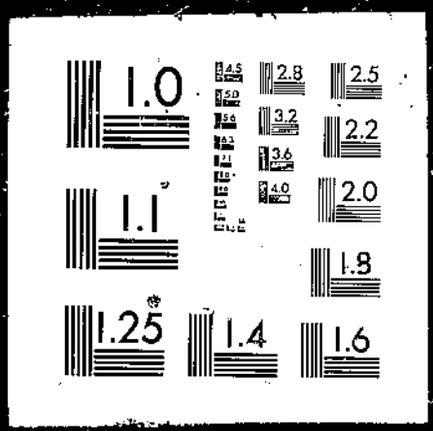
PB83-250621

FAER-184 PERFORMANCE AND STRUCTURE OF AGRICULTURE IN WESTERN EUROP
E.(FOREIGN AGRICULTURAL ECONOMIC REPT.) / RUTH ELLESON ECONOMIC RE
SEARCH SERVICE, WASHINGTON, DC. INTERNATIONAL ECONOMICS DIV. JUN 8
3 81P

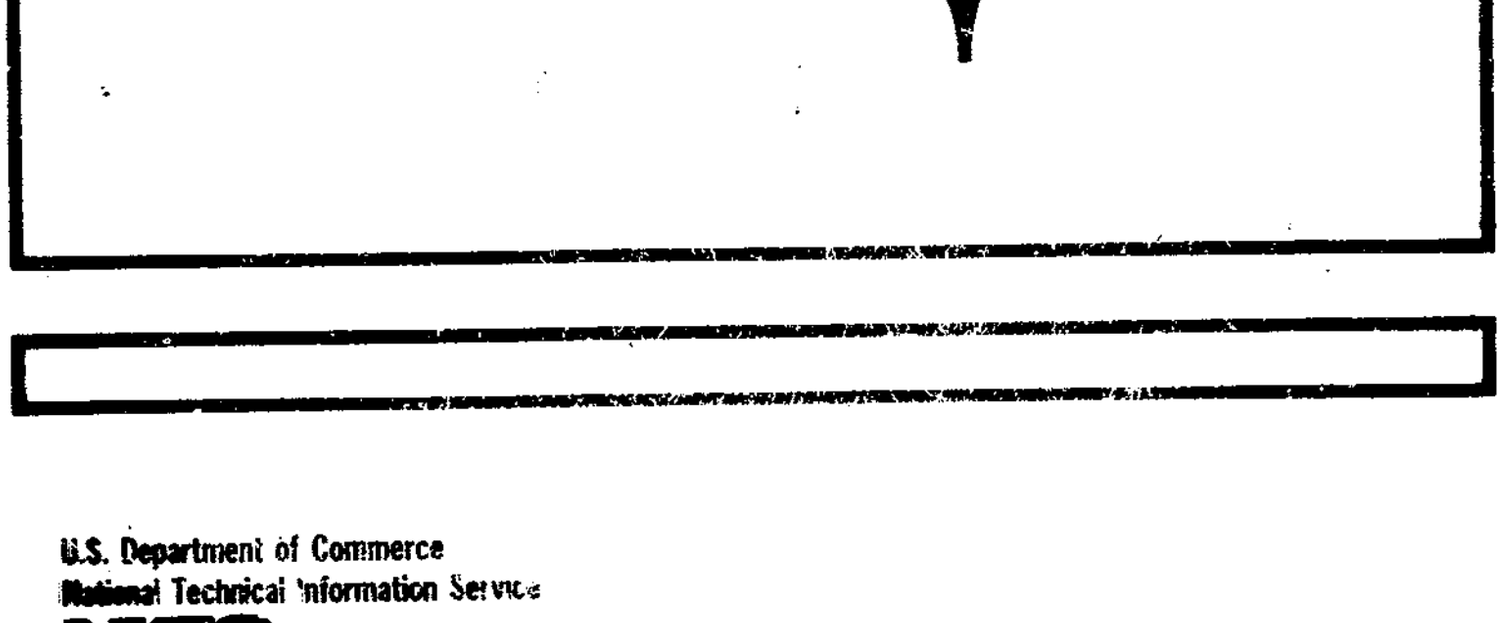


PB83-250621

Performance and Structure of Agriculture in Western Europe

(U.S.) Economic Research Service, Washington, DC
International Economics Div.

Jun 83



U.S. Department of Commerce
National Technical Information Service
NTIS

50272-101

REPORT DOCUMENTATION PAGE	1. REPORT NO. FAER-184	2.	3. Recipient's Accession No. PB83 250621

4. Title and Subtitle
Performance and Structure of Agriculture in Western Europe

5. Report Date
June 1983

6.

7. Author(s)
Ruth Elleson

8. Performing Organization Rept. No.
FAER-184

9. Performing Organization Name and Address
International Economics Division
Economic Research Service
U.S. Department of Agriculture
Washington, D.C. 20250

10. Project/Task/Work Unit No.

11. Contract(C) or Grant(G) No.
(C)
(G)

12. Sponsoring Organization Name and Address
Same as box 9

13. Type of Report & Period Covered

14.

15. Supplementary Notes

16. Abstract (Limit: 200 words)

Although agricultural output in Western Europe will continue to expand during the 1980's, the rate of growth may slow. This means a corresponding slower growth of U.S. feedstuff exports such as corn and soybeans for the region's livestock sector. These commodities, however, will remain the dominant U.S. exports to Western Europe. In contrast, the United States may benefit from slower growth of the region's crop sector as less competition will be encountered on third markets, especially for such internationally traded commodities as wheat. This study examines the performance and structural changes that took place in Western European agriculture during 1960-80.

17. Document Analysis a. Descriptors

Performances
Structure
International Trade
Commodities
Marketing

b. Identifiers/Open-Ended Terms

Agricultural Output
Western Europe
Crop Sector
EC Community

c. COSATI Field/Group 02-B

18. Availability Statement: National Technical Information Service, 5285 Port Royal Road, Springfield, VA 22161	19. Security Class (This Report) Unclassified	21. No. of Pages
	20. Security Class (This Page) Unclassified	22. Price

(See ANSI-Z39.18) See Instructions on Reverse

OPTIONAL FORM 272 (4-77)
(Formerly NTIS-35)
Department of Commerce

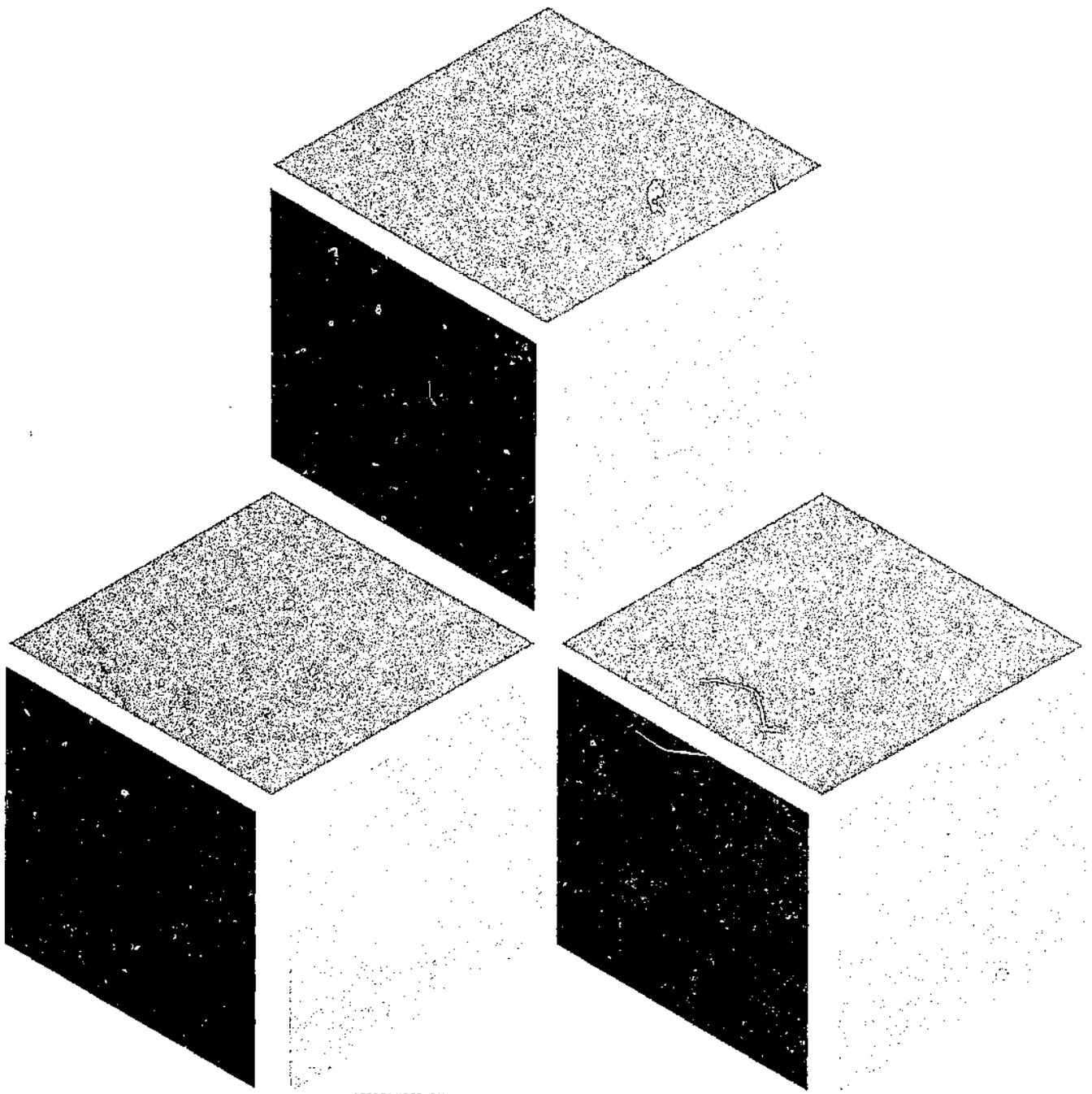
United States
Department of
Agriculture

Economic
Research
Service

Foreign
Agricultural
Economic
Report Number 184

Performance and Structure of Agriculture in Western Europe

Ruth Elleson



PERFORMANCE AND STRUCTURE OF AGRICULTURE IN WESTERN EUROPE. By Ruth Elleson. International Economics Division, Economic Research Service, U.S. Department of Agriculture, Foreign Agricultural Economic Report No. 184.

ABSTRACT

Although agricultural output in Western Europe will continue to expand during the 1980's, the rate of growth may slow. This means a corresponding slower growth of U.S. feedstuff exports such as corn and soybeans for the region's livestock sector. These commodities, however, will remain the dominant U.S. exports to Western Europe. In contrast, the United States may benefit from slower growth of the region's crop sector as less competition will be encountered on third markets, especially for such internationally traded commodities as wheat. This study examines the performance and structural changes that took place in Western European agriculture during 1960-80.

Key words: Western Europe, European Community, Common Agricultural Policy, European agriculture

ACKNOWLEDGMENTS

The author thanks Robert Frye and Reed Friend for their technical advice and editorial comments. Barbara Brygger typed the final draft.

HOW TO ORDER

Additional copies of this report may be purchased from:

National Technical Information Service
Identification Section
5285 Port Royal Road
Springfield, VA 22161

Ask for Performance and Structure of Agriculture in Western Europe, and indicate whether you want paper copies or microfiche. Cost per paper copy is $11.50; cost per microfiche copy is $4.50.

Washington, D.C. 20250

August 1983

GLOSSARY

European Community (EC)

Original six members:
- Germany (West)
- France
- Italy
- Netherlands
- Belgium
- Luxembourg

Members since January 1973:
- United Kingdom (England, Scotland, Wales, and Northern Ireland)
- Ireland
- Denmark

Member since January 1981:
- Greece

Proposed members:
- Portugal
- Spain

Other Western Europe:

- Norway
- Finland
- Switzerland
- Sweden
- Austria

1 hectare = 2.47 acres.
1 kilogram = 2.2 pounds.

Tonnage used in this report is metric (2,204.6 pounds).

CAP = Common Agricultural Policy of the European Community.

ECU = European Currency Unit. On April 9, 1979, the ECU became the standard value for transactions within the CAP--including the determination of support prices, import levies, and export subsidies. The value of the ECU is calculated from a weighted basket of all EC member currencies and was equal to about $1.21 at the end of March 1981.

CONTENTS

SUMMARY

Although agricultural output in Western Europe will continue to expand during the 1980's, the rate of growth may slow. For the United States, this means a corresponding decline in the growth of feedstuff exports such as corn and soybeans for the region's livestock sector. These commodities, however, will continue to dominate U.S. exports to the area. In contrast, the United States may benefit from slower growth of the region's crop sector as less competition will be encountered in third markets, especially for such internationally traded commodities as wheat.

Performance of Western Europe's agricultural sector during 1960-80 was impressive, with grain production increasing 74 percent (in real value); pork, 75 percent; and poultry, 330 percent. Self-sufficiency rates also climbed rapidly.

Increased use of highly specialized equipment such as harvesters, larger and more powerful tractors, and more widespread use of fertilizers greatly increased productivity in the crops sector. Rapid advances in technology and animal management created a well developed and highly productive commercial livestock sector.

Technical advances of the period more than offset declines in agricultural area and labor force. Agricultural area declined about 11 million hectares (ha), while reduction in the farm labor force for individual countries ranged from 35 to 65 percent. Many family and nonfamily (hired) workers left farms for jobs in the nonfarm sector. In general, farm operators retired or became part-time farmers.

In the European Community (EC), structural policies focus on encouraging farm enlargement and consolidation. Despite steadily declining farm numbers and increasing average farm size, the EC is a region of small farms. In 1975, there were 5.8 million farms, averaging 14.8 ha, compared with 7.1 million farms averaging 12.6 ha in 1966.

Most farms in Western Europe are owner operated, but rising farmland prices have induced many governments to encourage the renting of farmland as a means of expediting farm enlargement.

Performance and Structure of Agriculture in Western Europe

Ruth Elleson

INTRODUCTION

This report describes and analyzes longrun shifts in the performance and structure of Western Europe's agricultural sector. The analysis forms a basis for assessing the prospects for U.S. agricultural exports to the region, as well as U.S. competition from the region in other world markets.

Western Europe's strong economic expansion over the past 20 years has greatly increased its demand for meat. This has given rise to rapidly increasing investment in the region's commercial livestock sector, and provided markets for U.S. exports of feedstuffs.

In the crops sector, the increased use of mechanical equipment, fertilizers, and pesticides over the past 20 years has more than compensated for the decline in the farm labor force. The result has been sizeable productivity gains in some internationally traded crops. The region's wheat output, for example, now exceeds domestic requirements and competes with U.S. wheat in world markets.

Performance and structure, therefore, are basic to an understanding of the region's international trade in agricultural products. No meaningful long-term forecast of U.S. agricultural exports to Western Europe can be made without incorporating these factors into the forecasting model. This study provides researchers with guidance in constructing models, and also provides U.S. policymakers, exporters, and export-related businesses with broad guidelines for evaluating the region's potential as a market for U.S. agricultural products over the longer term.

The study does not attempt to quantify the link between structure and performance. Performance is evaluated in terms of the rate of growth of total agricultural output, shifts in the relative size of the crop and livestock sectors, trends in yields, and changes in self-sufficiency rates.

Agricultural policy, especially European Community (EC) policy, affects investment and output in the agricultural sector. But its specific impacts on performance are not quantitatively

identified or measured apart from other variables affecting performance. During the seventies, prices received by farmers under the EC's Common Agricultural Policy (CAP) rose sharply, but then moderated at the end of the decade. High price supports plus protection of farmers from outside competition through variable levies on competing imports created a favorable environment for expanding agricultural production. Export subsidies for many agricultural products allowed EC agriculture to compete in world markets and further encouraged output growth.

The term structure as used in this report includes: agricultural land--total area, average farm size, land tenure and land value; the agricultural labor force--total number of farmers, part-time farmers, and the age composition of farm operators; and fixed and consumable capital inputs--mechanization, irrigation, fertilizer, and feed grains. Changes in these structure variables over the past two decades are given comprehensive coverage. "One of the primary reasons for looking at farm structure is the likelihood that structure of the farm sector directly influences its performance (39)." 1/

The EC in this study includes the original six members (Belgium, the Federal Republic of Germany, France, Italy, Luxembourg, and the Netherlands) plus the three which acceded in 1973, Denmark, Ireland, and the United Kingdom. Greece, a member since January 1, 1981, is not included in the EC data used in this report. It is included in other Western Europe together with Sweden, Norway, Finland, Spain, Portugal, Austria, and Switzerland.

The data in the study include a number of different time periods and country groupings. This reflects the shift in country composition of the EC as well as the sporadic availability of data for some non-EC countries.

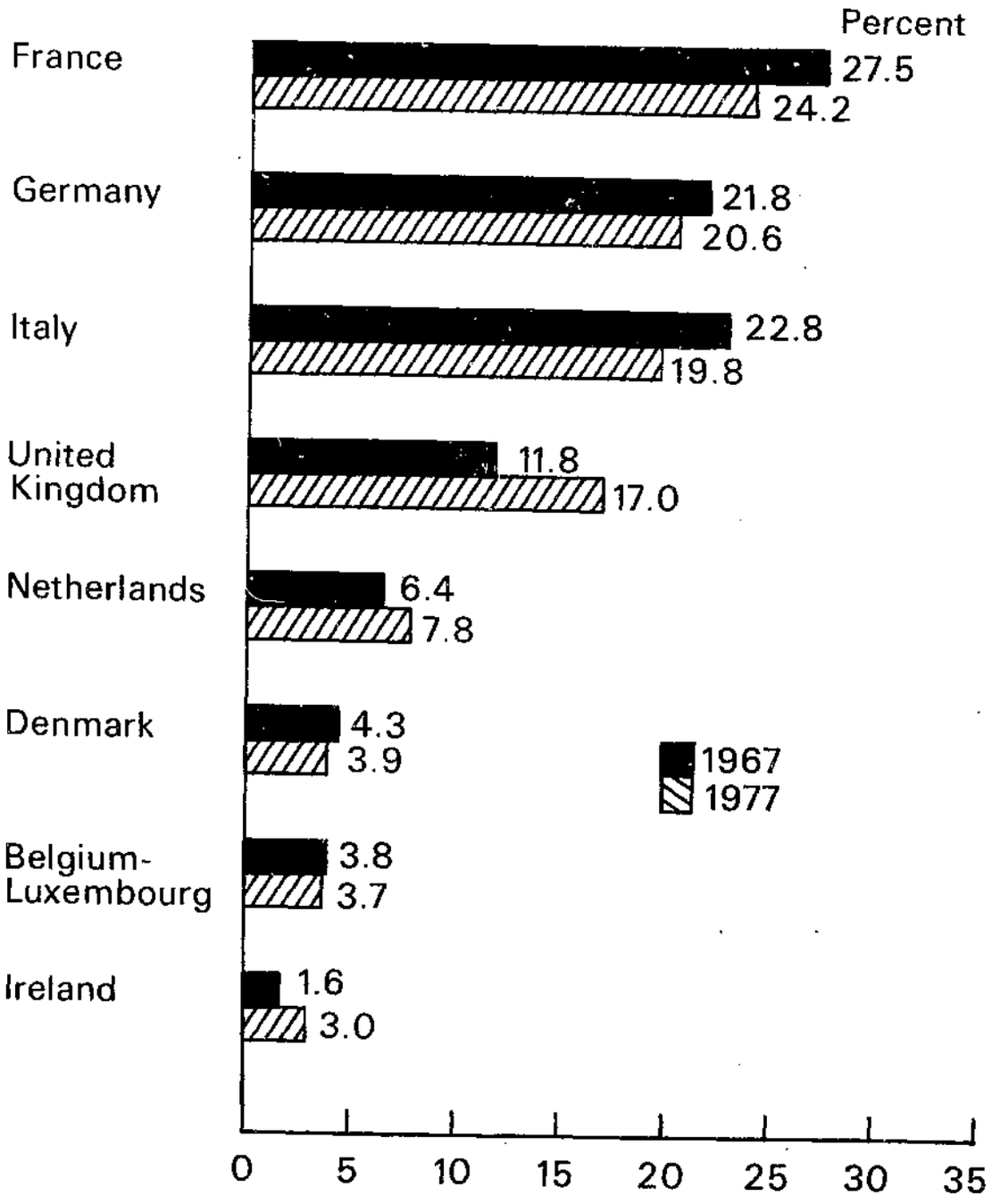
AGRICULTURE IN THE WEST EUROPEAN ECONOMY

The European Community is the most important group of agricultural-producing countries in Western Europe. In 1967, France, West Germany, and Italy together produced 73 percent of the total value of agricultural output in the six countries then constituting the EC. By 1977, however, these three countries' share of total agricultural output dropped to 65 percent given the enlargement of the community to include the United Kingdom, Denmark, and Ireland in 1973 (fig. 1).

