provided by the Agricultural Economics Institute, Copenhagen.

FARM INCOME

Membership in the EC did not insulate Danish farmers from a protracted period of financial crises. The euphoria felt by farmers benefitting from relatively high EC prices in the early years of membership diminished by the close of the transition period in 1978 as costs increased faster than prices. Certain categories of farmers experienced serious problems from the late 1970's into the 1980's, although a combination of credit relief programs, economic growth, lower inflation, and better export markets for livestock products resulted in improvements in the farm income situation in recent years. The protracted income crisis in Danish agriculture has, however, contributed to a strong increase in nonfarm employment among Danish farmers, likely to be a permanent economic reality for the farm family.

The Danish farm income problem has been similar to that in the United States. A major factor has been relatively high rates of interest. Net interest as a percentage of gross farm income rose from 29 percent in 1970-74 to 61 percent in 1980-83 (table 18), nearly five times that in 1960-64. Interest rates in Denmark since 1970 have been among the highest among several industrial countries since 1970. In 1970-74, the effective rate of interest at 12.3 percent (per annum) was the highest in 10 OECD industrial countries. The Danish rates reached 17.5 percent in 1978, and 20.5 percent in 1982. Since 1982, interest rates have receded. In late 1985, the rate dropped to 11 percent. High interest rates in Denmark were largely due to permanent and large deficits in the current account of the balance of payments. Although the repayment of high interest rates on loans has been a major cost to Danish farmers, relatively high rates have served a national purpose of preventing a large outflow of private capital.

Danish membership in the EC, with its promise of propped-up support prices, generous export subsidies, prospects of rising land values, and government encouragement tempted many young farmers to invest heavily in farming, even at high rates of interest.

Table 18--Net interest expenditure in relation to Denmark's agricultural income

Item	1960-64	1970-74	1980-83
		Millions of Dkr	
Gross farm income 1/	4,961	5,770	13,118
Net interest expenditure	655	1,690	7,958
		Percent	
Net interest as a percentage of gross farm income	13	29	61
		Millions of Dkr	
Net income from agriculture	4,306	4,080	4,660

1/ Excludes wages and depreciation.

Source: (15)

However, since the close of the transition period in 1978, input costs rose more rapidly than producer prices (table 19). High energy costs were an important component of the rise in total farm expenses, and these increases contagiously affected fertilizer and transport costs as well.

Improvements in both productivity in certain sectors and EC price supports may have prevented an even worse income situation from developing. However, table 18 indicates that the sharp increase in gross farm income between the early 1970's and 1980-83 was almost completely offset by increases in interest expenditures.

Table 19--Indices of producer prices and input prices

Item	1978/79	1979/80	1980/81	1981/82	1982/83	1983/84
			1970/71 - 1974/75 = 100			
Producer prices (P)	163	176	191	223	236	251
Input costs (I)	180	202	229	258	280	305
			Percent			
Ratio: P/I	90	87	83	86	84	82

Source: (15)

By 1980, net income from agriculture at 2.5 billion Dkr declined to its lowest level since EC membership, and less than half the 1978 level. This deterioration occurred despite relatively large farm sales. Farm output value rose nearly 10 percent to 32.5 billion Dkr. However, feed costs, by far the largest expenditure on raw materials, rose rapidly following accession. Total feed costs reached 10.7 billion Dkr in 1980 (about one-third the value of farm output), while interest paid on farm debt was 6.9 billion Dkr--further reducing farm revenue. In 1982, an exceptional year, net income from agriculture improved strikingly, largely due to a strong increase in the value of agricultural output especially from coarse grains, dairy, and pig products. Net income outpaced record interest debt expenditures of 8.5 billion Dkr.

High EC prices did not fully compensate for the combined cost effects of rising debt and escalating input prices. In 1981, a record number of farm foreclosures occurred at 1,607, up from 592 in 1980. A large government aid program amounting to 978 million Dkr ($107 million) in 1983, and 1,627 million Dkr ($157 million) in 1984 eased the crisis.17/ In 1984, the number of foreclosures declined to 839, reflecting an improvement in farmer's liquidity.

DANISH COOPERATIVES

Denmark's marketing system was not directly affected by membership in the European Community, since EC regulations permit member states self-determination in their distribution system. However, Danish agriculture is dominated by the Danish large-scale cooperatives performing extremely important roles in the producing, marketing, processing, and pricing of farm goods in Denmark. Important changes in their structure have occurred.

Background

The Danish cooperative movement, born with the construction of a cooperative store in Thisted, Jutland, in 1866, was originally modeled after the British Rochdale Society, an organization of poor weavers. The democratic philosophy of cooperation in Denmark with members sharing their capital quickly spread to agriculture. Denmark's first dairy cooperative Oas established in Hjedding in 1882.

During the late 19th century, dairying grew in importance, along with an urgent need for capital; the solution to the problem of scarce funds came from the farmers themselves who assumed both joint risk and profit. There are interesting comparisons to this solution to the farm crisis at that time and the crises in both Denmark and the United States in recent years. The U.S. Government looks to a more "market oriented" farm policy, while in the early 1980's the Danish Government intervened with an aid package following a period of record bankruptcies. This period also saw the burst of scientific inventions, notably the cream separator, enabling Denmark to produce butter and cheese, both exportable products of a high, uniform quality for the expanding export market.

17/ The 1983 program also awarded higher interest subsidies on debt conversion loans to farmers with large crop losses enabling a larger number of farms to participate. These aids were in addition to temporary measures enacted in 1980-1982 which subsidized high interest debt.

Most early members of the farm cooperatives were from the vestiges of peasant society with more to gain from shared responsibility and with a high degree of social cohesiveness. Until this period, the upper classes, or the Estates, had dominated the export markets, while peasants produced for domestic consumption.

A major force necessary for greater sophistication of the infrastructure of Danish agriculture was the availability of education for the masses. The Folk High Schools, designed and propagated by a Danish cleric, Bishop Gruntvig, filled this need, and reinforced the ideals of solidarity and self-government of the cooperatives.

Since the end of World War II, there has been a decline in the number of cooperative units and amalgamations of existing organizations, especially dairy and bacon cooperatives, although unit size has increased. Also, private marketing organizations have been competing with the established cooperatives, notably in the meat sectors. Some private organizations have gained competitive footholds in the expanding Japanese market for Danish pigmeat. The appearance of private competing marketing organizations may be expected in a highly industrial country as Denmark where there are no legal restrictions on independent enterprises except in monopolistic situations. Whether or not private organizations will succeed in competing with the cooperatives in marketing exports in the long run will depend upon their financial solidarity and marketing flexibility.

Table 20--Danish market share of cooperative organizations by type of product

Product	Percentage of production or sales		
	1978	1981	1982
	Percent		
Dairy products:			
Milk production	87	88	88
Butter production	92	93	92
Cheese production	79	82	79
Milk for fluid consumption	78	82	82
Livestock products:			
Pigmeat production	90	93	93
Cattle sales	50	44	40
Poultry production	45	38	55
Egg sales	56	69	70
Other:			
Sugar production	0	14	--
Seed production	50	57	60
Bread	0	16	--
Fruit, vegetables, flower production	50	52	50
Grain and feed sales	50	49	47
Machinery sales	15	19	17
Fertilizer sales	53	42	43

-- = Not available.
Source: (13)

Coops Represented by Agricultural Council in EC Matters

Positions of the cooperatives are communicated to the EC by the Agricultural Council, a unifying representative of all the major farm groups including the Farmer's Union, Commodity Boards, and the cooperatives. Since cooperatives set wholesale prices for many commodities, they have an important input in Danish positions regarding EC price levels. Although the Agricultural Council expresses a concensus of various positions, there are provisions and fora for individual groups to lobby and participate directly in EC decisions as well. For example, specialized producers of dairy products, grains, and hogs have formed independent unions and may present directly their views to the Government.

Organizational Structure 18/

The Danish cooperatives have evolved into a complex organizational infrastructure involving producing, marketing, exporting, and supplying requisites and services both to farmers and other cooperatives. Agricultural cooperatives are subdivided into two groups, primary societies (table 21) and secondary organizations (table 22). Primary organizations are the processing and distribution societies, largely product specific. The members of primary organizations are the farmers, and there are no restrictions on the number of these societies which a farmer may join.

In 1973, there were 26 major cooperative slaughterhouses (table 21). Due to a combination of mergers and the emergence of private slaughterhouses, only 15 cooperative slaughterhouses remained in 1983. These private slaughterhouses work closely with the Danish Bacon Factories Export Association, 19/ Denmark's major pork marketing cooperative, principally in the Japanese market.

As seen in table 21, there has been a long downward trend in the number of primary cooperative units which began prior to membership in the EC. The number of dairies declined from 397 in 1970 to 242 in 1973 and 91 in 1983, with mergers occurring at a rapid rate (there were 1,340 dairy enterprises in 1960). The cooperative dairies are dominated by Dairy Denmark, responsible for about 50 percent of total cooperative sales. Until 1984, Dairy Denmark was the sole exporter of butter, but eight export firms called "Butter Team Denmark" have organized as competitors.

Market Share Remains High

Although the number of certain cooperative organizations has declined, the market share of the cooperatives has remained very high or, in many instances, increased as table 20 indicates. The cooperatives dominate the production

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18/ This discussion excludes the consumer cooperatives and the wholesale Societies functioning outside of agriculture. For a description of these organizations see (22) and (27).

19/ This organization was called ESS-Food, a trading company established to handle trade in pigmeat to the United Kingdom, a very important market. In 1984, six of the largest slaughterhouses in ESS-Food withdrew to establish their own marketing organizations abroad. ESS-Food is now called the Organization of Danish Slaughterhouses. The cooperative system in Denmark is a deserved source of pride and is an example of a unique and successful marketing and processing system. However, the cooperatives have become large business organizations and there has been a shrinking direct involvement of farmers in cooperative decisions in recent years.

and/or sales of all the major livestock products: 92 percent of butter production, 93 percent of pigmeat production, and 82 percent of fluid milk produced for consumption. Private organizations are important in the marketing of "other" products such as sugar and seeds (table 20), and are highly important in cattle and poultry sales. Cooperatives and private firms equally share the feedstuffs market.

The secondary organizations were largely established by the primary societies for specific services to them, such as marketing butter or cheese or supplying cement or fuel. For example, a dairy (a primary organization) does not normally do its own marketing which is undertaken by the specialized local society. A farmer "joins" a cooperative dairy or slaughterhouse, and supplies milk or animals for further processing.

Table 21--Danish primary agricultural cooperative organizations

Type of organization	1973	1979	1980	1982	1983
			Number of units		
Production, sales, marketing: 1/					
Dairies	242	171	132	120	91
Slaughterhouses	26	20	17	16	15
Cattle marketing (Dalko)	36	29	28	29	29
Fur breeders association	0	6	6	6	6
Egg marketing (DAAE)	1	1	1	1	1
Poultry dressing (DANFO)	1	1	1	1	1
Seeds (DLF)	1	1	1	1	1
Sugar factories (SN)	0	0	1	1	1
Horticulture	22	20	20	20	20
Fish	26	22	22	22	22
Farm supply organizations (feeds, fertilizer, chemicals, machinery, etc.)	217	176	168	160	159
Service organizations:					
Insurance	0	1	1	1	1
Accident	0	1	1	1	1
Fire	0	1	1	1	1
Pension	1	1	1	1	1
Financial services:					
Bank	1	1	1	1	1
Other financial institutions	57	60	58	58	54

1/ The letters in parenthesis are abbreviations for the Danish title of the cooperative.

Source: (13)

Table 22--Danish secondary production, service, supply, and marketing cooperative organizations

Type of organization	1973	1979	1981	1982
	Number of members			
Butter (Andelssmor) 1/	204	177	135	121
Cheese (Dansk OST)	41	31	21	20
Milk (Danmaelk), for home use	39	24	18	16
Milk (Milco) for export	0	0	4	4
Dairy equipment	763	423	369	337
Packing material (Danapak)	280	256	196	181
Hide Central	0	35	23	32
Joint Bureau of Cooperative Bacon Factories	79	123	137	140
Wholesale farm supply organization	710	471	359	--
Cement factory (DAC)	2,092	1,833	1,683	1,570
Oil Co. Denmark	1,600	2,929	2,793	2,700
Dome bank	--	--	--	103,000
The Association of Village Banks	--	--	--	58
The Bread Bakeries Coop.	--	--	--	3

-- = Not available.

1/ The letters in parentheses are abbreviations or names for the Danish title of the cooperative.

Source: (13)

TRADE

A major motivation for Danish membership in the EC was to retain historic agricultural trade relationships with two major markets, the United Kingdom and West Germany. Another major benefit of membership, the availability of export subsidies, assisted Denmark in developing or maintaining third country markets in the Far East, Middle East, and the United States.