The share of agriculture in the total economy declined significantly in all countries of Western Europe during 1960-79. While the value of the Gross Agricultural Product (GAP) increased during this period, Gross Domestic Product (GDP) increased much faster. In Germany, for example, GAP doubled during 1961-78, but GDP increased almost fourfold (28). GAP as a percentage of GDP was lowest in the more highly

1/ Underscored numbers in parentheses refer to items listed in the bibliography.

Figure 1
Share of Total Value of EC Agricultural Production by Country



Source: (38).

industrialized countries of northern Europe, and highest in the less industrialized countries of the Mediterranean and Ireland (table 1).

While GAP is a relatively small percentage of GDP in all EC countries, the entire agro-industrial complex--agriculture, the farm input industry, and the food processing industry--is a much higher percentage of GDP. For the EC as a whole, the entire agro-industrial complex constituted 11.2 percent of GDP in 1970 (the most recent year for which complete data are available). In agriculture, value added represented 5.1 percent of the total, the farm input industry, 1.9 percent, and the food processing industry, 4.2 percent (4).

Historical data are available only for agriculture and the food processing industry, the agrifood sector. In 1960, the agrifood sector's contribution to GDP averaged 12.2 percent for Germany, France, Italy, the Netherlands, Belgium, and the United Kingdom combined; agriculture contributed 56 percent,

Table 1--Agriculture's share of gross domestic product, Western Europe 1/

Country	1960	1970	1979
		Percent	
EC			
Germany	4.9	3.4	2.1
France	9.5	6.5	4.8
Italy	12.0	8.8	7.5
Netherlands	9.9	5.8	4.1
Belgium	6.0	3.6	2.6
Luxembourg	7.1	4.1	2.8
United Kingdom	2.7	2.5	2.2
Ireland	17.5	14.3	13.7
Denmark	12.2	7.3	4.3
Other Western Europe			
Greece	20.8	15.7	12.4
Norway	10.1	6.4	5.6
Austria	8.6	6.9	5.5
Finland	18.6	12.4	8.7
Portugal	26.0	15.9	2/11.2
Spain	16.7	11.1	3/9.8
Sweden	5.5	4.0	3.3

1/ Factor cost at current prices.
2/ 1976.
3/ 1975.
Source: (4)

and the food industry contributed 44 percent. By 1978, the agrifood sector's contribution to GDP for these same six countries averaged only 8 percent; agriculture contributed 47 percent, and the food industry, 53 percent. Agriculture's share, therefore, dropped to less than half of the total (table 2).

Corresponding to the decline in the GAP/GDP percentage, agricultural employment as a percentage of total employment showed a downward trend in all countries of the region. In 1968, 12 percent of the Community's (EC's) total workforce was employed in agriculture; by 1979, the portion had declined to 7.7 percent. The lowest percentages were in the United Kingdom and Belgium, and the highest in Ireland and Italy (table 3).

Employment in the agrifood sector of the six countries for which data are available (Germany, France, Italy, the Netherlands, Belgium, and the United Kingdom) averaged approximately 19 percent of total employment in 1961. By 1978, employment had declined to 10 percent of the total. The 9-percent drop in food industry employment, however, was small relative to the 53-percent drop in agricultural employment.

Agricultural gross fixed capital formation in the Community has increased substantially over the long term as a result of improved technology and the substitution of capital for labor. As a percentage of total fixed capital formation in the economy, however, agriculture's share declined in most EC countries. The outstanding exceptions were the Netherlands

Table 2--Agrifood industry's share of gross domestic product, selected EC countries 1/

Country	1960	1970	1977	1978
		Percent		
Germany	11.5	8.2	7.2	7.0
France	15.2	11.1	9.5	9.4
Italy	18.2	12.1	10,7	11.1
Netherlands	14.6	11.1	8.5	8.5
Belgium	11.8	8.5	6.5	6.5
United Kingdom	8.1	6.7	6.5	6.4
Average	12.2	9.2	8.1	8.0

1/ Factor cost at current prices for agriculture and food processing.
Source: (4).

and Denmark, where capital formation in agriculture as a percentage of the total increased during 1960-79 (table 4).

The value of EC-9 agricultural imports from non-EC countries increased 65 percent during 1973-79. Despite this impressive gain, the value of the EC's agricultural imports as a

Table 3--Agriculture's share of total EC employment

Country	1968	1973	1978	1979
		Percent		
Germany	9.9	7.5	6.5	6.2
France	15.7	11.1	9.1	8.9
Italy	22.9	18.3	15.5	14.9
Netherlands	7.9	6.8	6.2	6.0
Belgium	5.6	3.8	3.2	3.1
Luxembourg	9.9	8.1	5.6	6.4
United Kingdom	3.5	2.9	2.7	2.6
Ireland	29.4	24.8	22.2	21.0
Denmark	12.8	9.5	8.8	8.3
EC	12.0	9.2	8.0	7.7

Source: (4).

Table 4--Agriculture's share of gross fixed capital formation, selected EC countries

Country	1960	1970	1979
		Percent	
Germany	3.9	2.6	3.5
France	NA	4.8	4.3
Italy	8.3	6.1	7.8
Netherlands	4.0	5.0	5.6
Belgium	3.1	3.0	2.8
Luxembourg	6.1	3.7	3.2
Ireland	15.0	14.5	14.0
Denmark	4.4	6.0	7.2

NA = Not available.
Source: (4).

percentage of total imports fell from 32.7 percent in 1968 to 28.6 percent in 1973, and then to a low of 18.4 percent in 1979 (table 5). Agricultural imports of individual EC countries, which include imports from other EC countries, also declined as a percentage of total imports. Denmark was the only exception (4).

The value of EC-9 agricultural exports to non-EC countries as a percentage of total exports declined from 8.8 percent in 1968 to 7.9 percent in 1979. Over the past decade, agriculture's share of total exports have been the highest for Ireland and Denmark and the lowest for Germany.

PERFORMANCE OF THE AGRICULTURAL SECTOR

Agricultural output in Western Europe expanded rapidly during 1960-80. This long-term trend reflected shifts in consumer demand resulting from higher disposable incomes; changing dietary patterns; increased use of fertilizers, machinery, and other inputs; and changes in both domestic policy and in the CAP.

This section evaluates performance in terms of total output in contrast to the more commonly used measure--output per unit of input.

Agricultural Output

Agricultural output in Western Europe is dominated by grains, livestock and products, root crops, and fruits and vegetables. In 1980, the leading commodities were cow's milk, $13.6 billion; pork, $10.2 billion; beef and veal, $10.1 billion; and wheat, $5.8 billion. The region's leading agricultural producers were France, West Germany, Italy, and the United Kingdom. Spain was the only non-EC country with a sizeable agricultural output.

Table 5--Agriculture's share of EC imports and exports

Country	Imports				Exports			
	1968	1973	1978	1979	1968	1973	1978	1979
	Percent							
Germany	26.8	22.8	18.4	16.1	3.8	5.2	5.5	5.6
France	21.6	18.8	17.0	14.9	19.6	21.1	21.1	17.0
Italy	30.5	30.5	22.9	21.6	9.6	9.2	7.4	8.3
Netherlands	20.0	19.6	18.2	17.3	28.8	26.3	25.3	23.5
Belgium-Luxembourg	18.2	16.5	15.1	14.4	10.3	11.0	10.7	10.3
United Kingdom	32.8	27.4	20.0	18.1	7.6	8.7	8.8	7.9
Ireland	21.7	18.1	14.7	14.5	56.1	46.0	42.4	39.1
Denmark	14.9	15.5	15.5	15.2	47.1	40.3	39.8	38.1
EC	32.7	28.6	20.2	18.4	8.8	9.2	7.6	7.9

Source: (4).

The leading commodity categories by country for 1960 and 1980 are given in tables 6, 7, and 8. Fruits and vegetables have been omitted because of the lack of comprehensive data. Total grain production in Western Europe increased $5.8 billion in 1961-65 prices over the 20-year period and major livestock and products increased $15.8 billion. The production of root crops, however, declined $711 million, largely because of the drop in potato output. Most of the output gain took place in EC countries, but Spain was an outstanding performer in the non-EC group. Looking at individual commmodities, the totals reveal sizeable increases in output during 1960-80 for all commodities except rye, oats, and potatoes, commodities with a declining demand.

France, the leading agricultural producer, has the largest land area of all countries in Western Europe. The country has ideal terrain and climatic conditions with generally fertile soils, ample precipitation, and mild temperatures. These favorable natural conditions permit a well-rounded agricultural sector. In 1980, the country was the largest West European producer of wheat, corn, and sugarbeets in the crops sector, and beef and veal, mutton and lamb, and cow's milk in the livestock sector. France is also second only to Italy in fruit and vegetable production.

Germany, the second largest producer, has a relatively unfavorable agricultural environment. The country has less than half the land area of France (almost two-thirds of which is hilly or mountainous), soils of relatively low fertility, and a short growing season in many parts of the country. Climatic conditions are favorable only in the coastal regions and central plains and valleys (21). Despite these environmental handicaps, the value of West Germany's crop production during the late seventies was almost three-fifths that of France. On their limited land, West German farmers obtained very high yields--for some crops twice as high as those in the United States (2).

Italy and the United Kingdom, the third and fourth largest agricultural producers, have quite dissimilar agricultural sectors. The differences are accounted for primarily by climate, topography, population density, and farm structure. The United Kingdom's temperate, moist climate with high humidity and limited sunshine favors the growth of grass. Hay and pasture cover about three-fourths of the agricultural area, creating the basis for the third largest livestock industry in Western Europe (1). Since the industry is based on grazing, however, output growth is limited by the amount of available pastureland. Over the past two decades, the increase in the value of livestock production in the United Kingdom has not been as great as in some other countries.

In the crops sector, the United Kingdom's damp climate does not favor the ripening of grains except in the dryer parts of eastern England where most of the wheat and barley is grown. Despite climatic limitations, the country ranked fourth in the

Table 6--Value of grain production in Western Europe

Year and country	Total	Wheat	Rye	Corn	Barley	Oats	Other grains
			Million dollars 1/				
1960:							
France	1,838	947	31	219	429	189	23
Germany	1,551	521	372	2	325	203	128
Italy	1,191	761	9	358	23	40	2/
United Kingdom	653	222	1	2/	280	136	14
Denmark	316	23	33	2/	174	42	44
Belgium-Luxembourg	177	82	17	2/	35	41	2
Netherlands	172	60	41	2/	27	32	12
Ireland	89	36	2/	2/	28	25	2/
EC	5,987	2,652	504	579	1,321	708	223
Spain	612	338	32	91	119	32	2/
Greece	211	147	2	26	20	14	2
Portugal	121	58	13	41	4	5	2/
Other 3/	930	267	91	19	238	256	59
Non-EC	1,874	810	138	177	381	307	61
Total Western Europe	7,861	3,462	642	756	1,702	1,015	284
1980:							
France	3,804	1,943	30	749	878	131	73
Germany	2,408	887	218	63	910	262	68
Italy	1,744	1,008	4	602	83	42	5
United Kingdom	1,261	555	1	2/	663	39	3
Denmark	468	52	16	2/	391	8	1
Belgium-Luxembourg	192	91	4	3	80	11	3
Netherlands	129	91	4	2/	26	8	2/
Ireland	120	19	2/	2/	95	6	2/
EC	10,126	4,646	277	1,417	3,126	507	153
Spain	1,416	518	22	206	608	45	17
Greece	442	256	1	97	80	8	2/
Portugal	105	39	12	44	3	7	2/
Other 3/	1,588	365	90	120	643	341	29
Non-EC	3,551	1,178	125	467	1,334	401	46
Total Western Europe	13,677	5,824	402	1,884	4,460	908	199

1/ In 1961-65 prices, constant dollars.
2/ Less than $0.5 million.
3/ Austria, Norway, Sweden, Switzerland, Finland.
Source: (38).

Table 7--Value of major livestock and products production in Western Europe

Year and country 1/	Total	Beef and veal	Mutton and lamb	Pork	Poultry meat	Cow's milk	Eggs
			Million dollars 2/				
1960:							
Germany	5,984	1,379	23	1,958	68	2,214	342
France	5,600	1,640	220	991	228	2,252	269
United Kingdom	3,070	800	233	466	175	973	423
Italy	2,995	767	65	406	250	1,244	263
Netherlands	1,538	301	9	352	41	670	165
Denmark	1,074	143	1	422	22	416	70
Belgium-Luxembourg	997	298	3	212	42	368	74
Ireland	393	87	31	65	10	173	27
EC	21,651	5,415	585	4,872	836	8,310	1,633
Spain	981	194	187	197	10	218	175
Portugal	287	84	48	94	11	31	19
Greece	243	38	87	27	15	35	41
Other 3/	3,363	656	31	611	39	1,851	175
Non-EC	4,874	972	353	929	75	2,135	410
Total Western Europe	26,525	6,387	938	5,801	911	10,445	2,043
1980:							
France	8,574	2,243	335	1,433	817	3,278	468
Germany	8,550	2,015	37	2,821	251	2,818	608
Italy	5,450	1,631	119	887	1,053	1,290	470
United Kingdom	4,216	994	258	647	430	1,424	463
Netherlands	3,043	495	16	950	212	1,147	223
Belgium-Luxembourg	1,533	422	4	591	70	351	95
Denmark	1,394	225	1	691	45	395	37
Ireland	852	356	34	99	20	322	21
EC	33,612	8,381	804	8,119	2,898	11,025	2,385
Spain	2,983	460	225	662	594	541	501
Portugal	680	197	56	149	180	55	43
Greece	678	128	152	137	95	75	91
Other 3/	4,419	939	43	1,088	152	1,948	249
Non-EC	8,760	1,724	476	2,036	1,021	2,619	884
Total Western Europe	42,372	10,105	1,280	10,155	3,919	13,644	3,269

1/ Items in stub are ranked by total value.
2/ In 1961-65 prices, constant dollars.
3/ Austria, Norway, Sweden, Switzerland, Finland.
Source: (38).

Table 8--Value of major root crops production in Western Europe

Year and country 1/	Total	Potatoes	Sugarbeets
		Million dollars 2/	
1960:			
Germany	1,167	933	234
France	791	506	285
Italy	447	298	149
United Kingdom	445	320	125
Netherlands	222	142	80
Belgium-Luxembourg	124	72	52
Denmark	113	75	38
Ireland	109	90	19
EC	3,418	2,436	982
Spain	342	263	79
Portugal	55	55	3/
Greece	33	33	3/
Other 4/	614	503	111
Non-EC	1,044	854	190
Total Western Europe	4,462	3,290	1,172
1980:			
Germany	656	342	314
France	608	245	363
Italy	457	218	239
United Kingdom	381	264	117
Netherlands	302	213	89
Belgium-Luxembourg	143	58	85
Denmark	85	30	55
Ireland	69	49	20
EC	2,701	1,419	1,282
Spain	490	346	144
Greece	100	74	26
Portugal	59	59	3/
Other 4/	401	256	145
Non-EC	1,050	735	315
Total Western Europe	3,751	2,154	1,597

1/ Items in stub are ranked by total value.
2/ In 1961-65 prices, constant dollars.
3/ Less than $0.5 million.
4/ Austria, Norway, Sweden, Switzerland, Finland.
Source: (38).

production of grains and roots crops in both 1960 and 1980, with sizeable gains in wheat and barley production.

The topography of Scotland lends itself to sheep raising, since much of the land lies well above 200 meters (43). The United Kingdom was Western Europe's largest producer of mutton and lamb in value in 1960, and the second largest producer in 1980.

Italy has two separate and distinct agricultural regions. The southern region, including the islands, has a mountainous and warm Mediterranean climate with hot, dry summers. Population pressures in this area have forced the country to devote much of its resources to land reclamation and improvement by means of drainage, irrigation, flood control, and elaborate terracing of hills. Here, labor-intensive crops such as fruits, vegetables, cotton, and tobacco predominate. Italy is Western Europe's number one producer of fruits and vegetables (35). Northern Italy, where the climate is temperate and the terrain more favorable, has a well-integrated grain-livestock economy closely resembling that of continental Europe.

The Netherlands, the fifth largest agricultural producer in the EC, has a large agricultural output relative to the size of the country. The Dutch climate is particularly well suited to agriculture with rainfall averaging 24 to 30 inches in most parts of the country, evenly distributed throughout the year. Dutch soils, inherently unproductive, return high yields with heavy applications of fertilizer and organic residues. Crop output per unit of land is one of the highest in Western Europe (19). Livestock, however, is the most dynamic sector of Dutch agriculture. The value of livestock and products in real terms has nearly doubled since 1960. Because of the limited land area, production is intensive. Pigs and chickens are confined, usually indoors, and fed prepared feedstuffs. Cattle usually graze outdoors in small areas that have been heavily fertilized.

Denmark and Belgium-Luxembourg each have approximately the same share of total EC agricultural output, but the Danish cereal sector is much larger because of more favorable natural conditions. Danish barley production, the fourth largest in the EC, increased by almost 125 percent between 1960 and 1980. Pork production in both countries expanded rapidly over the past two decades, reaching record highs in 1980 (22).

Ireland has the smallest share of agricultural output in the Community. With climatic conditions very similar to that of the United Kingdom, Ireland's grain sector is small, with little or no potential for major expansion. Any significant increase in agricultural output can only come from the livestock sector. Irish beef and veal production has grown rapidly in recent years, but is still relatively small (1).

Spain, the largest of the non-EC countries, has about the same land area as France but is not as well suited to agriculture.

In the north, precipitation is ample but much of the land is too mountainous for cultivation. In central and southern Spain, precipitation is deficient, poorly distributed, and much of the land is so rough and barren that it can only be used for grazing. The development and maintenance of irrigation systems, however, have made many of these dry areas the most productive in Europe (23).

Production Growth Trends

The growth of agricultural output during 1960-79 showed common patterns as well as diversity in Western Europe (figs. 2, 3, and 4). The upward trend in output reflected an increase in consumer demand resulting from higher disposable incomes and changing dietary patterns, greater use of fertilizers and machinery, and CAP policies and various government development programs. Only Portugal's output showed little or no growth.

Another common pattern for most countries was the sizeable short-term output declines in 1976 caused by a severe drought following a dry winter. The drought plus unusually high temperatures severely affected the output of corn, barley, potatoes, and vegetables. Milk output also declined as more than the usual number of cows were slaughtered (4).

Despite these similarities, growth patterns in agricultural output differed significantly among countries over the two decades. The indices of output increased at more uniform rates in the sixties, especially in the original six EC countries, than they did in the seventies.

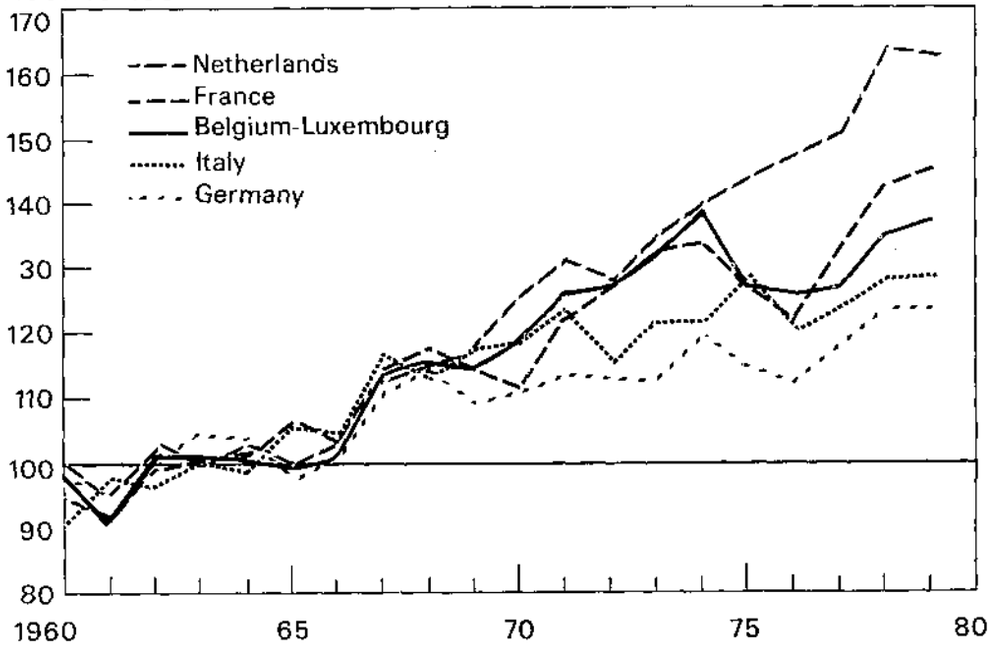
The Netherlands had the most dynamic agricultural economy of the EC-6 during the seventies. The livestock sector, concentrating on pork and poultry and using large-scale modern technology and imported feed, exhibited phenomenal growth. The crops sector expanded only moderately but glasshouse cultivation of high value crops such as vegetables and flower bulbs increased dramatically after 1960 (19). Output was unaffected by the 1976 drought because of the unique composition of Dutch agriculture, as well as the extensive use of irrigation.

Both France and Belgium-Luxembourg's output growth ran above average during the seventies. Production of grains and sugarbeets in the crops sector and poultry and milk in the livestock sector expanded rapidly in France. France's more favorable farm structure, combined with fertile soil and mild climate, enabled the country to take full advantage of CAP price policies. Belgium-Luxembourg's expansion of agricultural output was concentrated largely in the livestock sector, principally poultry and milk production.

Of the three newer EC members, Ireland's rate of growth of agricultural production far surpassed that of the United Kingdom and Denmark. Ireland's output growth was almost exclusively in beef, veal, and milk production (4).

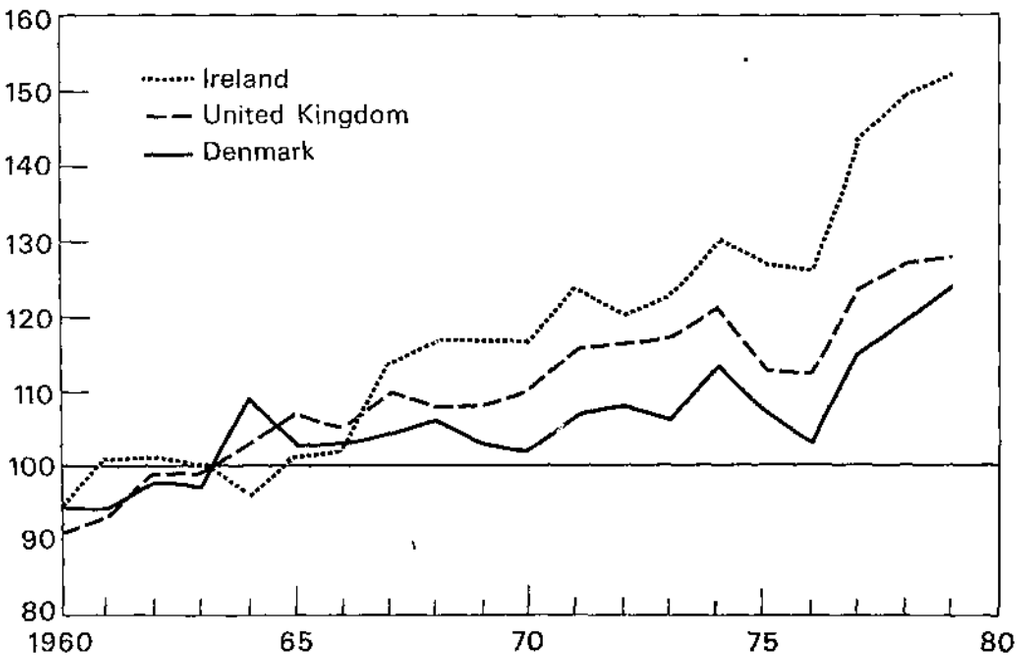
Spain's livestock and crop sectors have benefited from government policies begun in 1959. The government actively

Figure 2
Indices of Agricultural Production, Original European Community



Source: (38).

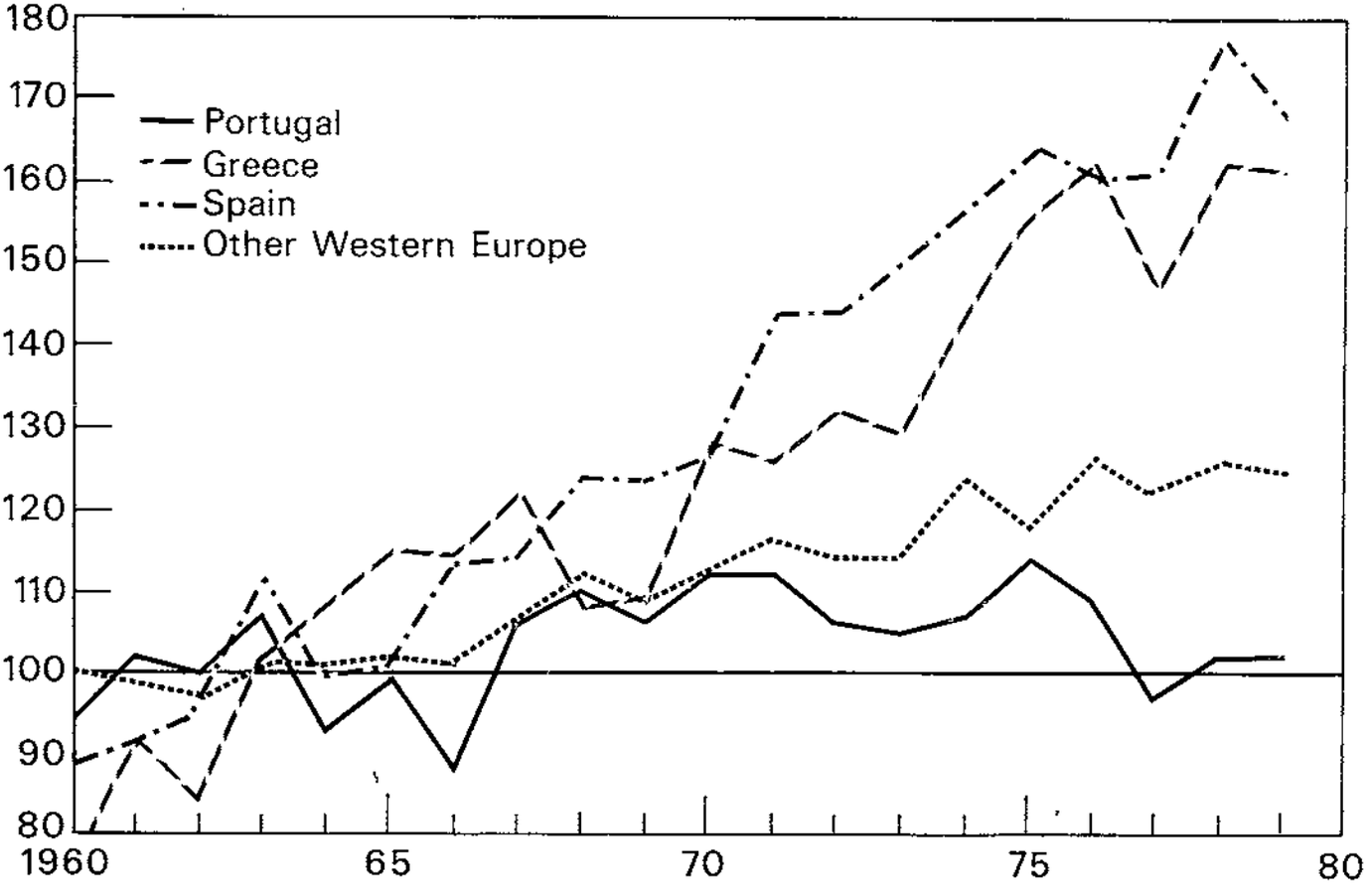
Figure 3
Indices of Agricultural Production, Community Members Since 1973



Source: (38).

Figure 4
Indices of Agricultural Production, Spain, Greece, Portugal and Other Western Europe 1/

1961-65=100



1/ Sweden, Switzerland, Finland, Austria, Norway.

Source: (38).

promoted agricultural development by abolishing many internal controls on marketing and by permitting large imports of breeding stock and animal feed to aid in livestock development (23). The livestock sector has thus grown rapidly in almost all categories. The crop sector has also benefited from government policies, especially during the seventies, with output of grains, citrus fruit, and other fruits and vegetables expanding rapidly.

Greek agricultural output has also responded favorably to government policies. Minimum price supports and income support payments, in addition to various other measures, have resulted in significant expansion of corn, barley, sugarbeets, pork, and poultry production (33).

Portugal's stagnating agricultural sector reflects structural deficiencies combined with poor weather and reduced yields since 1975. Since the need for technical and financial services to the agricultural sector was not fully recognized until after the 1974-75 Revolution (drastic changes in the political and economic system), there was little experience upon which to build viable programs quickly. Except for the organized labor movement in the south, which carried out massive land reform, and the existence of some specialized cooperatives, Portuguese farmers do not have local organizations to serve them and to represent their economic interests (42).

Portuguese production of virtually every major crop declined over the 20-year period under consideration. Output of wheat, rye, and barley each fell by about 50 percent, oats by 30 percent, and corn by 20 percent. Moderate strength in the livestock sector was not sufficient to offset the decline in the crops sector.

For Greece, Spain, and Portugal, entrance into the EC will require adapting their national agricultural policies after a period of transition to CAP regulations. The impact on certain crops and livestock products may be significant, but this impact is not identified or measured in this study.

Livestock and Crop Sectors

During 1967-77, the value of the Community's agricultural output averaged approximately 60 percent livestock and 40 percent crops. There was, however, considerable variation among countries, with the highest livestock-crop ratios in northern Europe and the lowest in southern Europe. Ireland's livestock-crop ratio was the highest and Italy's the lowest (table 9). The livestock sectors of Spain, Greece, and Portugal accounted for less than 50 percent of total agricultural value.

The heavier concentration of livestock in northern Europe reflects more advanced economic development. The region's per capita income is high, and the demand for meat is strong. On the supply side, the large-scale intensive livestock industries, such as exist in Germany, the Netherlands,

Table 9--Crops and livestock sectors by value, EC countries

Commodity	Germany		France		Italy		Netherlands		Belgium	
	1967	1977	1967	1977	1967	1977	1967	1977	1976	1977
	Percent									
Grains	9	9	14	19	12	9	5	2	8	6
Roots and tubers	7	6	4	6	5	4	9	7	7	6
Fruits and vegetables	7	5	10	7	20	19	12	10	17	10
Other	9	12	15	13	27	24	9	13	5	8
Total crops	32	32	43	45	64	56	35	32	37	30
Meat	40	42	37	36	22	29	35	39	39	49
Animal products	28	26	20	19	14	15	30	29	24	21
Total livestock	68	68	57	55	36	44	65	68	63	70
EC	100	100	100	100	100	100	100	100	100	100

	Luxembourg		United Kingdom		Ireland		Denmark		EC	
	1967	1977	1967	1977	1967	1977	1967	1977	1967	1977
	Percent									
Grains	9	4	12	14	7	9	9	15	11	12
Roots and tubers	3	1	6	9	6	5	3	4	6	6
Fruits and vegetables	6	4	10	9	3	4	3	3	12	9
Other	7	11	4	5	2	1	6	5	13	13
Total crops	25	20	32	37	18	19	21	27	42	40
Meat	40	39	36	34	55	50	52	49	35	37
Animal products	35	41	32	29	27	31	27	24	23	23
Total livestock	75	80	68	63	82	81	79	73	58	60
EC	100	100	100	100	100	100	100	100	100	100

Source: (12).

Belgium, and Luxembourg, require substantial investment funds and foreign exchange which are more available in the advanced industrialized nations.

There are exceptions to this generalization. Ireland, one of the least economically developed countries in northern Europe, has the highest livestock percentage. Large areas of pastureland make possible a relatively low-cost extensive livestock industry.

Italy is unique. The country's livestock sector is generally underdeveloped, but northern Italy, with a more advanced economy than the south, has invested heavily in capital to create one of the most modern, intensive livestock industries in Western Europe.

The southern European countries (including southern Italy), in contrast, are less economically developed. Relatively weak domestic demand for meat in these countries reflects low per capita income. On the supply side, these countries also lack both financial resources to develop a high-cost intensive livestock sector, and suitable topography and climate to develop a low-cost extensive livestock sector. Meat production in these countries, therefore, has generally increased slowly and remained relatively low. For the most part, their livestock sectors are characterized by a few animals on many small farms utilizing locally available feed.

The situation in the southern European countries is changing, however. Economic growth in recent years has increased the demand for meat and provided more capital for expanding the poultry and pork industries. The Governments of both Spain and Greece are also actively promoting development of these industries.

The Mediterranean countries have developed a large crop sector over many years. A warm climate, rugged topography, small farm size, and high population density have permitted these countries to specialize in labor-intensive vineyard and orchard crops--commodities in which they have a comparative advantage and a ready market, especially in northern Europe.

Livestock-crop ratios change very slowly over time. During 1967-77, the Netherlands, Belgium, Luxembourg, and Italy made modest gains in their livestock sectors. Many small holdings turned to intensive hog and poultry production as profitability of production increased. Hog production was also stimulated by the practice of contracting with feed producers and/or meat processors, especially in Belgium. Germany, France, and Ireland experienced little or no change in their livestock-crop ratios during this period; the United Kingdom and Denmark were the only countries to experience declines (36). There were two reasons for the declines. First, rising milk yields and surplus problems in both countries prompted corrective policy measures to reduce livestock numbers. This contributed to a longrun decline in

the cattle industry. Second, pig production was adversely affected in both countries by severe price squeezes.

Production Patterns

Agricultural production in the EC changed significantly over the past two decades. Shifts occurred in the location of production, yields, the number of hectares harvested, and the number of animals slaughtered or milked. These changes are mostly the result of economic factors such as price relationships and market conditions; technological factors such as improved seed varieties, better farming equipment and techniques, and increased use of fertilizer, herbicides, and irrigation; and institutional factors, including EC and national agricultural policies.

The CAP's favorable price policy has significantly affected output structure in the EC countries since its adoption in 1962, and especially after 1967 when common pricing came into full operation.

Technological Changes

New technology directly affected agricultural productivity in Western Europe during the sixties and the seventies. Capital was substituted for both land and labor, thereby changing the mix of inputs used in farming. Chemical and biological developments, for example, encouraged the substitution of capital for land, resulting in higher yields per hectare (ha). Technological innovations such as machines substituted capital for human labor, resulting in increased production per work-hour.

Land-saving technology now being used includes new crop varieties, improved animal breeding, fertilizer, pesticides, disease control, and nutritional advances. Laborsaving technology is primarily mechanical in nature, with machinery and equipment reducing not only the total labor required in production, but also the unpleasantness of many tasks.

The impact of technological change has been especially evident in commodity specialization and farm size. For many years, EC farmers practiced crop rotation and diversification to conserve soil fertility, prevent erosion, and control pests. Most of these results can now be achieved with chemical fertilizers, insecticides, and herbicides, permitting farmers to grow the same crop year after year with excellent results. Farmers may now maximize earnings by specializing in the most profitable crops. Similarly, new disease-control techniques have given hog and poultry farmers unprecedented opportunities to specialize on relatively small farms. The region's poultry and hog industries would have been impossible without the scientific advancements in disease control that allow more animals to be raised under a single roof.

Improvements in farm machinery have been important in fostering larger size specialized operations. For example, investing in a specialized piece of equipment means more of the commodity for which the machine was intended will probably be produced, and less of other commodities. Since a machine

is more economical on a particular size farm, expansion to that size is encouraged. Thus, specialization and increasing farm size usually occur together.

Future technological breakthroughs are not easy to predict, but such advances will undoubtedly continue to mean higher yields, larger farms, and greater specialization in both crop and livestock production.

Crop Production

Over the past two decades, shifts occurred in the shares of individual crops produced by Western Europe's leading producers. Most countries, however, maintained their 1961-65 rankings for each crop category. Yields increased universally, but variations among commodities and among countries for the same commodity were considerable (table 10).