Although Danish trade policy had been relatively liberal prior to membership since Denmark is a net importer of essential raw materials, there were non-tariff barriers and/or duties largely applying to competitive imports. The community's external tariffs combined with its internal price policy replaced many of Denmark's trade barriers which were in effect prior to 1973, and resulted in a highly protected internal market.

The availability of export subsidies which affects price competitiveness has been a significant benefit to Danish exporters of agricultural commodities to third countries. These markets have developed rapidly in recent years in Japan and the Middle East. The United States, traditionally Denmark's largest third-country customer, receives subsidized pigmeat products, largely canned hams, and dairy products.

Table 23 shows the financial importance of export subsidies. Total export subsidies (including accession compensatory amounts during the 1973-78 transition period and monetary compensatory amounts) increased from 1.6 billion Dkr ($264 million) in 1973 to a record 4.2 billion Dkr ($770 million) in 1978, and drifted lower to 3.4 billion Dkr ($372 million) in 1983. Table 23 indicates the relative importance of the various exported commodities partially financed by subsidies. Table 26, comparing the change in the percentage share in agricultural exports from 1973-83, highlights pigs, pigmeat, butter, and cheese as items increasing in importance to non-EC countries. These commodities are supported by export subsidies. Dairy products have received the largest total subsidy payment of all goods at 1.6 billion Dkr ($175 million) in 1983: 47 percent of the total and a virtual doubling of the 1973 value.

In recent years, the export subsidy received for exported cheese has increased while butter refunds have declined, not only because of relative price shifts between EC and world prices but also due to reduced butter exports. Other subsidized dairy products of rising importance have been casein and skim milk powder. Among meat products, most export subsidies are paid for exports of pigmeat products, largely fresh, chilled, and frozen meats, beef, and to a lesser extent, poultry meat. Export subsidies also apply to canned hams and shoulders, resulting in trade problems with the United States. There are considerable variations in the percentages of the restitutions by product. For example, in some years restitutions on cuts of pigmeat to the Japanese market ranged from 6 percent of the export price for a pork fillet to 22 percent for a pork salami.

The availability of EC export subsidies for cheese has been an important factor in market development since average cheese prices ex-dairy in Denmark generally have ranged between 10 to 20 percent above Danish export prices in recent years. The total value of cheese export subsidies paid to Denmark has risen over 300 percent during the 1973 to 1983 period and cheese receives a higher total export subsidy than any other single commodity. The export subsidy for feta cheese has ranged from 0.42 Dkr ($0.04) to 7.28 Dkr ($0.69) per kg in recent years. In 1982, cheese restitutions were nearly 30 percent of the total value of exports. Comparable percentages for butter and canned milk were 14 and 26 percent.

Although the United Kingdom and West Germany are the largest markets for Danish poultry meat, customers in the Middle East and Far East are important outlets. In 1983, the United Arab Emirates became the third largest market, with Saudi Arabia, Oman, Quatar, Singapore, and Hong Kong also growing in importance. Denmark is increasingly dependent on non-EC markets which qualify for export subsidies. In 1983-84, 54 percent of total poultry meat exports were shipped to non-EC countries. The average EC restitution was 1.85 Dkr ($0.20) per kg and total EC expenditures on export subsidies for poultry meat from Denmark were 53 million Dkr ($5.8 million).

EC export subsidies for Danish grain sales totalled 186 million Dkr ($20 million) in 1983 (table 23) but fell to 145 million Dkr ($14 million) in 1984 due to large grain surpluses which caused lower domestic market prices. The main non-EC outlets for grains (largely barley) have been the Soviet Union, East European countries, and Norway.

Due to a single outbreak of foot-and-mouth disease in July 1983, the markets for fresh and frozen pigmeat were closed to Denmark by Japan and the United States. Denmark was recognized as free of the disease by Japan on September 1, 1983, and by the United States on January 16, 1984. Exporters regained

Table 23—Danish export payments received from the European agricultural guidance and guarantee fund

Type of subsidy	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
	Million of Dkr										
Export subsidy:	770.1	897.8	828.3	1,129.3	1,610.0	1,682.9	1,849.2	1,807.0	1,367.1	1,564.4	1,580.2
Dairy products	468.0	563.5	451.9	487.6	669.1	536.6	575.4	436.3	236.9	336.0	363.8
Butter	152.7	182.0	184.5	268.6	397.0	454.8	508.3	625.1	653.4	692.4	656.2
Cheese	149.4	152.3	191.9	373.1	543.9	691.5	765.5	745.6	476.8	536.0	560.2
Other	7.6	4.7	2.8	3.6	2.3	1.3	5.5	2.6	1.2	1.1	2.1
Eggs	735.8	449.5	389.0	822.6	1,491.6	1,509.8	1,284.3	1,016.3	1,052.7	835.5	1,144.9
Meat products	110.0	170.9	129.1	199.0	391.8	408.8	371.9	375.3	340.1	304.1	416.2
Beef and veal	140.9	29.9	86.2	347.9	596.2	560.1	272.6	16.3	--	--	--
Bacon	445.9	222.3	166.9	260.6	469.5	498.4	594.2	564.1	665.8	487.5	675.9
Other pigmeat	39.0	26.4	6.8	15.1	34.1	42.5	45.6	60.6	46.8	43.9	52.8
Poultry meat	89.8	39.5	107.3	150.5	436.1	829.5	699.5	458.1	330.7	429.7	393.9
Crop products	54.1	12.6	92.7	77.8	148.5	524.4	469.0	404.8	183.7	142.0	185.8
Grains	0	--	--	3.0	--	--	--	--	4.4	28.7	15.0
Oilseeds	32.4	18.0	2.2	54.9	280.5	296.7	222.9	49.3	139.0	252.1	182.7
Sugar	3.3	8.9	12.4	14.8	7.3	8.4	7.6	4.0	3.6	6.9	10.4
Fruits, vegetables, flours	29.9	10.7	20.5	71.3	150.7	198.5	230.2	207.1	166.9	207.0	236.5
Other (processed products)	1,633.2	1,402.2	1,347.9	2,177.3	3,690.7	4,222.0	4,068.7	3,491.1	2,918.6	3,037.7	3,357.6
Total export payments	803.1	661.9	689.2	1,048.8	1,800.3	2,529.6	3,164.7	3,334.9	2,880.1	2,993.7	3,124.0
(Restitutions)	597.7	717.0	659.0	554.9	336.9	13.9	0	0	0	0	0
(Accession payments)	232.4	23.3	-.3	573.6	1,553.5	1,678.5	904.0	156.2	38.5	44.0	233.6
(Monetary compensatory amounts)											

-- = Negligible.