Wheat--Wheat is the most widely cultivated crop in the EC. Over 11 million ha were harvested annually during 1978-80. France, with the most favorable climate and terrain for large-scale production, produced more than twice as much wheat as Italy, the second largest producer. Between the early sixties and the late seventies, the yield of French wheat (primarily soft wheat) increased 70 percent, the largest increase of any EC country. This was due primarily to new technology and, in particular, to improved seed.

Corn--EC corn production increased from 6.5 million metric tons during 1961-65 to 16.7 million in 1978-80. Production is concentrated largely in France and Italy. Corn area in France doubled over the past two decades. Trends in land use suggest that much of this increase took place in the northern parts of the country on land previously planted to forage crops, rye, oats, and potatoes. Rapidly increasing yields, the result of hybrid seed requiring a relatively short growing season, and strong demand made the returns to corn production higher than for most other crops (37).

The increase in Italian corn production was small relative to that of France. Besides poor farm structure the major constraint on the expansion of corn in Italy was lack of water. Rainfall is generally scarce in the summer, the most crucial period of the corn growing season. Italy's corn area has also shifted northward, but even there supplemental water is usually required (37).

Barley--EC area under barley increased by 2.7 million ha between the early sixties and the late seventies--the largest increase for any major crop. The region's two largest producers, the United Kingdom and France, each increased their barley area by approximately one-half million ha, mostly during the sixties. Virtually no increase took place in the seventies as both countries had already reached an equilibrium in barley area.

Germany's barley area increased steadily during the sixties and seventies and was around 800,000 ha larger by the late

Table 10--EC crop production and yields

Commodity and country	Production				Yields		
	Quantity		Share by country		1961-65	1978-80	Change from 1961-65 to 1978-80
	1961-65	1978-80	1961-65	1978-80			
	1,000 mt		Percent		Kg/ha		Percent
Wheat:							
France	12,495	21,344	39.2	43.8	2,930	4,999	70.6
Italy	8,857	9,254	27.8	19.0	2,014	2,690	33.6
Germany	4,607	8,118	14.5	16.7	3,311	4,956	49.7
Other	5,876	9,991	18.5	20.5	4,033	5,369	33.1
EC	31,835	48,707	100.0	100.0	2,766	4,345	57.1
Corn:							
Italy	3,633	6,325	56.3	37.9	3,280	6,801	107.3
France	2,760	9,657	42.8	57.8	3,019	5,212	72.6
Other	57	720	.9	4.3	3,353	5,760	71.8
EC 1/	6,450	16,702	100.0	100.0	3,163	5,743	81.6
Barley:							
United Kingdom	6,670	9,923	30.3	25.1	3,588	4,233	18.0
France	6,594	11,436	30.0	28.9	2,802	4,145	47.9
Germany	3,462	8,539	15.7	21.6	3,011	4,310	43.1
Other	5,255	9,712	24.0	24.5	3,460	3,946	14.0
EC	21,981	39,610	100.0	100.0	3,194	4,150	29.9
Rye:							
Germany	3,031	2,223	70.0	73.1	2,664	3,787	42.2
Other	1,298	820	30.0	26.9	2,261	3,333	47.4
EC 2/	4,329	3,043	100.0	100.0	2,529	3,653	44.4
Oats:							
France	2,583	1,879	29.4	29.1	2,067	3,343	61.7
Germany	2,135	2,951	24.9	45.7	2,881	4,081	41.7
Other	4,010	1,622	45.7	25.1	2,689	3,238	20.4
EC	8,778	6,452	100.0	100.0	2,509	3,613	44.0
Sugarbeets:							
France	14,391	25,632	28.7	31.5	37,821	46,689	23.4
Germany	11,187	18,745	22.3	23.0	37,875	47,217	24.7
Other	24,609	37,008	49.0	45.5	35,717	43,796	22.6
EC	50,187	81,385	100.0	100.0	36,767	45,441	23.6
Potatoes:							
Germany	22,230	8,640	40.1	24.5	24,699	29,091	17.8
France	13,297	7,467	24.0	21.1	17,212	27,862	61.9
United Kingdom	7,349	6,714	13.3	19.0	22,910	32,279	40.9
Other	12,500	12,505	22.6	35.4	17,908	27,913	55.9
EC	55,376	35,326	100.0	100.0	20,571	28,932	40.6
Rapeseed							
France	196	774	54.4	52.0	1,829	2,546	39.2
Germany	100	343	27.8	23.0	2,152	2,680	24.5
Other	64	372	17.8	25.0	2,000	2,548	27.4
EC 3/	360	1,489	100.0	100.0	1,935	2,576	33.1
Vegetables: 4/							
Italy	9,859	13,754	35.1	45.1	NA	NA	NA
France	7,374	6,924	26.2	22.7	NA	NA	NA
United Kingdom	3,019	3,887	10.7	12.8	NA	NA	NA
Other	7,846	5,912	27.9	19.4	NA	NA	NA
EC	28,098	30,477	100.0	100.0	NA	NA	NA
Fruit: 5/							
Italy	16,806	20,275	46.2	49.7	NA	NA	NA
France	14,356	15,042	39.5	36.1	NA	NA	NA
Other	5,207	5,899	14.3	14.2	NA	NA	NA
EC	36,369	41,216	100.0	100.0	NA	NA	NA

NA = Not available.
1/ Excludes Denmark and Ireland.
2/ Excludes Ireland.
3/ Excludes Ireland, Italy, and Belgium-Luxembourg.
4/ Includes melons.
5/ Excludes melons.
Source: (17).

seventies. An unfavorable climate for corn, coupled with strong domestic demand from the livestock and brewery industries, were significant factors in the country's expanding barley production. Among the smaller producers, Denmark's barley area also increased significantly, reflecting strong demand from the hog sector.

Oats, Rye, and Potatoes--The areas planted in oats, rye, and potatoes registered steady long-term declines. The total area in these crops, however, still remains large--over 4 million ha during 1978-80. Decreasing demand for these crops is expected to lead to further declines in both area and output.

Sugarbeets--Sugarbeet production in the EC increased from 50 million to over 80 million metric tons during the period under consideration. France and Germany accounted for almost two-thirds of the increase.

In 1968, the CAP established production quotas and minimum prices for sugarbeets. The large quotas and high minimum prices have been largely responsible for expansion in sugarbeet area in virtually all EC countries (40).

Fruits and Vegetables--Italy is the EC's leading producer of fruits and vegetables, with France second. As more land is irrigated, Italy's leadership is likely to grow because of the country's favorable environment.

Livestock Production

Livestock enterprises in the EC are relatively small with far fewer animals per unit than in the United States (table 11). Poultry and hog production are exceptions, as rapid expansion of commercial production has occurred on highly specialized farms, utilizing the most advanced technology and processed feed.

Beef--EC beef production is primarily a joint product of the dairy industry. Some specialized beef herds are found in the United Kingdom, Ireland, France, and northern Italy where there is extensive grazing land. These herds, however, represent a relatively small percentage of total EC cattle. Typically, a farm has a few cows which are fed on permanent pasture and/or rotation forage and home-produced grains, and milk is sold daily. The calves are fed farm-produced milk and many are sold as veal. Calves kept to older ages consume farm-produced forage supplemented with homegrown grains, fodder beets, and in some areas, sugarbeet tops. These animals, together with the culled dairy cows, constitute a major share of the home-produced beef eaten by EC consumers (35).

There are several reasons for the limited number of beef herds in the Community. First, the small size of most EC farms precludes production of beef cattle on extensive pasture or range units, the most economical method of production. Also, these small farmholders need the regular income provided by daily milk sales. Beef cattle, on the other hand, must be fed

Table 11--EC animal production and yields

Commodity and country	Production				Yields		
	Quantity		Share by country				
	1961-65	1978-80	1961-65	1978-80	1961-65	1978-80	Change from 1961-65 to 1978-80
	1,000 mt		Percent		Kg/animal		Percent
Beef and veal:							
France	1,433	1,769	29.2	26.4	183	228	24.6
Germany	1,122	1,465	22.9	21.9	192	269	40.1
United Kingdom	897	1,058	18.3	15.8	222	258	16.2
Italy	679	1,086	13.8	16.2	184	220	19.6
Other	774	1,326	15.8	19.8	184	234	27.2
EC	4,905	6,704	100.0	100.0	192	240	25.0
Pork:							
Germany	1,799	2,677	31.4	29.1	76	72	-5.3
France	1,246	1,826	21.8	19.8	92	89	-3.3
Italy	422	1,022	7.3	11.1	103	103	0
Netherlands	419	1,090	7.3	11.8	81	84	3.7
Other	1,843	2,589	32.2	28.1	65	68	4.6
EC	5,729	9,204	100.0	100.0	77	78	1.3
Poultry:							
France	495	1,079	33.2	28.4	NA	NA	NA
United Kingdom	355	746	23.8	19.6	NA	NA	NA
Italy	342	979	22.9	25.8	NA	NA	NA
Other	299	997	20.1	26.2	NA	NA	NA
EC	1,491	3,801	100.0	100.0	NA	NA	NA
Milk:							
France	25,091	32,143	29.1	29.7	2,552	3,200	25.4
Germany	20,586	23,994	23.8	22.2	3,517	4,403	25.2
United Kingdom	12,011	15,940	13.9	14.7	3,474	4,752	36.8
Other	28,638	36,078	33.3	33.4	3,236	3,691	14.1
EC	86,326	108,155	100.0	100.0	3,084	3,779	22.5
Cheese:							
France	544,200	1,110,000	30.0	32.6	NA	NA	NA
Italy	437,134	598,942	24.1	17.6	NA	NA	NA
Germany	339,200	741,407	18.7	21.8	NA	NA	NA
Netherlands	216,360	433,012	12.0	12.7	NA	NA	NA
Other	274,056	520,981	15.2	15.3	NA	NA	NA
EC	1,810,950	3,404,342	100.0	100.0	NA	NA	NA
Eggs:							
Germany	801,146	811,236	26.9	20.8	NA	NA	NA
France	577,140	831,353	19.4	21.3	NA	NA	NA
United Kingdom	549,200	811,000	18.4	20.8	NA	NA	NA
Italy	417,118	637,940	14.0	16.3	NA	NA	NA
Other	635,286	812,163	21.3	20.8	NA	NA	NA
EC	2,979,890	3,903,692	100.0	100.0	NA	NA	NA

NA = Not available.
Note: Totals may not add because of rounding.
Source: (17).

and maintained for long periods of time before any income can be realized. A large number of calves, however, are slaughtered for veal. Second, CAP policy does not favor beef herds. For example, the use of dual purpose animals makes the beef supply a function of policies aimed at regulating surplus milk supplies. Also, the CAP's high grain price policy makes grain feeding costly and promotes the slaughter of calves for veal (35).

The rapid yield increases of beef, veal, and milk have been due largely to improvements in genetics, technology, and feeding practices as well as the CAP premiums paid for heavier weight beef animals. There has also been a gradual shift from triple purpose cattle (dairy, meat, and draft) to dual purpose cattle (dairy and meat). Further shifts to dual purpose cattle can be expected in Greece, Spain, and Portugal, where draft cattle are still widely used (8).

Pork and Poultry--The greatest advances in pork and poultry production have been made in the Netherlands and Italy. Both countries have significantly increased their shares of pork production. Italy's increases in poultry volume have been so sizeable that the country's share came close to matching that of France during 1978-80. The latest data indicate that Italy has in fact surpassed France in poultry production.

Since the early sixties, the production of pork and poultry has become concentrated and commercialized. In general, the type of animals raised are an improvement over those formerly raised on small farms. For example, pigs are now marketed at lighter weights but with less inedible waste material. The management and feed of the animals are much improved, and the result has been a shorter growout period and increased efficiency of capital. Feed conversion ratios have also fallen, adding to the profitability of production (36).

Much of the EC's rapid growth in pork, poultry, and egg production is the result of the high level of protection afforded by the CAP. Direct intervention on domestic markets is limited to pork, but export subsidies' help support internal market prices for poultry and eggs.

Dairy Products--The CAP pricing system is extremely complex for dairy products, especially milk, but the end result is high prices to farmers and surpluses of many products. The Community has found it especially difficult to avoid price increases for dairy products because of the importance of milk in the income of small farmers. To hold down the milk surplus, the EC has paid premiums for slaughtering small herds and not delivering milk to the dairy (40).

Vertical Integration

Vertical integration--coordinating two or more stages of production--is increasing in most countries of Western Europe. Expansion of the poultry and hog industries has increased contracts between farmers and feed companies, and expansion of the frozen and prepared food industries has

increased contracts between farmers and processors. These contracts usually require farmers to observe quality standards, but do not necessarily affect their independence. Full vertical integration, where an integrator purchases farm units, is rare (3).

Sugarbeets and hops are almost always under contract because both crops require highly specialized processing; fruits and vegetables for processing are usually under contract. Intensive livestock production lends itself to contracting because production technology is fairly standardized and economies of scale are common.

Since most contracts are with private companies, farm organizations are concerned with the relatively weak position of the individual farmer approached by a large company. Farm organizations have attacked this problem on two fronts.

First, they urge their members to sign group contracts or to sign contracts with their cooperatives. In the United Kingdom, the National Farmers' Union has developed a seal-of-approval service for contracts. In the Netherlands, the three principal farm organizations have set up regional advisory commissions where farmers can have their contracts checked. In some cases, farm organizations defend members in court against exploitation by integrators.

Second, farm organizations also protect farmers who sign contracts by urging the government to adopt protective legislation. Although not all producer groups are in favor of the legislative approach to vertical integration, France and Germany have adopted such an approach. In France, laws require all contracts to be in writing, and encourage formation of local producer groups to negotiate with processing companies. West Germany has similar laws.

To retain control of agriculture while vertical integration progresses, farmers in some countries have developed vertically integrated cooperatives. In the Scandinavian countries, for instance, there is little scope for vertical integration by private firms because farmers have integrated upstream and downstream through their cooperatives. In Norway and Sweden, 87 and 80 percent, respectively, of all farm products are handled through cooperatives. In Denmark, cooperatives handle over 90 percent of the pork, 87 percent of the milk, 60 percent of the beef, and 58 percent of the eggs. In Finland, cooperatives handle 96 percent of the milk and 70 percent of slaughtered livestock (3).

In some countries, vertical integration by private companies has been reduced or avoided by statutory marketing agencies. In the United Kingdom, for example, producer-controlled marketing boards as well as the Home Grown Cereals Authority and the British Sugar Corporation together control the marketing of about one-third of British farm products (3).

Self-Sufficiency

The rapid increase in Western Europe's production over the past 20 years has resulted in self-sufficiency rates of over 100 percent for many agricultural commodities. 2/ This has not only eliminated the need for many imports, but the region's surplus commodities now compete with U.S. exports on world markets. The EC policy of subsidizing its own exports is a matter of increasing concern to U.S. exporters and policymakers.

Self-sufficiency rates for the main EC agricultural commodities reveal a generally adequate supply of foodstuffs for human consumption, but an inadequate supply of some feedstuffs such as corn and soybeans for animal consumption (table 12).

Table 12--Self-sufficiency rates of selected EC commodities, 1977/78 average 1/

Commodity	Percent
Above 100 percent:	
Sugar	117
Milk	2/118
Poultry	105
Cheese	103
Concentrated milk	156
Butter	111
Whole milk powder	2/310
Skimmed milk	110
All wheat	105
Rye	106
Barley	106
About 100 percent:	
Oats	96
Potatoes	99
Wine	99
Eggs	100
Fresh milk products	100
Beef and veal	97
Pork	100
Below 100 percent:	
Corn	52
Rice	67
Fresh vegetables	93
Fresh fruit (other than citrus)	76
Citrus fruit	42
Sheep and goat meat	65
Vegetable oils and fats	25

1/ Production as a percentage of total consumption.
2/ 1976/77.
Source: (4)

2/ Production as a percentage of domestic consumption.

The CAP has been largely unsuccessful in encouraging production of these commodities in short supply because of unfavorable climates and low yields. The 25,000 tons of soybeans produced in 1978 fell far short of the required 17 million tons. During the same year, the Community produced and manufactured only 1 percent of its oil requirements and only 4 to 5 percent of its protein cake and meal requirements (4).

Self-sufficiency rates showed considerable variation among countries for the same commodity. In the midseventies, France had the highest self-sufficiency rates for wheat and coarse grains; the Netherlands and Belgium-Luxembourg had the lowest. In the latter countries, demand was strong because of livestock requirements, while supply was short because of limited cereal growing areas. In fact, the livestock sectors of these countries have grown so rapidly that between 1960-64 (average) and 1973-75 (average), the self-sufficiency rates for coarse grains fell from 27 to 14 percent in the Netherlands, and from 43 to 29 percent in Belgium-Luxembourg. In contrast, France's self-sufficiency rate for coarse grains increased from 117 to 149 percent during this period (table 13).

Since the Community's demand for potatoes has declined along with production, the self-sufficiency rate has remained relatively unchanged in most countries. Higher incomes and changing tastes caused human potato consumption to decline, and the labor intensive nature of production made potatoes uneconomical as animal feed.

The Netherlands increased its surplus of vegetables from 165 to 190 percent during the 1960-64 to 1973-75 period, reflecting the rapid development of cultivation under glass (19). Belgium-Luxembourg and Portugal also increased their vegetable surpluses. Italy, Spain, and Greece, with large Mediterranean-type agricultural sectors, continued as Western Europe's leading fruit producers and exporters.

All EC countries except Germany, Italy, and the United Kingdom produced meat in excess of demand during 1960-64 and 1973-75. The rates were, however, generally lower for most countries during the more recent years as consumers with higher incomes increased their meat purchases faster than producers could increase supply. Poultry and pork production in the Netherlands, however, expanded so rapidly that the country's self-sufficiency rates for these commodities increased despite greater domestic demand.

Demand for meat in Spain, Portugal, and Greece exceeded supply during 1960-64 and 1973-75. These countries have relatively small livestock sectors, with correspondingly small per capita consumption of meat. The supply and demand for meat in Greece and Portugal increased at about the same rate. In Spain, the rate of increase in beef production outstripped demand, so that the country's self-sufficiency rate rose from 78 to 92 percent.

Table 13--Self-sufficiency rates of selected West European commodities 1/

Country and year	Wheat	Coarse grains 2/	Potatoes	Vegetables 3/	Citrus fruits 3/	Other fruit	Beef	Poultry	Pork
				Percent					
France:									
1960-64	123	117	101	97	4/	83	111	103	97
1973-75	193	149	103	95	4/	96	116	110	87
Germany:									
1960-64	78	70	98	65	4/	59	86	40	95
1973-75	93	75	88	37	4/	49	94	51	87
Italy:									
1960-64	90	55	100	117	158	123	69	98	95
1973-75	89	51	95	110	118	128	56	98	74
Netherlands:									
1960-64	45	27	117	165	4/	116	93	309	156
1973-75	52	14	127	190	4/	66	89	357	210
Belgium-Luxembourg:									
1960-64	74	43	101	108	4/	69	93	110	107
1973-75	67	29	101	121	4/	59	91	109	173
United Kingdom:									
1960-64	45	64	96	79	4/	42	73	63	99
1973-75	61	72	93	76	4/	40	74	65	98
Denmark:									
1960-64	106	87	105	96	4/	79	313	406	419
1973-75	130	99	101	77	4/	64	295	252	419
Ireland:									
1960-64	71	90	104	NA	4/	30	573	113	167
1973-75	50	74	103	106	4/	27	593	107	138
Spain:									
1960-64	90	78	101	108	253	115	78	99	98
1973-75	96	64	100	110	243	105	92	100	96
Portugal:									
1960-64	70	102	97	109	NA	99	72	100	99
1973-75	68	38	95	149	NA	97	66	100	94
Greece:									
1960-64	101	87	99	101	142	104	61	88	97
1973-75	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other Western Europe 5/									
1960-64	77	83	99	99	4/	79	100	65	100
1973-75	110	88	98	69	4/	67	99	77	103

NA = not available.
1/ Production as percentage of total consumption.
2/ Barley, oats, maize, and other coarse grains.
3/ Includes juices and canned products, in fresh equivalents.
4/ Less than 0.5 percent.
5/ Norway, Sweden, Finland, Switzerland, and Austria.
Source: (25).

Per capita consumption of agricultural commodities changes slowly over time. At the EC level, per capita consumption of vegetables and pork has increased since the early seventies, but has decreased for bread grains and potatoes. Per capita consumption of most other agricultural commodities changed little or not at all over the past decade (table 14). Among individual countries, per capita consumption differs widely for each commodity, reflecting national and regional traditions as well as economic conditions. After the creation of the EC and the increase in intra-Community trade, some differences were reduced, but considerable differences still existed during the late seventies (4).

STRUCTURE OF THE AGRICULTURAL SECTOR

The term structure as used in this report refers to the total environment in which agricultural production takes place. Structure is therefore a major determinant of the volume and composition of agricultural output. The most important aspect of structure is natural environment--topography, soil, rainfall, and climate. Because of its unchangeable nature, the environmental aspect of structure is given only minimum coverage. Attention will focus on land, labor, and capital, the structural elements that are subject to change and serve as indicators of future shifts in production.

The Land

Agricultural area in Western Europe is declining, while forest area is increasing. Between 1961-65 and 1977, the increase in forest area just about offset the decline in the agricultural area (17).

France, Spain, the United Kingdom, Italy, Germany, and Greece had approximately 80 percent of the agricultural area of Western Europe during the seventies. France had the most pasture area and Spain the most crop area.

The price of farmland rose in all countries of the region, but the rate of increase slowed after 1979. By the midseventies, Belgium and Germany had the highest land prices in the EC. Land rents also rose more moderately after 1979.

Land Utilization

Total land area of the 17 major countries of Western Europe is approximately 337.4 million ha, 150.4 million in the EC and 187 million in the other countries of the region (see glossary for country groupings). In 1977, 45 percent of the total land area was agricultural, 34 percent forest and woodlands, and 21 percent nonagricultural (table 15). These percentages, however, varied widely among countries. The utilized agricultural area covered over 70 percent of the land area in Ireland and the United Kingdom, but only 10 percent in Sweden, Finland, and Norway. The forest area exceeded 60 percent of the land area in Finland and Sweden, but less than 10 percent in the Netherlands and the United Kingdom (17).

The total agricultural area of Western Europe in 1977 was approximately 151.2 million ha, accounting for 62 percent of total land area in the EC countries and 31 percent in the non-EC countries. The smaller percentage of agricultural area

Table 14--EC per capita consumption of selected food products

Commodity	EC		EC range 1977/78			
			High		Low	
	1971/72	1977/78	Country	Number	Country	Number
			Kg per capita			
Cereals (excluding rice)	85	82	Italy	123	Denmark	67
Rice	2	4	Italy	7	Germany Ireland Denmark	2
Potatoes	85	76	Ireland	113	Italy	40
Sugar	37	35	Ireland	45	Italy	27
Vegetables	95	104	Italy	151	Denmark	59
Fresh fruits	1/ 60	54	Germany Netherlands	76	Ireland	28
Citrus fruits	2/ 23	24	Netherlands	54	United Kingdom	12
Wine	50	48	France	98	Ireland	3
Fresh milk	NA	104	Ireland	208	Italy	81
Cheese	10	11	France	17	Ireland	2
Butter	5	6	Ireland	12	Italy	2
Eggs	14	14	Germany	17	Netherlands	11
Beef and veal	25	26	France	32	Denmark	17
Pork	32	36	Germany	56	Italy	21
Poultry	12	13	Italy	17	Denmark	8
Oil for human consumption	NA	3/10	Italy	17	Netherlands Belgium-Luxembourg	4

NA = Not available.
1/ 1972/73.
2/ 1973/74.
3/ 1977.
Source: (14).

in the non-EC countries--despite a much larger land area--reflects the adverse climate and rugged topography in Norway, Sweden, and Finland. Excluding these three northern countries, the percentage of agricultural land in the remaining non-EC countries was around 60 percent of the total land area, only slightly below the EC average.

The agricultural area in Western Europe has declined steadily since World War II. By 1977, there were 11 million fewer ha

Table 15--Land utilization in Western Europe

Region and year	Total land area 1/	Agricultural area	
	Mil. ha	Mil. ha	Percent 2/
EC:			
1961/65	150.4	101.0	67
1970	do.	97.7	65
1977	do.	93.4	62
Other Western Europe:			
1961/65	187.0	60.8	33
1970	do.	58.9	31
1977	do.	57.8	31
Total Western Europe:			
1961/65	337.4	161.8	48
1970	do.	156.6	46
1977	do.	151.2	45

	Forest and woodlands		Other lands	
	Mil. ha	Percent 2/	Mil. ha	Percent 2/
EC:				
1961/65	28.0	19	21.4	14
1970	31.0	21	21.7	14
1977	32.0	21	25.0	17
Other Western Europe:				
1961/65	77.9	42	48.3	26
1970	81.3	43	46.8	25
1977	84.3	45	44.9	24
Total Western Europe:				
1961/65	105.9	31	69.7	21
1970	112.3	33	68.5	20
1977	116.3	34	69.9	22

1/ Excludes area under inland water bodies such as major rivers and lakes.
2/ Percentage of total land area.
Source: (17).

than during 1961-65, with almost three-fourths of the decline concentrated in the EC countries. This has been the result of abandoning marginal agricultural land and land near metropolitan areas for housing, infrastructure (roads, utilities, etc.), and recreational facilities (17).

Forest and woodlands accounted for 116 million ha in Western Europe in 1977. Fifty-eight million ha or 50 percent of this area was located in Norway, Sweden, and Finland. During 1961-77, forest land increased by 10 million ha, largely in response to the strong demand for lumber. Many owners of idle land or land with little agricultural potential turned to afforestation. Also, in many hilly regions, forests designed to provide cover for slopes were planted on former cropland or pastures to improve farming on the agricultural land below (31).

"Other land" accounted for about 21 percent of the total land area in Western Europe in 1977, and showed little change since the early sixties. This category is made up of two distinct land types--wasteland and urban land. The percentage of wasteland is high in Norway because of the rugged topography and harsh climate, while the percentage of urban land is high in Belgium and the Netherlands because of dense population (31).

Utilization of Agricultural Area

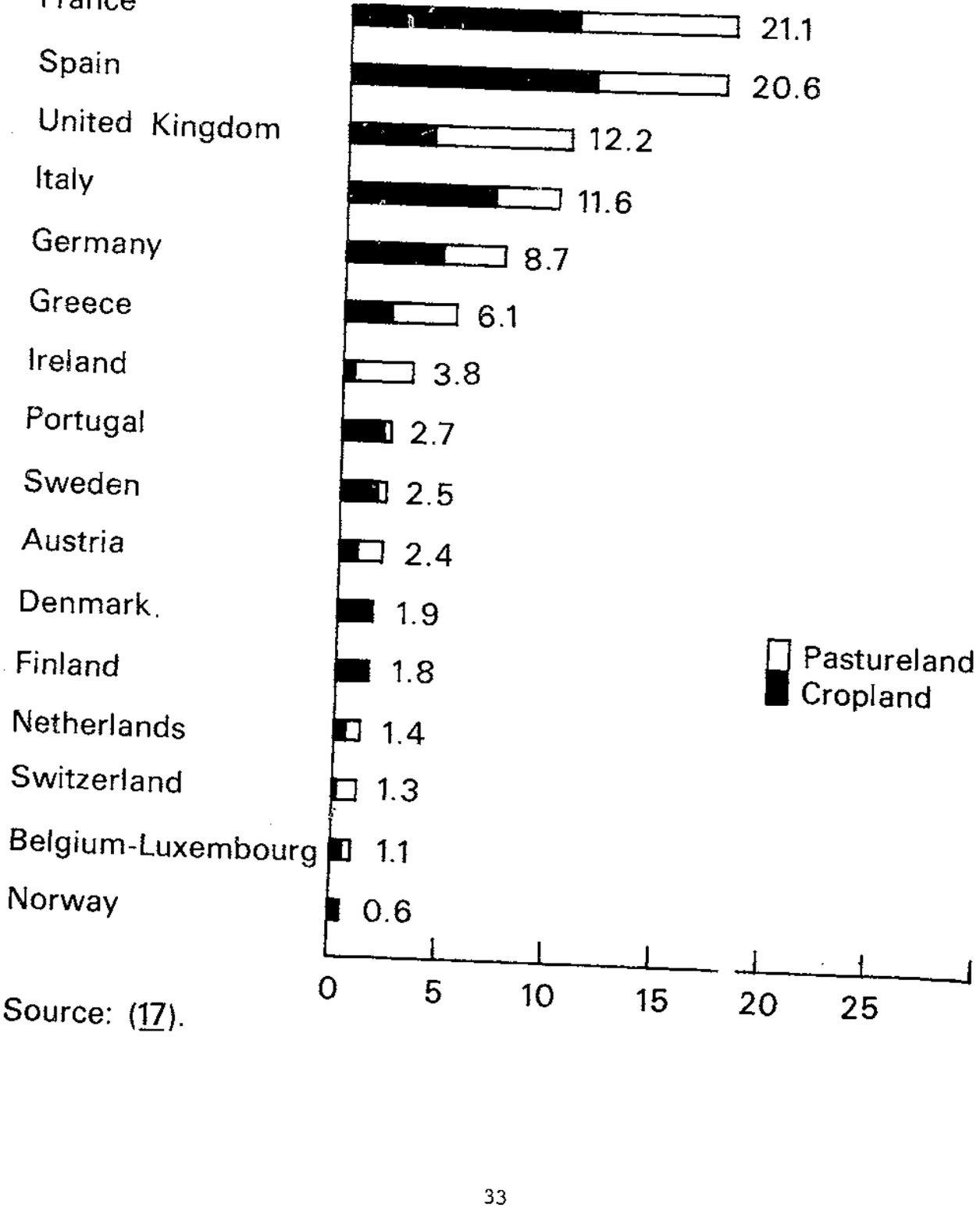
Agricultural land in Western Europe is divided very unevenly. In 1977, France and Spain had the largest shares of Western Europe's agricultural area--approximately 21 percent each. The United Kingdom and Italy were next with 12 percent each and Germany and Greece followed with 9 and 6 percent, respectively. Each of the remaining countries had under 4 percent of the total agricultural area of the region (fig. 5).

Cropland and pastureland, the two major divisions of agricultural area, also vary significantly among countries. In 1977, Ireland had 83 percent of its agricultural land in pasture and 17 percent in cropland, while Denmark had 10 percent in pasture and 90 percent in cropland. The United Kingdom and the Netherlands were the only other EC countries besides Ireland with more than 50 percent of their agricultural land in pasture.

France and Spain, with the largest agricultural areas, had 59 and 66 percent, respectively, of their agricultural areas in cropland. Spain was Western Europe's leader in crop area with 20.6 million ha, while France had the largest pasture area with 13.1 million ha (17).

The long-term decline in Western Europe's agricultural area reflects a reduction in both arable land and permanent pasture. Between 1961-65 and 1977, arable land declined by 10.2 percent and permanent pasture by 4.1 percent. In contrast, land devoted to permanent crops such as fruit trees and vines increased 3.5 percent, mostly concentrated in Italy, Spain, and Greece (table 16).

Figure 5
Share of Agricultural Land Use by Country, 1977



Source: (17).

Arable land, permanent cropland and pastureland in all EC countries except Italy and Ireland declined between 1961-65 and 1977. Italy increased its area in both permanent crops and permanent pasture, while Ireland increased its area in permanent pasture only, but both countries experienced substantial declines in arable area. Among non-EC countries, Spain's increase of 8.5 percent in permanent cropland brought

Table 16--Major agricultural land classifications, by country, Western Europe

Country	Arable land 1/		Permanent cropland 2/		Permanent pastureland 3/	
	1977	1961-65 to 1977	1977	1961-65 to 1977	1977	1961-65 to 1977
	1,000 ha	Percent	1,000 ha	Percent	1,000 ha	Percent
Germany	7,497	-4.3	515	-12.9	5,205	-9.2
France	17,265	-10.5	1,571	-11.4	13,074	-1.1
Italy	9,235	-27.2	2,971	7.5	5,275	3.5
Netherlands	829	-13.1	35	-7.9	1,196	-7.5
Belgium-Luxembourg	860	-10.1	28	-44.0	777	-4.3
United Kingdom	6,921	-5.2	65	-39.9	11,403	-7.5
Ireland	985	-25.0	2	NA	4,770	14.1
Denmark	2,637	-4.1	11	-8.4	279	-17.2
EC-9	46,229	-12.8	5,198	-2.6	41,979	-2.4
Spain	15,630	-3.1	4,974	8.5	10,750	-12.6
Greece 4/	3,020	2.7	990	15.3	5,255	3.0
Portugal	2,990	-19.9	585	-2.5	530	NA
Potential EC members	21,640	-5.1	6,549	8.4	16,535	-7.8
Norway	800	-5.9	NA	NA	99	-42.4
Austria	1,529	-8.4	98	48.5	2,071	-9.0
Finland	2,547	-3.3	NA	NA	177	59.5
Switzerland	371	-7.7	20	53.8	1,625	-8.5
Sweden	2,994	-11.9	NA	NA	728	6.4
Other Western Europe	8,241	-8.0	118	49.4	4,700	-6.3
Total Western Europe	76,110	-10.2	11,865	3.5	63,214	-4.1

NA = not available.

1/ Includes land under temporary crops, temporary meadows, kitchen gardens (including cultivation under glass), and land temporarily fallow or lying idle.

2/ Land cultivated with crops that occupy the land for long periods and need not be replanted after each harvest such as fruit trees and vines.

3/ Land used for 5 years or more for herbaceous forage crops either cultivated or growing wild.

4/ Greece joined the EC on January 1, 1981.

Source: (17).

its 1977 area in this category to almost 5 million ha, or 42 percent of Western Europe's total area in permanent crops.

Greece was the only country in Western Europe to increase in all three categories of agricultural land use. The increase in arable land partly reflected the rapid expansion of sugarbeet area, from 9,000 ha in 1961/65 to 46,000 ha in 1977. Greece's permanent crop area expanded largely as a result of increased fruit (especially peaches) production (33).

Land Values and Rents

The price of farmland in Western Europe rose steadily over the past two decades, pushed up by inflation as well as the demand for land by farmers, urban and industrial developers, and investors. Land price increases generally accelerated in the early seventies, paralleling the pickup in the inflation rate, but eased somewhat after 1975. The increase in many countries has been small since 1979.

Statistical data on land prices are very limited. The data available suggest a rather wide variation among EC members for both average price levels and price increases (table 17). Average prices tend to be much higher in Belgium than elsewhere. Another source, using an index of 100 for the average price of farmland per ha in England and Wales in 1975, found the following comparative indexes for other EC members: Germany, 159.6; France, 81.4; Netherlands, 127.1; Belgium, 182.8; and Denmark, 128.0 (41).

Although farmers often claim land prices are pushed up by purchasers from outside the farm sector, this is usually not the case. In the United Kingdom, a 1979 report found that 60 percent of all land sold in 1977 and 1978 was bought by neighboring farmers to expand their holdings. The report also found that institutions bought 4 to 6 percent of all land sold between 1974 and 1978, and owned just 1.2 percent of all agricultural land (41).

Many countries, concerned about rising farmland prices, have acted to combat this trend. In France, loans for land purchase are based on the average sale price of land, not the actual sale price. In Switzerland, where land prices have reached 5 to 10 times their agricultural yield value, loans for land purchase are restricted to 125 percent of the yield value. Sweden is considering proposals that would prohibit a sale being made when the asking price greatly exceeds the agricultural value of the land, calculated on the basis of its yield potential (41).

Farmland price increases may have tapered off during the late seventies. In France, rates of increase fell gradually, from 13.5 percent in 1976 to 8.9 percent in 1979. The French Ministry of Agriculture attributed the smaller increases to stagnating demand (18). Land prices, however, are determined by the sale of a very small proportion of a country's land in a given year. In Ireland, for instance, only 2 percent of farmland comes on the market annually, which is fairly

representative of most other countries in Western Europe. Of the total land transferred in any one year, a high percentage (85 percent in Ireland) is acquired through inheritance rather than through purchase on the open market.

Land rents, in general, have increased much less than farmland prices. In some countries, existing tenancy legislation gives the tenant and heirs an almost absolute security of tenure while effectively controlling rental charges. Notable

Table 17--EC farmland prices

Country	Land prices per hectare					Annual percentage change	
	1963	1970	1973	1974	1975	1965/70 average	1974/75 average
	- - - British pounds 1/ - - -					- - Percent - -	
Germany	1,279	1,884	2,169	2,020	2,059	5.7	1.9
France:							
Tillage land	351	642	854	986	1,121	9.0	13.7
Pasture	399	606	766	862	978	6.2	13.5
Italy:							
Pasture	370	513	689	881	1,027	4.8	16.5
Netherlands:							
Tillage land	769	1,061	1,149	1,416	1,637	4.7	15.6
Pasture	644	916	1,054	1,374	1,642	5.2	19.5
Belgium:							
Tillage land	1,706	2,467	2,362	2,570	2,726	5.4	6.0
Pasture	1,022	1,910	1,995	2,146	2,370	9.3	10.4
Luxembourg:							
Tillage land	775	NA	1,152	1,994	NA	NA	NA
Pasture	859	NA	NA	NA	NA	NA	NA
United Kingdom:							
England and Wales	289	526	1,161	1,574	1,290	8.9	-18.0
Scotland	NA	244	663	780	NA	NA	NA
Northern Ireland	NA	434	835	971	NA	NA	NA
Ireland	NA	491	1,261	NA	NA	NA	NA
Denmark	379	717	1,058	1,379	1,651	9.5	19.8

NA = Not available.
1/ A pound = 1963, $2.80; 1970, $2.40; 1973, $2.45; 1974, $2.40; 1975, $2.22.
Source: (5).

exceptions were England and Wales where rents increased 18 percent in 1975/76. The increases were, however, the result of a 3-year adjustment in rental charges in accord with prevailing tenancy legislation (4).