Source: (16)

the Japanese market for fresh and frozen pork in 1984, shipping 16 percent of the total value of pigmeat products. Pork exports and prices to the United States grew strongly after January 1984, aided by the strong dollar, and amounted to 20 percent of the total value of Danish pork exports.

Table 24--Value of Denmark's total agricultural exports

Commodity	1973	1978	1980	1981	1982	1983
			Million dollars			
Live animals	52.0	36.1	48.2	42.9	27.8	27.7
Meat & prep.	917.1	1,761.4	2,298.4	2,296.6	2,186.1	1,996.6
Dairy products & eggs	326.6	697.5	852.6	837.5	850.4	792.0
Cereals & prep.	84.0	312.4	355.2	244.0	295.9	311.7
Fruit, vegetables, nuts	24.3	64.7	75.9	76.1	88.9	100.2
Sugar & prep.	40.7	134.1	180.3	184.8	139.9	141.5
Coffee, tea, cocoa, spices	8.3	39.1	62.3	62.4	51.1	44.2
Animal feeding stuffs	167.2	192.9	219.0	207.4	167.6	176.0
Misc. food prep.	28.5	88.5	155.2	141.9	134.3	135.3
Beverages	79.6	114.8	124.9	115.2	116.7	116.1
Tobacco & tobacco prod.	16.5	37.7	44.9	42.3	41.6	44.6
Hides, skins, furs	146.5	294.7	499.2	461.1	435.4	411.7
Oilseeds, nuts, kernels	17.4	44.5	104.8	122.0	120.0	115.8
Soybeans	--	--	.9	--	.1	--
Cotton	.3	.3	.2	.3	.3	.3
Veg. fiber, excl. cotton jute:	.2	.2	.2	.1	.1	.2
Crude animal raw materials	147.8	231.9	319.9	281.8	295.1	279.2
Animal, veg. oil, fats	48.0	102.3	119.4	115.2	99.4	107.4
Others 1/	.6	0.9	1.1	1.0	1.2	.7
Total agriculture	2,105.6	4,153.8	5,411.6	5,232.6	5,051.4	4,800.5

-- = Less than $50,000.
1/ Others includes: natural rubber, gums, silk, wool, and animal hair.

Source: (30)

The share of Danish agricultural exports to the EC from 1973 to 1983-84 declined moderately from 65 percent to 61 percent, offset by the rise in the export share to third countries aided by restitutions (table 26). The value of exports to the United Kingdom and West Germany, Denmark's major markets, rose sharply in value, from 3.6 to 8.9 billion Dkr and 1.4 to 7 billion Dkr, respectively. Specific markets within the EC bloc also increased sharply since 1973, especially Italy.

A growing market for live animals and meats, Italy increased its purchases from 1.3 to 1.8 billion Dkr. France, from a negligible 321,000 Dkr in 1973, bought Danish farm goods worth 1.9 billion Dkr in 1982. However, the value of Danish agricultural exports to the EC has declined since 1982, while agricultural imports remained relatively constant (fig. 2).

Table 25--Value of Denmark's total agricultural imports

Commodity	1973	1978	1980	1981	1982	1983
			Million dollars			
Live animals	3.2	1.7	2.3	2.0	1.7	2.0
Meat & prep.	6.7	24.5	20.2	20.1	18.7	21.8
Diary products & eggs	18.8	25.9	79.8	103.7	60.7	50.3
Cereals & prep.	82.0	140.2	159.0	171.3	136.4	157.2
Fruits, vegetables, nuts	114.0	228.5	274.3	258.9	235.1	235.8
Sugar & prep.	14.2	66.6	83.6	71.8	77.1	77.5
Coffee, tea, cocoa, spices	116.3	307.7	313.8	255.4	241.2	227.8
Animal feeding stuffs	198.0	381.1	524.9	573.9	506.9	514.8
Misc. food prep.	16.6	28.6	36.4	33.3	30.6	30.3
Beverages	65.2	111.0	125.0	118.0	116.3	113.6
Tobacco & tobacco prod.	69.0	86.2	42.9	40.2	44.8	39.8
Hides, skins, furs	73.6	176.9	303.4	300.7	281.4	233.7
Oilseeds, nuts, kernels	85.0	161.7	132.7	106.2	84.2	85.6
Soybeans	67.3	123.5	82.5	63.5	48.9	50.4
Cotton	4.2	4.3	5.5	5.2	5.3	5.4
Veg. fiber, excl. cotton jute	4.6	.9	3.4	1.4	2.1	2.3
Crude animal raw materials	50.9	112.0	139.3	124.1	126.4	144.2
Animal, veg. oil, fats	20.3	65.5	93.1	99.0	99.0	93.3
Others 1/	9.0	18.4	25.0	20.8	17.1	18.4
Total agriculture	951.6	1,941.6	2,364.6	2,306.1	2,085.0	2,080.8

1/ Others includes: natural rubber, gums, silk, wool, and animal hair.

Source: (30)

Outside the EC, traditional important Nordic markets Sweden and Norway showed moderate increases in their value of imports from Denmark since 1973 while the United States, Denmark's most important customer outside the EC, doubled imports from 1.2 to 2.4 billion Dkr. During Denmark's first decade of membership in the Community, Japan and Iran emerged as extremely important markets for Danish pigmeat (Japan) and cheese (Iran). This development, namely developing specifically tailored value-added products for specific markets, is likely to characterize Denmark's future trade policy.

Table 24 indicates that many categories of agricultural exports have increased since 1973, especially in the important meat and dairy product categories. Together, exports of these categories more than doubled during the 1973 to 1983 period. Other categories which have sharply increased are grains, beverages (especially beer), hides, skins, and furs. The largest share of Denmark's farm products are shipped to other EC countries. The following table gives a breakdown of the shares of selected products to both EC and non-EC markets in 1973 and 1983.

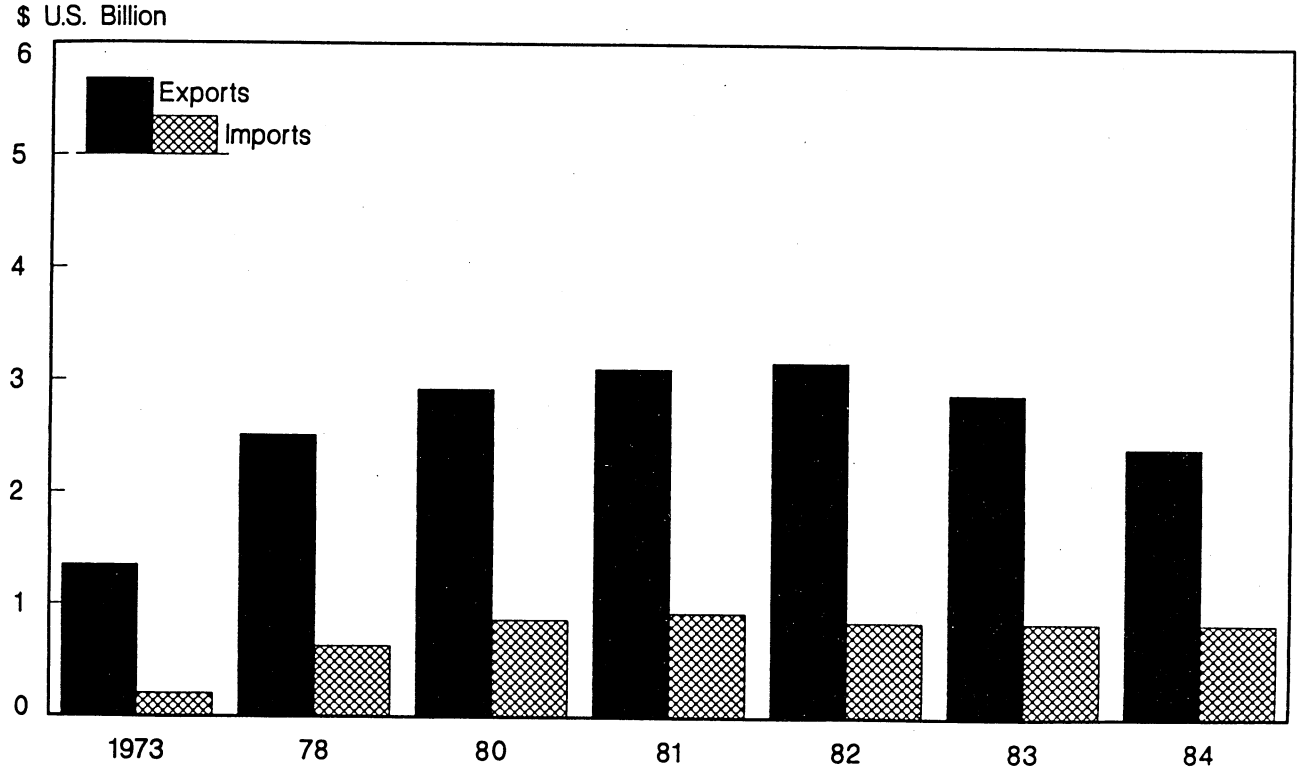
Table 26--Percentage share of exports of major agricultural items to EC and non-EC regions

Item	EC		Non-EC	
	1973	1983-84 ave.	1973	1983-84 ave.
	Percent			
Cattle, beef, and veal	84.0	88.0	16.0	12.0
Pigs, pigmeat	89.0	75.5	11.0	24.5
Butter	85.0	73.5	15.0	21.5
Cheese	51.0	44.0	49.0	56.0
Poultrymeat and eggs	30.0	48.0	70.0	52.0
Canned milk and meat	28.0	30.0	78.0	70.0

Source: (15)

Figure 2

Danish Agricultural Exports and Imports with EC



Within the EC, the most important markets for specific products (1983) are bacon (United Kingdom, 99-percent market share), pigmeat, fresh and frozen (West Germany, 34 percent), butter (United Kingdom, 58 percent), cheese (West Germany, 23 percent, United Kingdom, 11 percent), and canned hams and shoulders (United Kingdom, 39 percent).

The Example of Iran

A major marketing success has been Denmark's penetration and maintenence of the Iranian market for Feta cheese, a Danish dairy product innovation produced from cow's milk. Feta, commonly produced from goats and sheep, and heavily consumed in Mediterranean and Middle Eastern countries, has not been traditionally produced in Denmark. During Denmark's first decade of EC membership, cheese exports to Iran, virtually nil in 1973, rose in value to 554 million Dkr at 83,000 tons in 1983 and reached 100,000 tons in 1984, cementing Iran's position as the largest export market for Danish cheese. Denmark produces 35 varieties of cheese for export. Due to strong demand from Iran, Feta enjoys a 43-percent share of total cheese exports. Egypt and Greece are other customers for Danish Feta.

U.S. Trade

The market for U.S. agricultural exports to Denmark has declined both in value and in relative market share, especially since the close of the Danish transition period to full EC membership in 1978 (table 27). During the 1973 to 1978 transition period, the actual value of U.S. exports increased from $167 million to $295 million (table 27), and the U.S. share of the Danish market declined modestly from 18 percent to only 15 percent. Since 1978, there has been a sharper decline (fig. 3). In 1983, the total value of U.S. farm goods exported to Denmark dropped to $157 million, only 8 percent of Denmark's total imports. Part of the decline of U.S. exports was due to the deterioration of EC levy protected commodities, notably grains and grain products. The U.S. market share for this category had been 34 percent in 1973, but only 3.4 percent by 1983. The market for U.S. wheat and corn, commodities for which the United States was the major supplier in 1978, dropped sharply by 1983, due to the availability of cheaper (non-levy) grains from EC partners and rising domestic grain output. Exports of U.S. wheat to Denmark were halved between 1978 to 1983 to 6,000 tons. West Germany sharply increased its exports of wheat to Denmark (to 73,000 tons) and the U.K., enjoying a new position as a net exporter of wheat in 1983, shipped 33,000 tons to Denmark that year, up from 9,000 tons in 1978.

France traded places with the United States as Denmark's major supplier of corn due to France's preferential position within the EC, namely supplying levy-free corn at a lower cost than goods shipped from the United States. Whereas France increased their exports of corn by about 84,000 tons from the end of Denmark's transition period to 1983 (to 104,000 tons), the United States shipped only 9,500 tons compared with a healthy 182,000 tons in 1978.

Animal feedstuffs (grain byproducts, roots, vegetables) are also shipped to Denmark from the United States. U.S. exports of this category dropped from 193,000 tons at the end of the transition period (1978) to 142,000 tons (1983), while the quantity shipped from EC suppliers (West Germany and France) rose nearly 70 percent to 761,000 tons. The U.S. market share (table 27) had risen to 35 percent in 1978, but declined sharply to 6.2 percent in 1983.