Structure of Holdings

Western Europe is essentially a region of small farms. The region must continually reduce the number of farms and increase farm size in order to improve agricultural performance. While the average farm size has increased continuously since World War II, the rate of increase has been slow.

Over the 10-year period ending in 1975, the degree of concentration in crop production increased in the EC. The typical farm produced fewer crops and utilized more land area per crop. Cereals and sugarbeets are typically grown on the largest farms, and occupy the largest areas. The degree of concentration in the livestock sector also increased. The number of holdings with livestock declined and the number of livestock units per holding increased.

Land in the EC is largely held in owner-operated farms, but some countries are encouraging tenancy in order to increase land mobility. High land prices prevent young people from taking up farming and existing farmers from expanding their holdings.

Farm Numbers and Size

There were 5.8 million farms in the EC in 1975 with an average farm size of 14.8 ha, according to the 1975 Farm Structures Survey. 3/ In 1975, Italy, with 2.7 million farms, had the smallest average farm size (6.2 ha); the United Kingdom, with 281,000 farms, had the largest average farm size (58.7 ha); and France, Luxembourg, Ireland, and Denmark each had an average farm size of 22 ha (table 18).

The national average, however, is often not representative of farm size in all regions of a country. In France, many regions did not approximate the 1975 national average of 22 ha. Holdings in the large cereal growing areas of the Parisienne, Champagne, and Picardie regions, for example, were much larger--59, 53, and 52 ha, respectively. On the other hand, in the mountain and other less favored areas, average farm size was about 13 to 19 ha.

Italy's average farm size of 6.2 ha was larger than the 4 ha, in some parts of southern Italy, but much smaller than the 21 ha in some parts of northern Italy. In 15 of the country's 21 regions, however, the variation was narrower--6 to 10 ha (4).

3/ Most of the analyses on the structure of holdings in this study are based on the comprehensive surveys conducted by the Statistical Office of the European Community in 1966-67 and 1975. The Community Survey on the Structure of Agricultural Holdings, 1975, was published in 1978 in six volumes (11).

Table 18--Number and area of EC agricultural holdings and average farm size

Country and year	Number	Area	Average farm size
	1,000	1,000 ha	Ha
Germany			
1966-67	1,246.0	12,678.2	10.2
1975	907.9	12,398.6	13.7
France:			
1966-67	1,708.7	30,115.2	17.6
1975	1,315.1	29,463.6	22.4
Italy:			
1966-67	2,980.4	17,928.3	6.0
1975	2,664.2	16,485.5	6.2
Netherlands			
1966-67	247.0	2,232.5	9.0
1975	162.6	2,086.3	12.8
Belgium:			
1966-67	214.8	1,593.1	7.4
1975	138.1	1,467.5	10.6
Luxembourg:			
1966-67	8.6	133.9	15.6
1975	6.2	136.1	22.0
United Kingdom:			
1970	326.1	17,701.7	54.3
1975	280.6	16,469.0	58.7
Ireland:			
1970	277.4	4,737.2	17.1
1975	228.0	5,076.6	22.3
Denmark:			
1973	141.1	2,975.9	21.1
1975	132.2	2,966.0	22.4
EC:			
1966-67 1/	7,150.1	90,096.0	12.6
1975	5,834.9	86,549.6	14.8

1/ Denmark, 1973; Ireland, 1970; United Kingdom, 1970.
Sources: (11, 13).

During the 10-year period 1966-75, the average EC farm size increased by 2.2 ha. Italy was the only EC country with virtually no increase in average farm size. The rate of farm enlargement, primarily a function of the decline in the number of farms, is neither steady nor predictable. The retirement of older farmers, the availability of jobs in the nonfarm sector, domestic and EC policies, and local economic conditions all directly or indirectly influence changes in average farm size (4).

In general, farms that are too small can be a barrier to the efficient use of resources and lead to inadequate farm income. The size of the economically viable farm varies according to the physical conditions of production and the general economic environment. But changing conditions over time usually create the need for larger farms. During the seventies, rising farmland prices and the higher cost of inputs played a significant role in increasing the minimum size of the economically viable farm (30).

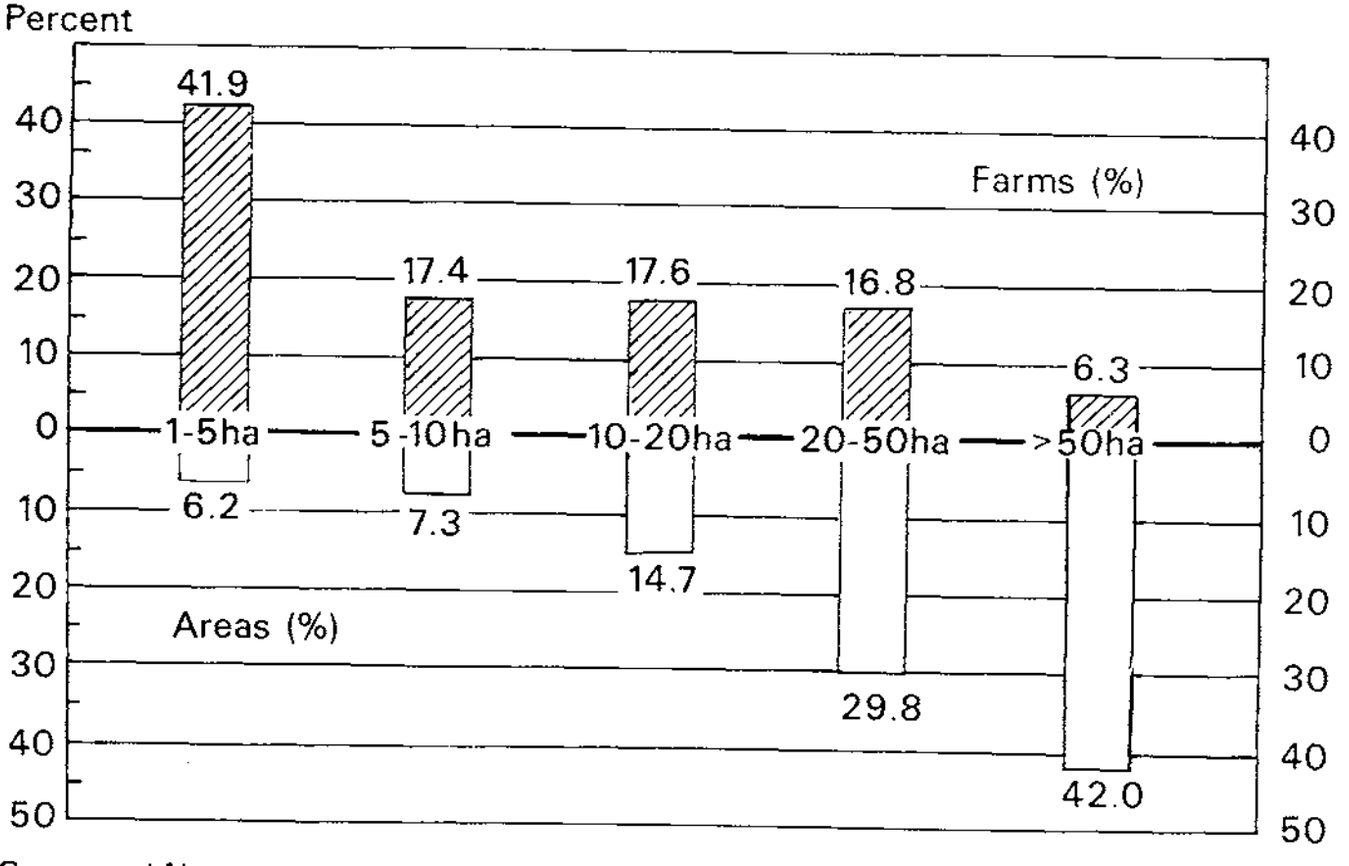
The size distribution of holdings varies among countries and regions of the same country. Eighty percent of EC farms were less than 20 ha in 1975. This varied from only 42 percent in the United Kingdom to 95 percent in Italy. In Germany, the Netherlands, and Belgium, the number of farms in this size category more or less approximated the Community average, while France, Luxembourg, Denmark, and Ireland had fewer small farms (table 19).

During 1966-75, the percentage of farms 20 ha or less declined, and the percentage of farms over 20 ha increased (11, 13). This general trend occurred in all EC countries. During 1970-75, farms 20 to 50 ha in size did not increase as rapidly as in earlier years. Farms 50 ha and over, however, did show sizeable gains, especially in Belgium, Luxembourg, and Ireland.

Relating farm size to area clearly shows that despite continuously increasing farm size, structural imbalance is still considerable. In 1975, farms less than 20 ha constituted almost 80 percent of EC farms and occupied only 28 percent of the agricultural area. These statistics are exaggerated, however, by the large number of small farms in Italy. At the other end of the scale, farms over 50 ha--mostly in France and the United Kingdom--constituted only 6 percent of farms, and occupied 42 percent of the agricultural area (fig. 6) (4).

Farm size is usually measured in terms of hectares of utilized agricultural area. However, this does not accurately measure the real productive capacity of many farms since it fails to distinguish between extensive and intensive farming. The 1975 Farm Structures Survey introduced the European size unit (ESU) to overcome this deficiency. As an indicator of farm size, the ESU approximates the value of output per farm. Using this measure, the Netherlands, with its many highly intensive farms,

Figure 6
Farms and Their Areas in the European Community, 1975



Source: (4).

Table 19--Size distribution of EC farm holdings

Farm size in hectares	Germany		France		Italy		Netherlands		Belgium	
	1966-67	1975	1966-67	1975	1966-67	1975	1966-67	1975	1966-67	1975
	Percentage of holdings									
< 1	8.9	4.0	7.8	8.6	13.9	19.5	17.7	11.5	29.7	24.8
1-< 5	33.3	31.1	22.0	18.9	59.3	55.	28.6	22.0	26.6	22.0
5-< 10	21.7	19.2	18.0	13.9	15.6	14.0	19.9	18.9	19.3	16.7
10-< 20	23.4	23.1	24.0	20.7	7.2	6.7	22.4	27.1	16.3	20.5
20-< 50	11.2	19.7	21.8	27.3	2.9	3.3	10.5	18.6	7.1	13.5
50-< 100	1.2	2.4	5.0	8.1	.7	.9	.8	1.8	.9	2.1
≥ 100	.2	.4	1.4	2.5	.4	.5	.1	.2	.2	.3

Farm size in hectares	Luxembourg		United Kingdom		Ireland		Denmark		EC
	1966-67	1975	1966-67	1975	1966-67	1975	1966-67	1975	1975
	Percentage of holdings								
< 1	7.7	6.4	4.5	3.4	3.8	NA	3.7	1.6	12.6
1-< 5	22.3	20.6	17.7	11.5	19.7	15.1	11.8	11.7	36.8
5-< 10	15.2	8.1	12.0	11.3	20.3	16.5	19.1	19.2	15.1
10-< 20	23.6	18.5	15.3	16.2	29.4	31.0	28.0	27.8	15.2
20-< 50	28.7	38.0	24.7	28.0	25.9	28.8	30.5	32.0	14.8
50-< 100	2.5	8.1	14.4	16.3	NA	7.0	5.6	6.2	3.9
≥ 100	.1	.3	11.4	13.3	.9	1.6	1.3	1.4	1.6

NA = Not available.
Note: (<) = less than
(≥) = greater than or equal to.
Sources: (11, 13).

had the largest average farm size, and the United Kingdom, with its well developed agricultural structure, had the second largest. Italy had the smallest farms but Ireland's farms were not much larger.

Average EC farm size measured in the European size unit (ESU) 1975

Country	ESU per farm
Germany	8.2
France	9.4
Italy	3.2
Netherlands	17.8
Belgium	9.4
Luxembourg	10.2
United Kingdom	15.3
Ireland	4.2
Denmark	12.4
EC-9	6.7

Source: (11).

After 1975, changes in the size distribution of EC farms continued but at a slower rate. Most countries for which data are available experienced a slower rate of decline in farms 20 ha and under, and a slower rate of increase in farms 50 ha and over (4). The 1975/76 recession and high inflation have contributed significantly to the slowdown of structural change.

Commodity Structure of Farms

The typical farm in Western Europe produces several crops and keeps some livestock. According to the 1975 Farm Structures Survey, 61 percent of Community holdings produced cereals, 57 percent pulses, 47 percent fodder crops, 42 percent roots and tubers, and 31 percent vineyard crops; 51 percent raised bovine animals, 37 percent dairy cows, 38 percent pigs, and 52 percent laying hens.

The total number of farms producing crops fell sharply during 1966-75, accompanied by an increase in average area per crop. This trend paralleled the reduction in the number of small farms and the increase in the number of large farms. The end result was an increase in concentration of agricultural production (11, 13).

Since the structure of EC farm production is dominated by small- and medium-sized farms, crop areas are small by U.S. standards. For example, the Community's average cereal area per holding in 1975 was only 7.2 ha, varying from a high of 29.2 ha in the United Kingdom to a low of 3.2 ha in Italy. The average areas devoted to fodder and industrial crops

(oilseeds) were next in size with 4.7 and 4.3 ha, respectively. However, less than 1 percent of holdings harvested industrial crops. For the remaining crops, the average areas were less than 2 ha, with fresh vegetables averaging less than 1 ha per holding (table 20). Crops under glass and flowers and ornamental plants occupied the smallest areas per holding, but only about 1 percent of holdings cultivated these specialty crops.

Both cereals and sugarbeets are grown on the largest EC farms and occupy the largest areas (table 21). In contrast, potatoes are grown on the smallest farms and occupy the smallest areas. According to the 1975 Farm Structures Survey, farms 20 ha and over had 97.5 percent of the sugarbeet area in France, 82.2 percent in Germany, and 44.8 percent in Italy. The cereal area was less concentrated, with farms over 20 ha having 87.0 percent of the cereal area in France, 63.2 percent in Germany, and 42.8 percent in Italy. The degree of concentration was greater in 1975 than in 1966-67.

Potato production was concentrated on smaller holdings. In 1975, farms of 20 ha and over had 66.3 percent of the potato area in France, 44.4 percent in Germany, and 9.9 percent in Italy. Concentration increased during 1966-75 for France and Germany, but declined slightly for Italy.

Livestock was raised on 4.3 million, or 75 percent, of the Community's farms in 1975. Seventy-eight percent of the livestock farms kept grazing stock (cattle, sheep, goats, and horses), and accounted for 73 percent of total livestock units (LU). 4/ An even greater proportion (85 percent) of livestock farms kept nongrazing stock (pigs and poultry) and accounted for only 27 percent of total LUs.

The livestock sector also became increasingly concentrated. Between 1966-67 and 1975, the number of holdings with cattle and pigs declined significantly, while LUs per holding increased. In contrast, the number of holdings with poultry generally increased and the number of LUs per holding decreased (table 22).

The poultry sector's apparent reduction in concentration runs contrary to the general trend. But CAP price policies and the increasing popularity of poultry meat and products may have induced many small farm operators to enter the poultry business. If these small operators were excluded, the data would likely reveal increased concentration for most countries.

The 1975 Farm Structures Survey also revealed a higher percentage of LUs on larger holdings compared with a decade earlier. The proportion of LUs on holdings over 50 ha increased from 8.5 to 11.7 percent in Germany, from 21.6 to

4/ A livestock unit (LU) equals the number of animals maintained on the feed requirements of one incalf dairy heifer.

Table 20--Average crop areas per EC farm

Crops	Germany		France		Italy		Netherlands		Belgium	
	1967-68	1975	1967-68	1975	1967-68	1975	1967-68	1975	1967-68	1975
	Hectares									
Cereals	4.5	6.8	7.6	10.8	2.6	3.2	4.1	6.2	3.8	5.4
Pulses	1.0	1.1	.6	1.1	.8	.7	2.1	2.8	1.0	1.6
Roots and tubers	1.3	1.6	1.3	1.7	.6	.8	.5	5.1	1.1	2.2
Industrial plants	2.0	4.2	3.3	4.9	1.0	1.5	3.6	6.7	2.2	2.5
Fresh vegetables 1/	.8	1.2	.9	1.3	.7	.5	1.1	2.1	.7	1.4
Flowers 2/	.4	.5	.5	.5	.4	.4	.7	1.2	.3	.4
Fodder crops	1.3	1.9	4.4	6.6	2.3	2.8	1.8	2.6	1.5	1.9
Fruit and berries	.6	.8	1.2	1.7	1.5	1.5	2.0	2.9	.9	2.0
Citrus fruits	3/	3/	1.6	1.9	1.3	1.5	3/	3/	3/	3/
Olive groves	3/	3/	1.0	1.0	1.5	1.5	3/	3/	3/	3/
Vineyards	.7	1.4	1.7	2.3	.9	1.0	3/	3/	3/	3/

Crops	Luxembourg		United Kingdom		Ireland		Denmark		EC
	1967-68	1975	1967-68	1975	1967-68	1975	1967-68	1975	1975
	Hectares								
Cereals	6.4	8.4	NA	29.2	NA	3.3	NA	14.1	7.2
Pulses	1.2	2.0	NA	10.4	NA	2.0	NA	3.7	1.1
Roots and tubers	.7	.5	NA	6.3	NA	.8	NA	3.7	1.7
Industrial plants	3/	3.0	NA	18.7	NA	1.6	NA	8.4	4.3
Fresh vegetables 1/	3/	3/	NA	6.3	NA	.6	NA	2.2	.9
Flowers 2/	3/	3/	NA	1.3	NA	.6	NA	.6	.7
Fodder crops	2.7	4.1	NA	15.6	NA	5.1	NA	7.7	4.7
Fruits and berries	.5	.5	NA	4.8	NA	.7	NA	4.2	1.6
Citrus fruits	3/	3/	NA	3/	NA	3/	NA	3/	1.5
Olive groves	3/	3/	NA	3/	NA	3/	NA	3/	1.5
Vineyards	1.0	1.1	NA	3/	NA	3/	NA	3/	1.4

NA = Not available.
1/ Includes melons and strawberries.
2/ Includes ornamental plants.
3/ Less than 0.5 ha.
Sources: (11, 13).

27.7 percent in France, and from 13.1 to 15.1 percent in Italy. In the United Kingdom, 62 percent of LUs were on holdings over 50 ha in 1975 (table 23).

The large livestock holdings in the United Kingdom and Ireland are associated with extensive grazing in the cattle industry, while the smaller holdings in Germany, the Netherlands, and Belgium are associated with intensive feeding in the pig and poultry industries (24).