Denmark has been a traditional customer for U.S. tobacco and tobacco products. The Scandinavian Tobacco Company which merged with the American Tobacco Co. and Nordisk British in 1972 dominates the Danish tobacco industry and is the sole producer of cigarettes. The market for leaf

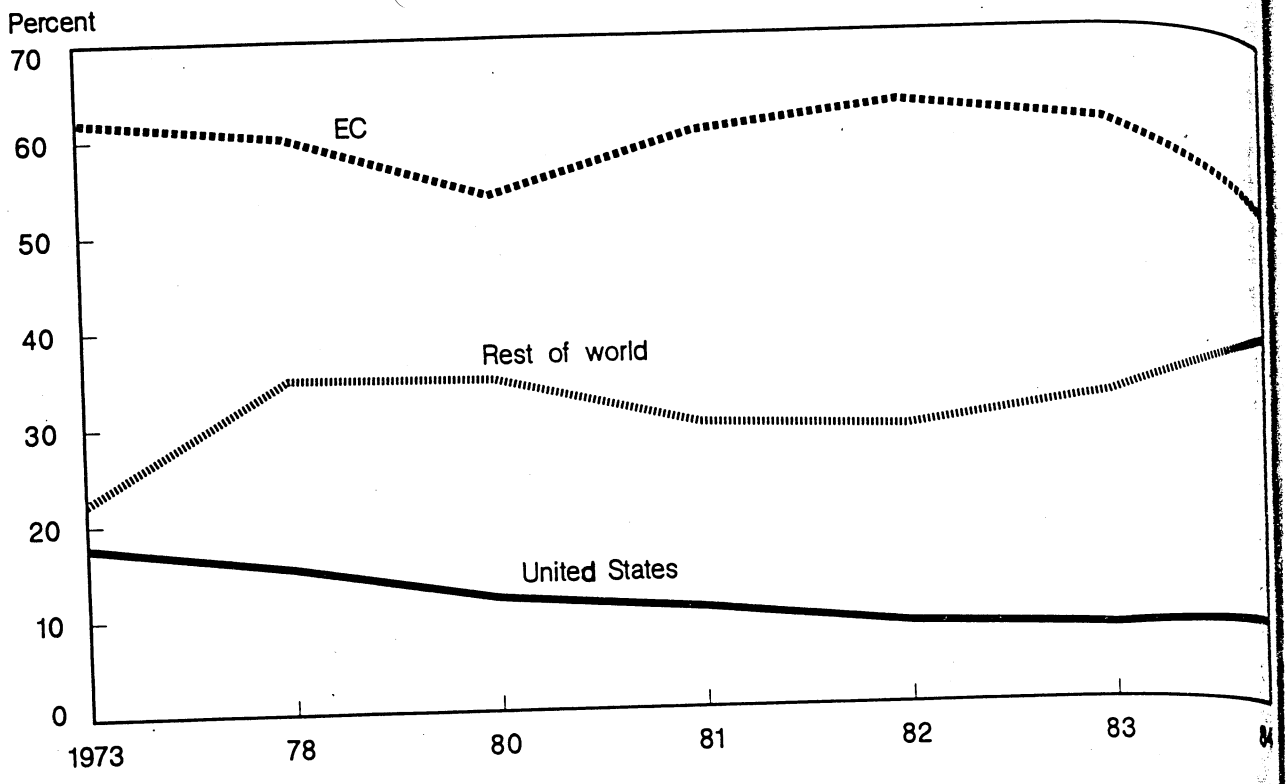
Table 27--U.S. market share of selected Danish agricultural imports

Commodity	1973			1978			1982			1983		
	Total	U.S.	Share	Total	U.S.	Share	Total	U.S.	Share	Total	U.S.	Share
	Million dollars		Percent	Million dollars		Percent	Million dollars		Percent	Million dollars		Percent
Live animals	3.1	0	--	1.7	0.2	11.8	1.7	0.3	17.6	2.0	0.2	10.0
Meat and preparations	6.7	.2	3.0	24.5	2.4	9.8	18.7	2.2	11.8	21.8	1.8	8.3
Dairy products and eggs	18.8	--	--	25.9	.1	.4	60.7	--	--	50.3	.1	.2
Cereals and preparations	82.0	28.0	34.1	140.2	48.4	34.5	136.4	16.8	12.3	157.2	5.4	3.4
Fruits, vegetables, nuts	114.0	11.5	10.1	228.5	20.0	8.8	235.1	17.4	7.4	235.8	16.6	7.0
Sugar and preparations	14.2	.1	.7	66.6	.9	1.4	77.1	6.1	7.9	77.5	2.5	3.2
Coffee, tea, cocoa, spices	116.3	.1	.1	307.7	.6	.2	241.2	.6	.2	227.5	.2	.1
Animal feeding stuffs	198.0	23.1	11.7	381.1	34.5	9.1	506.9	32.9	6.5	514.8	32.1	6.2
Miscellaneous food preparations	16.6	1.0	6.0	28.6	1.2	4.2	30.6	1.2	3.9	30.3	1.3	4.3
Beverages	65.2	.3	.5	111.0	.6	.5	116.3	.8	.7	113.6	.5	.4
Tobacco and tobacco products	69.0	35.5	51.4	86.2	48.1	55.8	44.8	12.4	27.7	39.8	10.0	25.1
Hides, skins, and furs	73.6	.8	1.1	176.9	1.5	7.6	281.4	15.7	5.6	233.7	9.1	3.9
Oilseeds, nuts, kernels	85.0	60.9	71.6	161.7	110.3	68.2	84.2	44.9	53.3	85.6	44.3	51.8
Soybeans	67.3	60.5	89.9	123.5	109.4	88.6	48.9	43.6	89.2	50.4	42.7	84.7
Cotton	4.2	1.5	35.7	4.3	.8	18.6	5.3	1.2	22.6	5.4	1.6	29.6
Vegetable fiber, excluding cotton jute	4.6	0	--	.9	--	--	2.1	--	--	2.3	--	--
Crude animal raw materials	50.9	3.6	7.1	112.0	12.3	11.0	126.4	21.2	16.8	144.2	30.5	21.2
Animal vegetable oil, fats	20.3	.4	2.0	65.5	.7	1.1	99.0	.5	.5	93.3	.6	.6
Total agriculture	942.5	167.0	17.7	1,923.3	294.6	15.3	2,067.9	174.3	8.4	2,035.4	156.8	7.7

-- = Less than $50,000.