Table 21--Distribution of crop areas by farm size, selected EC countries

Farm size in hectares	Germany		France		Italy	
	1966-67	1975	1966-67	1975	1966-67	1975
			Percent			
Cereal area:						
< 1	0.2	0	0	0	0.8	0.9
1-< 5	7.1	4.9	1.4	0.9	24.9	20.0
5-< 10	14.0	9.2	4.7	2.5	21.4	18.2
10-< 20	32.0	22.7	16.0	9.5	19.6	18.1
20-< 50	33.2	42.9	36.6	33.2	15.7	19.0
50-< 100	8.8	13.8	22.6	28.4	7.7	10.5
≥ 100	4.7	6.5	18.7	25.4	10.0	13.3
Total	100.0	100.0	100.0	100.0	100.0	100.0
Sugarbeet area:						
< 1	.1	0	0	0	.9	.5
1-< 5	1.4	.4	.1	0	16.6	13.8
5-< 10	6.7	2.1	.8	.2	22.2	19.2
10-< 20	28.4	15.2	5.7	2.2	22.8	21.6
20-< 50	35.9	45.0	23.5	17.3	18.4	21.3
50-< 100	16.5	23.0	24.2	27.5	7.8	9.8
≥ 100	11.0	14.2	45.6	52.7	11.3	13.7
Total	100.0	100.0	100.0	100.0	100.0	100.0
Potato area:						
< 1	.6	0	.5	.5	4.0	8.1
1-< 5	13.5	12.2	6.2	5.1	47.2	51.6
5-< 10	19.5	15.0	12.4	8.2	21.5	19.5
10-< 20	35.3	28.4	28.8	20.0	13.5	11.0
20-< 50	24.1	32.5	30.9	33.0	6.3	5.5
50-< 100	4.9	8.5	9.3	15.0	2.5	2.1
≥ 100	2.0	3.4	11.8	18.3	5.0	2.3
Total	100.0	100.0	100.0	100.0	100.0	100.0

Notes: (1) Totals may not add to 100 due to rounding.
(2) (<) = less than
(≥) = greater than or equal to.

Sources: (11, 13).

Table 22--Livestock distribution by EC farmholding

Country	Cattle				Pigs				Poultry			
	Holdings with cattle 1/		Livestock units 4/ per holding		Holdings with pigs 2/		Livestock units 4/ per holding		Holdings with poultry 3/		Livestock units 4/ per holding	
	1966-67	1975	1966-67	1975	1966-67	1975	1966-67	1975	1966-67	1975	1966-67	1975
	--- 1,000 ---		--- LU ---		--- 1,000 ---		--- LU ---		--- 1,000 ---		--- LU ---	
Germany	1,006.5	633.6	10.2	15.8	1,004.0	612.6	4.0	14.3	285.2	531.2	3.5	1.7
France	1,218.6	842.4	13.3	20.6	831.1	497.5	2.9	4.6	672.8	1,018.7	1.8	2.1
Italy	1,243.1	785.4	5.7	8.1	999.1	827.2	1.5	2.6	509.5	1,290.2	1.5	1.1
Netherlands	157.8	108.2	16.8	33.9	97.8	55.2	10.8	31.4	67.1	25.9	6.1	28.7
Belgium	159.0	95.7	12.4	22.1	105.2	57.4	5.1	19.7	29.6	55.8	6.5	5.7
Luxembourg	7.1	5.0	17.2	31.5	7.1	2.9	3.8	5.7	4.5	4.0	2.7	.8
United Kingdom	NA	209.3	NA	50.0	NA	47.5	NA	39.2	NA	99.4	NA	12.9
Ireland	NA	209.4	NA	24.8	NA	26.5	NA	8.7	NA	128.9	NA	1.0
Denmark	NA	81.6	NA	26.1	NA	89.4	NA	20.1	NA	43.7	NA	3.3
EC	NA	2,970.6	NA	19.3	NA	2,216.2	NA	7.4	NA	3,197.8	NA	2.2

NA = Not available.

1/ Minimum: 1 milk cow or 2 bovine animals over 2 years.

2/ Minimum: 3 fattening pigs.

3/ Minimum: 100 hens.

4/ The various animal species were converted to a common livestock unit (LU) on the basis of the numbers of animals maintained on the feed requirements of one incalf dairy heifer.

Sources: (11, 13).

Table 23--Distribution of livestock units 1/ by size of EC holding

Farm size in hectares	Germany		France		Italy		Netherlands		Belgium	
	1966-67	1975	1967-75	1975	1966-67	1975	1967-75	1975	1967-75	1975
	Percentage of holdings									
< 2	3.0	3.0	2.2	2.3	16.4	17.4	7.1	12.1	11.0	13.7
2-< 5	7.4	4.0	3.2	2.0	19.5	17.3	8.5	7.8	10.8	7.7
5-< 10	16.3	10.0	9.1	5.1	20.2	18.3	23.8	16.1	24.6	15.9
10-< 20	34.3	26.3	24.3	17.5	17.7	17.1	38.9	34.7	30.4	30.1
20-< 50	30.4	44.9	39.7	45.4	13.0	14.7	20.2	27.1	18.7	26.2
50-< 100	6.1	9.4	15.0	20.1	6.5	7.4	1.2	2.2	3.8	5.3
≥ 100	2.4	2.3	6.6	7.6	6.6	7.7	.2	--	.7	1.0

	Luxembourg		United Kingdom		Ireland		Denmark	
	1966-67	1975	1966-67	1975	1966-67	1975	1966-67	1975
	Percentage of holdings							
< 2	1.5	0.5	NA	2.6	NA	0.6	NA	0.3
2- < 5	5.1	2.3	NA	2.9	NA	2.4	NA	1.1
5- < 10	8.1	2.1	NA	2.9	NA	6.0	NA	6.9
10- < 20	21.6	10.5	NA	7.0	NA	21.3	NA	22.0
20- < 50	53.4	58.8	NA	22.6	NA	41.9	NA	48.6
50- < 100	9.3	24.3	NA	23.6	NA	19.9	NA	15.8
≥ 100	.9	1.4	NA	38.4	NA	8.0	NA	5.2

-- = not applicable.
Note: (<) - less than
(≥) - greater than or equal to.
NA = Not available.
1/ A livestock unit (LU) equals the number of animals maintained on the feed requirements of one incalf dairy heifer.
Sources: (11, 13).

The 15 percent of LUs on holdings over 50 ha in Italy in 1975 was surprisingly large for a country of small farms. This paradox is explained by the large, intensive livestock operations located in the northern regions of the country, with an advanced grain-livestock economy similar to economies in northern Europe.

Larger average farm size in cattle operations is usually accompanied by a larger forage area per livestock unit and a reduction in animal density. But more efficient livestock management, higher yielding fodder and other pasture crops, and greater use of purchased feedstuffs can compensate for forage area and permit density to increase. Average density of dairy cows at the Community level was 28 cows per 100 ha in 1975, but was 40 or more in the Netherlands, Denmark, Belgium, and Luxembourg.

In the leading pig and poultry producing countries, the Netherlands, Belgium, Germany, and Denmark, more than 35 percent of all livestock were fed prepared feedstuffs. Forty-seven percent of Denmark's livestock were fed this way, the highest percentage in the Community. These percentages compare with around 20 percent in the United Kingdom and France, and 6 percent in Ireland (4).

Land Tenure

EC farms are predominately owner-operated. In 1975, 63.8 percent of the agricultural area was farmed by owners, 34.6 percent by tenants, and 1.6 percent by sharecroppers and others. The area farmed by owners ranged from 97 percent in Ireland (the direct result of government policy) to 27 percent in Belgium (table 24). The area under tenancy increased in Germany during 1966-75, partly the result of flexible land tenancy legislation (30).

Focusing on holdings instead of land area, the 1975 Farm Structures Survey revealed that 28 percent of EC farmholders were both landowners and land renters, 62 percent exclusively landowners, and 10 percent exclusively land renters. In Germany, more than 50 percent of the country's holdings were partly owned and partly rented, while only 42 percent were 100 percent owned.

According to the 1975 Farm Structures Survey, the larger the holding the greater the importance of rented land, and the higher the ratio of rented to owned land. In 1975, holders owned all of the land area on 78 percent of EC farms 1 to 5 ha, but only 31 percent of the land area on farms 50 to 100 ha.

Farm tenancy in times of high and rising land prices not only makes it easier for young farmers to enter the profession, but for established farmers to expand their holdings (5). The state plays an important role in ensuring land mobility in many countries. In Greece, reclaimed land is distributed to the landless and small landowners at low cost. Countries such as Norway and Sweden expropriate farms that are mismanaged or badly farmed. In Denmark, institutions owning

Table 24--Distribution of agricultural area in the EC

Country and year	Owner farmed	Tenant farmed	Other
		Percent	
Germany:			
1966-67	77.7	22.1	0.2
1975	70.5	29.0	.4
France:			
1966-67	52.0	45.0	2.9
1975	51.8	46.7	1.5
Italy:			
1966-67	70.0	17.8	12.3
1975	77.6	17.3	5.1
Netherlands:			
1966-67	51.1	48.7	.2
1975	55.7	43.7	.6
Belgium:			
1966-67	29.3	70.2	.5
1975	27.1	72.9	1/
Luxembourg:			
1966-67	64.5	29.1	6.3
1975	58.5	41.5	1/
United Kingdom:			
1966-67	NA	NA	NA
1975	56.7	43.3	1/
Ireland:			
1966-67	NA	NA	NA
1975	96.5	3.5	1/
Denmark:			
1966/67	NA	NA	NA
1975	85.9	14.1	1/
EC:			
1975	63.8	34.6	1.6

NA = Not available.
1/ Less than 0.5 percent.
Sources: (11, 13).

land can, under certain conditions, be ordered to give land into tenancy (20).

A number of countries are endeavoring to improve the position of tenants by encouraging landowners to rent to farmers under favorable terms. In Germany, until recently, conditions of tenancy were freely established between interested parties. Now, new leases must be monitored by agricultural commissions. In France, legislation has been proposed to encourage tenancy, even though the state already has the right of preemption over land for structural improvements. In Belgium, a land bank is being considered to ensure that farmland coming onto the market will be purchased by those willing to rent to farmers (7).

Part-Time Farming

Part-time farming is important in Western Europe to farmers who wish to increase their income or to migrate from agriculture to other sectors of the economy. 5/ It is often a first step in the migration process. Permanent part-time farming is encouraged in certain depressed or remote regions where it is important to maintain a minimum rural population for social and political reasons (32).

The 1975 Farm Structures Survey revealed that 64 percent of EC farmholders (operators) and 86 percent of assisting family members were part-time workers. The proportion of part-time farmholders was the highest in Italy--84 percent--but 30 percent or less in the Netherlands and the United Kingdom (table 25).

Under many definitions, however, farmers are only classified as part-time if they work less than 50 percent of their time on their farm. When this criterion is used, only 44 percent of farmholders in the Community were part-time in 1975. The lowest percentage of part-time farmholders was in the United Kingdom (10 percent) and the highest in Italy (60 percent), with Germany next highest at 44 percent. The low percentage of part-time farmholders in the Netherlands (15 percent) reflected the country's high per farm income.

According to the 1975 Farm Structures Survey, 26 percent of part-time farm holders were self-employed, while 74 percent were employed by others. The latter type of employment was common in Germany and Italy. In Germany, part-time farmers were mostly industrial workers, while in Italy (especially in the south) they were usually day laborers on other farms. In France, and particularly in the United Kingdom, self-employment predominated (4).

Part-time farming is also important in many non-EC countries. In Austria, Norway, Switzerland, and Finland, countries that are largely mountainous or forested, part-time farmers usually find additional employment in forestry or fishing, although

5/ Part-time farming is defined as farming where the farmholder works less than 2,200 hours per year on the farm.

Table 25--Distribution of farmholders and assisting family labor, by time spent on farm, selected EC countries 1975 1/

Country and percentage of time spent on holding	Farmholders	Assisting family labor
	Percent	
Germany:		
< 25	18	26
25-< 50	26	39
50-< 100	10	20
≥ 100	46	16
France:		
< 25	19	32
25-< 50	11	26
50-< 100	18	30
≥ 100	52	12
Italy:		
< 25	40	41
25-< 50	20	22
50-< 100	24	25
≥ 100	16	11
Netherlands:		
< 25	8	14
25-< 50	7	28
50-< 100	14	35
≥ 100	71	23
United Kingdom:		
< 25	7	29
25-< 50	3	18
50-< 100	20	18
≥ 100	71	34
EC:		
< 25	27	34
25-< 50	17	27
50-< 100	20	25
≥ 100	36	14

Note: (<) = less than.
(≥) = greater than or equal to.

1/ Part-time farming is defined as working less than 2,200 hours per year on the farm.

Source: (11).

employment in other industries is expanding, especially in the lowland areas (32).

Future trends in part-time farming will depend on economic conditions and government policies. Economic conditions encourage part-time farming when net farm income falls significantly below earnings in other sectors of the economy. Farmers and members of their households will then attempt to find nonfarm employment within a reasonable distance from their farms.

Part-time farming is generally encouraged by EC policies concerned with price and income support payments, since part-time and full-time farmers are treated alike. In contrast, benefits of both EC and national policies concerned with credit and investment aids are not readily available to dual jobholders (part-time farmers). In general, most EC structural policies discourage part-time farming. Retirement and amalgamation schemes, for example, are designed to create viable full-time farms. There are, however, some structural policies which encourage dual jobholding, such as those aimed at maintaining minimum population and income in rural areas where full-time viable farms cannot be established because of adverse environment.

Agricultural Labor Force

The agricultural labor force in Western Europe declined significantly between 1960 and the late seventies. The number of assisting family workers and nonfamily workers declined faster than farmholders. Since 1970, however, the reduction in total farmworkers has slowed as a result of fewer nonfarm jobs.

Many elderly farmers are expected to retire during the 1980's and their land reallocated for structural improvement. Family workers will continue to be the largest group to migrate from agriculture to other sectors of the economy. The rate of migration, however, will depend on economic conditions and the availability of nonfarm jobs.

Size and Composition

The agricultural labor force in 17 countries of Western Europe was approximately 13.8 million persons in 1978, with 8.1 million in the EC. Italy had the largest number of agricultural workers, followed by Spain and France (26). These three countries together accounted for 54 percent of Western Europe's agricultural labor force (table 26).

The total EC farm labor force (excluding seasonal workers) consisted of 45 percent farmheads, 47 percent family members, and 8 percent regular nonfamily workers, according to the 1975 Farm Structures Survey. EC farms varied from small holdings worked solely by the owner to large holdings operated entirely by nonfamily workers. Ninety-three percent of all farms, however, employed no outside labor, and accounted for 70 percent of the agricultural area. At the other end of the scale, only 0.4 percent of farms exclusively employed regular nonfamily labor. These farms accounted for 2.4 percent of the

agricultural area. Normally, the larger the farm, the higher the percentage of regular nonfamily workers (4).

The total EC agricultural labor force declined significantly during 1960-78 (table 27). For most countries the largest part of the decline took place during 1960-70. The United Kingdom, with the largest farm size structure, had the lowest migration away from land, but the Netherlands, with relatively small farms, also had a low rate of migration (10).

All three main categories of the agricultural labor force--farmholders, assisting family members, and nonfamily workers declined substantially during 1960-78. The decline in the number of farmholders was basically the result of retirements, while the decline in assisting family members and nonfamily workers was largely the result of migration to the nonfarm sector. A slowdown occurred, however, in the rate of migration of assisting family members and nonfamily workers during the seventies as slower economic growth offered fewer

Table 26--Agricultural labor force in Western Europe, 1978 1/

Country	Persons	Total
	1,000	Percent
Italy	3,090	22.3
Spain	2,439	17.6
France	1,915	13.9
Germany	1,608	11.6
Portugal	1,179	8.5
Greece	870	6.3
United Kingdom	651	4.7
Austria	329	2.4
Netherlands	284	2.1
Finland	256	1.9
Sweden	251	1.8
Ireland	229	1.7
Switzerland	223	1.6
Denmark	215	1.6
Norway	161	1.2
Belgium	118	.8
Luxembourg	8	.1
Western Europe	13,826	100.0

Note: Includes hunting, forestry, and fishing.
1/ Excludes Iceland.
Source: (26).

Table 27--Change in size of EC labor force 1/

Type of labor	Germany	France	Italy	Nether-lands	Belgium	Luxem-bourg	United Kindgom	Ireland	Denmark
					Percent				
Total labor force:									
1960-70	-33.8	-45.7	-42.2	-25.0	-48.9	-31.8	-32.0	NA	-43.1
1970-78	-32.9	-13.5	-21.0	-13.6	-31.2	-26.7	+5.9	NA	-13.8
Farmholders:									
1960-70	-28.4	-31.0	-26.5	-15.5	-36.7	-18.3	-32.0	-21.8	-26.5
1970-78	-25.0	-13.8	-19.6	-14.0	-25.2	-25.9	+5.9	-13.5	-11.1
Assisting family members:									
1960-70	-31.4	-60.5	-64.0	-26.0	-65.3	-42.0	-32.1	NA	-72.5
1970-78	-40.1	-7.9	-36.3	-18.9	-45.2	-27.5	-28.4	NA	-27.3
Nonfamily workers:									
1960-70	-57.9	-44.2	-24.7	-50.0	-47.1	-46.7	-44.7	-50.6	-68.3
1970-78	-31.7	-25.8	-11.8	0	-44.4	-50.0	-14.5	-31.8	-23.1

NA = not available.

1/ Labor force includes workers on farms of 1 ha or more who spend more than 50 percent of their time engaged in agricultural work.

Source: (14).

nonagricultural jobs. In addition, the number of nonfamily workers were by then close to minimum levels. As a result, farmholders increased in relative importance in all EC countries. For example, during 1960-78, the proportion of farmholders to the total agricultural labor force increased from 55 to 74 percent in Belgium, and from 62 to 80 percent in the United Kingdom (4).

In the non-EC countries, the declines in the agricultural labor force ranged from 30 to 60 percent during 1965-78. This was very similar to labor force trends in the EC countries. Portugal, where the number of agricultural workers declined only 4 percent, was the exception.

There are indications that the proportion of hired (nonfamily) workers may be stabilizing or even increasing in Spain, Austria, Finland, Norway, and Sweden. As a result, family workers (including farmholders) either declined in importance or held steady (26).

Change in size of labor force in selected non-EC Western European countries, 1965-78

Country	Percent
Austria	-52.2
Finland	-60.2
Greece	-45.8
Norway	-35.9
Portugal	- 3.9
Spain	-33.3
Sweden	-40.0
Switzerland	-29.4

Source: (26).

Change in labor force density in agriculture, or persons per unit of land, paralleled the decline in the agricultural labor force. The number of persons employed per 100 ha in 1960 ranged between 16 and 18 persons in Germany, the Netherlands, Belgium, and Luxembourg. By 1978, the number had fallen to about 7 persons per 100 ha in all these countries except the Netherlands and Italy. The Netherlands' worker-land ratio remained high because of the intensive nature of the country's agriculture. Italy's high worker-land ratio, on the other hand, reflected the low level of agricultural development. The United Kingdom's extremely low worker-land ratio--3.3 workers per 100 ha--reflected the country's favorable farm structure (4, 26).