Source: (30)

Figure 3
Share of Danish Agricultural Imports



tobacco in many Western European countries including Denmark has been adversely affected by health considerations and antismoking campaigns. In Denmark, extremely high excise taxes and a 22-percent VAT are additional factors penalizing consumers. In 1983, these taxes amounted to 88 percent of the retail price of a package of cigarettes. EC tariff concessions have been granted and implemented by Denmark since 1980. Membership in the EC has been an important factor in accounting for relative longrun declines in the consumption of certain U.S. tobacco products. The United States is an important supplier of raw tobacco for Denmark, providing approximately 25 percent of imports in 1983, compared with 51 percent a decade earlier. 20/ The U.S. product is mainly flue cured Virginia tobaccos and burley. Competition from both Brazil and Africa (largely Zimbabwe and Malawi) has been keen. The main African suppliers enjoy duty free trade status under the EC's Generalized System of Preferences (GSP).

The United States has been an important supplier of oilseeds to Denmark. The Danish livestock industry consumes over 1 million tons of soybean meal annually (1.3 million in 1984) consisting of U.S. beans shipped to Denmark (and crushed locally), or soybean meal derived largely from U.S. beans imported and crushed by West Germany and the Netherlands.

Until recent years, the United States has enjoyed a near 100-percent market share in direct shipments of soybeans to Denmark. Denmark imported 172,000

20/ As of January 1, 1979, Danish trade statistics were harmonized with EC regulations. Under EC law, only products which actually clear customs are registered as imports. Thus, since raw tobacco is commonly held in bonded storage for up to 2 years, actual imports may be understated since 1979.

tons of soybeans in 1982 and 169,000 tons in 1983 of which the United States supplied 90 and 86 percent, respectively. U.S. direct shipments of soybean meal are negligible, averaging near 100,000 tons in recent years. As table 28 indicates, Danish imports of soybeans rose sharply after Denmark joined the EC, from 388,000 tons in 1973 to 491,000 tons by 1978. The sharp falloff which occurred in 1980 was due to the destruction of one of Denmark's two major soybean crushing facilities. There are no plans to rebuild the plant. Thus a higher share of soybean meal imports has been necessary to meet the longrun rise in consumption. Relatively high U.S. prices in recent years have had an adverse effect on Danish demand in recent years.

The U.S. market share for fruits, vegetables, and nuts declined from 10 percent in 1973 to 7 percent a decade later (table 27). The seasonal and perishable nature of fruits and vegetables and the EC's net importer status are reflected in an EC policy for fruits and vegetables which is relatively liberal compared with many CAP protected products. Nevertheless, customs duties, quotas, calendar embargoes, quality standards, and preferences to certain non-EC supplying countries are used. Market prices are supported by intervention agencies withholding produce from the market. The EC also implements a wide range of regulations permitting processing subsidies for many fruits and vegetables in addition to export restitutions. These processing subsidies apply to certain types of canned and dried fruits and vegetables and are not very significant in Denmark.

Table 28--Denmark's imports and domestic consumption of soybeans and soybean meal

Year	Soybeans, imports and crush	Soybean meal production	Soybean meal imports	Total domestic
		1,000 tons		
1973	388	308	359	667
1974	439	349	425	774
1975	397	316	443	759
1976	384	305	529	834
1977	386	307	563	870
1978	491	386	703	1,089
1979	486	379	716	1,095
1980	387	325	800	1,125
1981	198	156	1,102	1,258
1982	172	137	1,171	1,308
1983	169	135	1,163	1,298
1984	162	130	1,182	1,312
1985	145	116	1,200	1,316

Source: (33)

Competitive EC suppliers also benefit from nearness to market, lower shipping costs, a highly developed sales and marketing infrastructure in Western

Europe, and a long-range improvement in the quality of fruits and vegetables. These advantages have enabled U.S. competitors to increase their share of Denmark's market. For example, both France and the Netherlands dramatically increased their markets for fresh vegetable exports to Denmark since 1978; the Netherlands from 13,000 tons in 1978 to 18,000 tons by 1983. The U.S. market for fresh vegetables has been relatively small (1,144 tons in 1983), only slightly above 1978 (1,038 tons).

Third country suppliers are also formidable competitors with the United States. Sweden is a major non-EC supplier of processed (and frozen) vegetables, along with Spain, Israel, and Eastern Europe.

Italy has dominated the pear market in Denmark (55 percent or 4,927 tons in 1983), while the United States shipped only 28 tons in 1983 (from 110 tons in 1978). Main competitors with the United States for the Danish lemon and grapefruit market are Israel, Spain, and South Africa, collectively accounting for nearly 75 percent of Danish imports of these items in recent years. The United States has enjoyed domination of the raisin market, shipping 2,144 tons in 1983, nearly half of total imports, and about double Turkish shipments of 1,019 tons.

The U.S. market for cotton has enjoyed more favor since 1978 when the U.S. market share was 19 percent, down from 36 percent in 1973. The decline during the transition period reflected both slowdowns in demand and rising competition from synthetic fabrics. However, by 1983, the U.S. market share increased to 30 percent, and more positive horizons are foreseen as the Danish economy improves.

TRADE RELATIONS BETWEEN DENMARK AND THE UNITED STATES

The United States and Denmark have a long, favorable trade relationship. As signatories to the General Agreement on Tariffs and Trade (GATT) and participants in the Organisation for Cooperation and Development (OECD), a high level of cooperation and agreement on a wide variety of policy issues occurs.

Prior to membership in the EC, Danish trade policy had been relatively free of barriers, since Denmark imports a large percentage of essential raw materials and fuels. Prior to accession, tariff and nontariff measures such as quotas, phytosanitary measures, and calendar-regulated import schedules did not result in serious trade problems with the United States and the U.S. market share was relatively high for grains, tobacco and tobacco products, and oilseeds.

Trade policy relations have remained favorable between the United States and Denmark following EC membership. However, trade problems have become more complex, particularly since the EC is a highly protected market and many exported products are heavily subsidized. The United States now discusses policy issues multilaterally with the community as a unit with specific country references falling within that more general framework.

In recent years, the United States and the European Community have engaged in a number of trade-related disputes. The Danes have been sympathetic towards U.S. interests in many instances. As a net importer of protein feeds, Denmark is opposed to EC trade restrictions on U.S. oilseeds. Denmark is also opposed to taxing imports of U.S. corn gluten feeds, an issue, however, which does not materially affect Denmark. Corn gluten is not a substitute for grains such as wheat in feed rations in Denmark, as in some other EC states. Denmark,

similar to the United States, opposes costly EC price and income supports, which encourage burdensome stocks. Denmark has not significantly contributed to high grain, dairy, or beef intervention stocks in the EC.

A trade dispute between the United States and any individual country may be triggered by the effect of the CAP on an export. For example, in June and July 1980, the U.S. International Trade Commission (ITC) investigated a complaint filed by the U.S. National Pork Producer's Council which declared that subsidized EC exports of canned ham and pork shoulders to the United States materially injured or retarded the U.S. industry. The complaint was directed toward the entire European Community where export subsidies are automatically in effect when domestic prices rise above world market levels according to EC laws. Under the U.S. Countervailing Duty law, if injury is found "The Secretary of the Treasury is required to impose countervailing duties on imports on products on which he determines a subsidy is being paid by foreign governments." The countervailing duty is imposed in addition to regular duties and is equal to the net amount of the subsidy (34).

Denmark and the Netherlands were the principal suppliers of canned hams and pork shoulders to the United States. In 1979, the United States imported 79 million pounds of canned hams and shoulders. Denmark supplied 71.5 million pounds and the Netherlands 7.6 million pounds The investigations concluded that no material injury to the United States was demonstrated. The ITC's final determination concluded that the EC products (largely from Denmark) were sufficiently differentiated from the U.S. products, and that the EC product was selling at prices well above those in the United States despite the subsidy. Also, EC exports had been a declining share of the U.S. market.

The U.S. ITC in June 1980 also determined that the butter cookie industry in the United States was not materially injured or retarded by export subsidies on butter cookies from Denmark (the ingredients of butter cookies--butter, flour, etc.--are subsidized under the CAP).

A resumption of a similar trade dispute between the United States and the EC was diffused in May 1985 when the EC Commission began reducing export subsidies for fresh, chilled, and frozen pork, and canned hams and shoulders to the United States (and Canada). The total reduction in subsidies was about 90 percent. The strong U.S. dollar and rising prices in the United States since 1984 have resulted in reductions in EC subsidies. Nevertheless, this specific trade issue may resurface depending upon shifts in prices and policies in both the United States and the European Community.

CONCLUSION

EC membership has largely been an asset to Denmark's agricultural sector but a disadvantage to U.S. exporters. Major benefits which justified membership were higher relative farm prices, receiving export subsidies for trade with non-EC countries, and retaining economic, political, and trade links with the other EC members. Specific developments in Danish agriculture following membership are:

o Danish demand for U.S. farm goods declined. The Danish market for U.S. grains and oilseeds fell due to relatively high EC import levies which affected grain, while the combined effects of the destruction of a crushing plant in Denmark, rising self-sufficiently in feeds encouraged by EC support

programs, and relatively high U.S. oilseed prices have been major factors explaining the decline in soybean exports.

o U.S. exports of fruits and vegetables, other animal feeds, and tobacco have been adversely affected by either EC preferences granted to competitive suppliers, or, for some fruits and vegetables, nontariff and price policies. Competition for certain fruits from Italy, Israel, Spain, and Morocco will continue to be intense.

o Trade policy between the United States and Denmark has been complicated by EC regulations. In 1980, the U.S. International Trade Commission in Washington investigated a complaint which focused on the EC's use of export subsidies which affected the export prices of canned hams, pork shoulders, and butter cookies. Although the commission ruled in Denmark's favor, the hearings indicated that any individual EC member may be subjected to a trade-related dispute when they apply EC-wide export subsidies.

o Production of grains and oilseeds increased sharply following membership, encouraged by relatively high EC-price supports and subsidies. Wheat area nearly tripled since membership while oilseeds, largely new varieties of rapeseed, rose over fivefold. EC policy also supported production of pulses (feed peas) whose area tripled from 1970-72 to 1984.

o Significant changes occurred in the livestock sector since membership in the EC. Production of pigmeat trended higher, but was adversely affected by a serious financial crisis in the early 1980's. Exports to the United States and Japan were banned throughout 1983 due to disease. However, EC export subsidies have been a significant factor affecting price competitiveness in non-EC markets in the long run. The highly advanced Danish infrastructure and the role of the cooperatives in the hog sector gives Denmark an export advantage. Dairy cow numbers and milk production have been declining due to EC policies to curb dairy surpluses. Milk production remains at a relatively high level partly reflecting breed shifts towards higher yielding animals. An EC-wide program to reduce milk production which began in 1984 reinforced the already existing decline in dairy cows.

o Since membership, total feed consumption of grain has fallen along with total feed consumption, offset by the increase in oilcake and meal use. No major shift to nongrain feeds (manioc, corn gluten) occurred in Demark because transportation costs from continental suppliers would result in relatively high prices.

o Although the EC remains Denmark's most important regional customer, the Danish share of agricultural exports to non-EC countries has increased since membership. Pigmeat and cheese exports to non-EC markets, especially those in the Far East and Middle East increased, aided by EC export subsidies. Iran became Denmark's most important cheese importer, taking 43 percent of total cheese exports in 1984.

o Membership in the EC did not prevent a serious financial crisis and record bankruptcies in Denmark's farm sector, due to relatively high interest payments. Danish farmers invested heavily in farming following membership, with over-expectations of relatively high returns. Improvements in productivity, EC price supports, and Government aid prevented an even worse situation. The situation has eased since 1984.

APPENDIX: THE PRICE MECHANISM OF THE COMMON AGRICULTURAL POLICY

The EC Council of Ministers sets support prices annually for products covered by a common regime. These products represent over 90 percent of the value of EC farm production. The price support mechanisms are theoretically similar for the various commodities, although there are technical differences in the methodology used.

The prices are generally set by the EC Council after rigorous negotiations between the EC Commission and representatives of various interest groups, notably COPA (Comite des Organisations Professionelles Agricoles), representatives of the farmers unions, and the Agricultural Committee of the European Parliament.

Each year, the Council initially establishes target prices, or prices which producers "ought" to receive. These theoretical prices are benchmarks from which other support prices, levies, and directly or indirectly, export subsidies are set. Target prices are generally fixed above market prices.

Intervention prices establish a guaranteed "floor price." Intervention agencies are authorized to purchase commodities from farmers at this price, normally intended to be below market prices.

Threshold prices are the minimum prices at which imports could enter the EC and compete with EC-produced products. For example, the threshold price for grain equals the import price on the continent (including insurance and freight) plus a variable import levy which protects EC grain prices from third country imports.

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