Annual Work Unit

An alternative measure of labor input in agriculture is the annual work unit (AWU). AWU differs from labor force statistics (numbers) in that it expresses labor input in terms of persons working fulltime, thus eliminating the bias of part-time workers. Total AWU's for any country is thus always smaller than comparable labor force numbers.

Labor input in the EC, according to the 1975 Farm Structures Survey, was 7.5 million AWU's, with 6.2 million AWU's or 82 percent family labor, and 1.3 million AWU's or 18 percent nonfamily labor. These proportions, however, varied widely among countries. In Belgium, for example, family labor accounted for 95 percent of total AWU and nonfamily labor only 5 percent, while in the United Kingdom, family labor made up 60 percent of the total and nonfamily labor 40 percent (table 28).

In the family labor category, EC farmholders provided 56 percent of the total AWU's, spouses 23 percent, and the other family members the remaining 21 percent. In Denmark farmholders and spouses provided 96 percent of all AWU's.

In the nonfamily labor category, the high proportion of regularly employed workers in the United Kingdom was the result of favorable farm structure and the cottage system. Under the cottage system, workers receive living quarters on the property and are protected by laws that give them considerable security. Italy had the highest proportion of seasonal labor. Small farm size, low farm income, and excess farm labor forced family workers as well as farmholders to seek seasonal employment on larger neighboring farms. This was particularly true in southern Italy. Northern Italy, with many large and prosperous farms, uses a large number of permanent hired workers, many whom have long-term contracts (4).

Age of Farm Operators

The age of farm operators influences structural change in agriculture. The older the labor force, the greater the possibility that a farm operation may cease and its land be reallocated for farm enlargement.

In 1975, 44 percent of EC farmholders were over 55 years of age, and 21 percent were over 65. These percentages, however, varied widely among member countries. For example, farmholders over 55 made up more than 50 percent of the agricultural labor force in Italy and Ireland, but only 26 percent of the farm labor force in Germany (table 29).

During 1970-75, the decline in the over-55 age group ranged from 16 percent in Germany to no change in Denmark. No country experienced an increase in either older or younger farmers. Only the 45 to 54 age group increased in a few countries, namely Germany, France, and Italy.

Table 28--EC agricultural employment, by type of worker, 1975

Type of worker	Germany	France	Italy	Nether-lands	Belgium	Luxem-bourg	United Kingdom	Ireland	Denmark	EC
					1,000 AWU's					
Total	1,234	1,950	2,826	254	140	12	626	325	177	7,544
Family labor	1,139	1,634	2,262	219	133	12	376	292	152	6,219
Holders	580	942	1,209	137	96	5	227	174	102	3,472
Spouses	296	390	520	45	21	3	50	47	44	1,416
Other family members	263	302	533	37	16	4	99	71	6	1,331
Nonfamily labor	95	316	564	35	7	NA	250	33	25	1,325
Regularly employed	76	244	216	28	6	NA	203	26	20	819
Not regularly employed	19	72	348	7	1	NA	47	7	5	506

NA = Not applicable.
Note: Annual work unit (AWU) = Labor input of one person employed fulltime.
Source: (4).

Many small EC farms are operated by elderly farmers. In 1975, farm operators over 65 years of age accounted for 13 percent of the agricultural area. Most of this area will become available for farm enlargement when these elderly farmers retire (4).

Future Trends

Labor input during 1980-85 is projected to decline at the slower rate begun in the early seventies. The decrease in the number of family workers will continue to determine the level of labor input for the sector as a whole; nonfamily workers are relatively minor in importance in most countries. As in the past, more part-time than full-time family workers will leave agricultural employment, thus minimizing the decline in labor units. The reduction in workers, therefore, will be mostly part-time family workers and elderly farm operators. The number of nonfamily workers, both permanent and seasonal, has already declined to such an extent in most countries that any further declines can only be minimal. This is especially true as farms grow in size and require more nonfamily workers.

Belgium and Italy will probably continue to have the highest annual rates of decline in labor input--around 5 percent annually. Germany, France, and possibly the Netherlands and Ireland should decline about 3 to 4 percent annually, while Denmark and the United Kingdom should continue to experience the lowest rates of decline (6).

Table 29--Percentage of EC holdings by farmholder age group, 1975

Country	Under 35	35 to 44	45 to 54	55 to 64	Over 65
	Percentage of holdings				
Germany	13	30	31	17	9
France	8	19	34	21	18
Italy	4	14	27	26	29
Netherlands	14	25	29	23	10
Belgium	12	22	32	22	12
Luxembourg	8	18	27	23	24
United Kingdom	9	19	27	27	18
Ireland	6	16	26	27	25
Denmark	9	20	27	27	18
EC	7	18	30	23	21

Source: (11).

Agricultural Inputs

Real gross investment in agriculture increased over the past two decades in virtually all EC countries. Approximately 5 to 10 percent of investment was for buildings, 15 to 20 percent for equipment, and 70 to 80 percent for other purchased inputs. Investment in purchased animal feedstuffs, especially feed grains, has been strong in recent years as a result of the rapidly growing livestock sectors in such countries as the Netherlands, Belgium, and Germany. A large proportion is imported in the form of coarse grains and oilseeds, and then processed locally. Energy use has also expanded rapidly.

Around 73 percent of all EC holdings used tractors in 1975, with the percentage only slightly lower for combine and sugarbeet harvesters. Almost 80 percent of EC cows were milked mechanically, but Italy pulled the average down. Fully mechanized potato harvesters were less widely used because of the small size of most farms cultivating this crop. Fertilizer use per ha in the EC countries was the highest in the world. The use of irrigation in the Mediterranean countries has been expanding since the early sixties.

Agricultural Investments

Progressive growth in the use of purchased farm inputs is characteristic of modern agricultural development. As farm production expands, the need for inputs increases. Furthermore, the reduction in the number of farmworkers is normally achieved at the cost of more capital inputs. As a result, an increasing emphasis on capital characterizes structural change in agriculture.

The Netherlands had the highest level of gross fixed capital formation per ha and per agricultural worker of any other EC country during the seventies. Germany and Belgium occupied the second and third positions, respectively, while Ireland and Italy occupied the lowest positions (6).

Real gross investment in agriculture increased in most EC countries over the past two decades. The level of total investment increased fourfold in the Netherlands and Belgium, and more than doubled in Germany and France. In contrast, agricultural investment in the United Kingdom stagnated over the period (table 30).

Building investment averaged 5 to 10 percent of total annual agricultural investment in most countries during 1960-80. The absolute level of investment in any one year is influenced largely by technological progress, the need for expansion, building costs, profitability levels, and government subsidies. In the Netherlands, for example, the demand for livestock buildings has been strong because of the rapidly expanding livestock sector (6).

Investment in buildings, however, has not kept pace with total agricultural investment in some countries. In Germany, for example, building investment weakened in the early seventies; in France, it has generally lagged because of soaring building costs, although state aid programs have caused periodic

Table 30--Gross investment in EC agriculture, annual average, selected years

Country and year	Buildings	Equipment	Intermediate goods 1/	Total
		Million dollars (1970 prices)		
Germany:				
1960-62	336	741	NA	NA
1962-64	431	963	3,140	4,534
1966-68	452	877	3,771	5,100
1970-72	338	1,033	4,972	6,343
1973-75	410	1,383	6,629	8,422
1980 2/	371-479	1,964-2,027	9,479-10,599	11,814-13,105
Belgium:				
1960-61	18	70	414	502
1965-66	21	82	644	747
1970-71	22	77	976	1,075
1974-75	30	161	1,428	1,619
1980 2/	38-62	185-222	2,222-2,445	2,445-2,729
France:				
1960-61	242	803	2,798	3,843
1965-66	372	1,134	3,528	5,034
1970-71	383	1,607	3,816	5,806
1973-74	460	1,632	5,784	7,876
1980 2/	597-762	1,892-2,126	6,801-7,323	9,290-10,211
Netherlands:				
1960-61	70	80	947	1,097
1965-66	111	123	1,168	1,402
1970-71	147	141	1,574	1,862
1973-74	244	226	2,360	2,830
1980 2/	319-397	365-402	3,737-4,477	4,421-5,276
United Kingdom:				
1960-61	176	365	3,333	3,874
1965-66	215	344	3,612	4,171
1970-71	292	329	3,398	4,019
1974-75	300	428	3,052	3,780
1980 2/	326-407	442-500	3,327-3,408	4,095-4,315
Denmark:				
1960-61	89	95	571	755
1965-66	83	117	618	818
1968-69	48	87	521	656
1972-73	101	150	640	891
1980 2/	174-200	233-436	765-999	1,172-1,635

NA = Not available.

Note: Excludes livestock, long-term crops, and current assets such as crops, stocks, and current financial assets. Years vary by country as consistent data are not available.

1/ Other purchased inputs such as fertilizers, seeds, and feedstuffs.

2/ Forecast range.

Source (6).

upturns. In the United Kingdom, on the other hand, building investment has risen steadily largely as a result of government subsidies (6).

Equipment investment in most countries during 1960-80 was about 15 to 20 percent of total annual investment, and represented not only replacement of machinery, but long-term substitution of capital for labor. In the Netherlands and the United Kingdom, however, the percentages were lower--around 8 to 10 percent. The Netherlands' widespread use of cooperative machinery and the United Kingdom's large farm size structure helped reduce their machinery needs relative to other countries. Belgium's low equipment investment relative to total agricultural investment was caused by extraordinarily rapid structural changes. Specifically, those farms soon to be abandoned did not invest in equipment, and neither did the newly enlarged farms, at least initially.

Expenditures on intermediate goods averaged between 70 and 80 percent of total annual agricultural investment in most EC countries. Such goods included all purchased goods and services used in agricultural production not classified under buildings and equipment. Leading intermediate goods were animal feedstuffs, fertilizers, pesticides, herbicides, and fuels.

There is a direct relationship between the consumption of intermediate goods and the quantity and type of commodities produced. For example, the rapid increase in the volume of agricultural output in the Netherlands gave rise to an increase in consumption of intermediate goods. In the United Kingdom, on the other hand, slower output growth was reflected in little or no increase in the consumption of intermediate goods (6).

The rapid growth of the EC livestock sector has resulted in increased demand for animal feedstuffs such as corn and soybeans, especially in Germany, the Netherlands, and Belgium. Imports are necessary because of limited domestic production. Most imports are in the raw state and processed locally into compound feed. In the crops sector, output expansion has given rise to greater consumption of energy, fertilizers, and crop protection products.

Mechanization

Tractors, the most common farm equipment, were used on 73 percent of EC holdings in 1975. This percentage was pulled down by Ireland, Belgium, and Italy where a relatively small percentage of holdings used tractors (table 31).

The density of tractors varied from one region to another, with the EC average at 5 per 100 ha of utilized agricultural area in 1975. The figure for Scotland was only 1 tractor, whereas for Baden-Wurttemberg, a region of small farms in Germany, the number was 14. This difference reflects size of farms and use of agricultural land. The United Kingdom and Ireland, the countries with the lowest density of tractors,

had a high proportion of pasture as well as the largest size farms (4). Countries such as Germany, with high tractor density, had the opposite structural characteristics.

While Italy had the lowest percentage of holdings using tractors, the number of tractors in use increased faster than in any other country. Between 1965 and 1976, the number of tractors there increased 106 percent. Ireland's increase of 88 percent was also a rapid rate. Growth in tractor use was much more moderate in the remaining EC countries, and in the United Kingdom, the number hardly increased at all.

Table 31--Selected EC agricultural inputs, 1975

Country	Holdings using tractors	Tractors		Horsepower per 100 ha of UAA 1/
		≥35 hp	≥51 hp	
	Percent			Number
Germany	91	44	14	399
France	89	64	29	204
Italy	57	63	28	237
Netherlands	90	69	17	349
Belgium	59	73	34	300
Luxembourg	91	67	33	286
United Kingdom	90	79	32	122
Ireland	65	57	17	104
Denmark	90	68	31	300
EC	73	61	25	221

	Crop areas harvested by fully mechanized equipment			Cows milked mechanically
	Combines for cereals	Potato harvesters	Sugarbeet harvesters	
	Percent of total area			Percent
Germany	79	49	83	91
France	97	54	95	77
Italy	66	7	70	47
Netherlands	97	94	93	94
Belgium	78	59	75	79
Luxembourg	100	40	NA	96
United Kingdom	93	64	93	95
Ireland	64	20	62	42
Denmark	80	75	85	96
EC	85	54	86	79

NA = Not available.
Note: (≥) = equal to or greater than.
1/ Utilized agricultural area (UAA).
Source: (11).

The United Kingdom led in the number of multitractor holdings. Sixty-two percent of holdings had two or more tractors. Luxembourg was next with 51 percent, and Italy last with only 23 percent.

Tractors in the EC are relatively small. In 1975, 61 percent of tractors were equal to or greater than 35 horsepower, while only 25 percent were equal to or greater than 51 horsepower. Because of the relatively small size of most holdings, larger and more powerful tractors have not been economically feasible. On larger farms, tractors were correspondingly larger. For instance, 46 percent of tractors in the East-Midlands region of the United Kingdom had an engine power exceeding 50 horsepower, while only 5 percent of tractors in Val d'Aoste in southern Italy had engines this powerful (4).

The best measure of tractor use is horsepower per unit of agricultural area. Germany in 1975 led all EC countries with 400 horsepower per 100 ha, and the Netherlands was next with 350 horsepower. Both countries have relatively small farms. In contrast, Ireland and the United Kingdom, with relatively large farms, had the lowest horsepower per 100 ha.

Combine harvesters, sugarbeet harvesters, and potato harvesters are the most commonly used mechanized machinery in the Community. In 1975, 85 percent of the cereal area, 86 percent of the sugarbeet area, and 54 percent of the potato area were harvested by specialized equipment. Italy and Ireland were significantly below the EC averages in the use of all three types of machinery. These percentages, however, take account of only the highest degree of mechanization, that is, machinery which copes with most of the various harvesting processes. Simple reapers, binders, and potato lifters, used extensively on small holdings, are not included.

The number of combine harvesters in the EC increased by 40 percent during 1965-76. While the number remained relatively stable in the United Kingdom, it increased 118 percent in Italy. The phenomenal growth in Italy reflected the extremely low level of combine use during the earlier period.

Sugarbeet harvesting is also highly mechanized. In 1975, EC area planted in this crop was only 7 percent the size of the cereal area. France and Germany together had almost 60 percent of the EC's sugarbeet area and over 40 percent of the harvesters.

Seventy-nine percent of all EC dairy cows were milked mechanically in 1975, varying from 42 percent in Ireland to 96 percent in Denmark and Luxembourg. In regions with only a few dairy cows per holding as in Liguria and Sicily in southern Italy, the corresponding figure was no more than 6 percent (11).

Feed Grains

Feed grains as an agricultural input have grown dramatically in recent years. The demand for feed grains has paralleled the increase in nongrazing livestock, namely pigs and poultry.

The intensive nature of pig and poultry production has created an increasing need for purchased feed, mainly feed grains. In Germany, for instance, the volume of feed grains used in pig production has more than doubled since 1960, but feed grains as a percentage of total pig feed has remained relatively constant at 40 to 45 percent. The percentage of potatoes used as pig feed has declined dramatically in most countries, while the use of concentrates has increased. Because of EC milk surpluses, dry milk is often a component in feed, but the percentage is relatively small (34).

Imports are vital for an adequate feed grain supply in all countries except France, with Germany the largest importer. Less than 30 percent of EC imports come from other members, but the largest percentage comes from France. Western Europe's feed grain imports averaged $5 billion annually during 1976-78, $4 billion which was imported by the EC alone. During 1970-72, imports averaged only $2.1 and $1.8 billion for Western Europe and the EC, respectively (15).

Energy

Energy needs have expanded with greater mechanization and increased use of fertilizers, pesticides, herbicides, and fuels. Because of the rapid rise in prices, energy is becoming a much larger proportion of total input cost, both directly as fuel and indirectly as a component in other inputs. Since 1970 heating and motor fuel prices in the EC have increased much more than electricity prices (table 32) (14).

Table 32--Purchase price index of energy directly consumed in agriculture in major EC countries 1/

Year	Germany	France	United Kingdom	Italy
		1975=100		
1973	78.9	60.9	56.3	50.0
1974	93.9	94.5	82.3	91.5
1975	100.0	100.0	100.0	100.0
1976	107.1	112.0	123.1	121.4
1977	107.2	124.4	147.4	147.4
1978	107.6	133.9	152.1	150.1
1979	139.4	159.1	181.9	162.5
1980	161.7	218.4	238.7	205.3

1/ Fuels for heating, motor fuels, electricity, and lubricants.

Source: (9).

Fertilizer

EC fertilizer use per ha is the highest in the world and increasing rapidly with Belgium and the Netherlands the heaviest users (table 33). The Netherlands' high consumption of nitrogenous fertilizers is the result of the widespread use of intensive pastureland. Germany, Denmark, and Luxembourg, and to a lesser degree, France, also consume large amounts of fertilizer. Low fertilizer consumption is characteristic of the United Kingdom and Ireland, as land is relatively abundant per farmer and grazing is extensive. Italy's low fertilizer use, on the other hand, is a sign of lagging agricultural development. In many regions, low farm income and lack of knowledge preclude greater use of fertilizers. This is also true to some extent in Ireland (4).

Table 33--EC consumption of commercial fertilizers 1/

Country	Nitrogen		Phosphate	
	1965/66	1979/80	1965/66	1979/80
	Kg/ha			
Germany	63	121	60	75
France	26	70	38	62
Italy	24	59	13	40
Netherlands	138	240	51	41
Belgium	89	128	69	70
Luxembourg	51	108	45	51
United Kingdom	35	71	22	24
Ireland	7	43	22	27
Denmark	64	136	42	46
EC average	36	75	35	46

	Potash		Total	
	1965/66	1979/80	1965/66	1979/80
	Kg/ha			
Germany	86	98	210	294
France	29	56	93	188
Italy	19	22	55	121
Netherlands	61	61	250	342
Belgium	102	114	260	312
Luxembourg	52	62	148	221
United Kingdom	22	25	79	120
Ireland	19	33	48	104
Denmark	61	59	167	240
EC average	34	44	106	166

1/ Pure nutrient content.
Source: (14).

Irrigation

Irrigated land represents a small percentage of total agricultural area in Western Europe (table 34). Although irrigation facilities are found throughout Western Europe, development has been most extensive in the Mediterranean countries because of their hot, dry summers. Italy, Spain, Portugal, and Greece have most of the irrigated area and expansion has continued since the early sixties. The Netherlands is the only non-Mediterranean country with a significant area of irrigated land (17).

Structural Policies

The need for structural policies to improve land, labor, and capital use in agriculture has long been recognized by all of Western Europe. Continuous structural changes are essential in agricultural development because of changing economic conditions, technology, and consumer demand. In general, the policy objectives of most countries include establishing viable farms capable of supporting the farmer and the farm family, improving the physical shape and size of farms, and integrating structural changes in agriculture with general economic development. A variety of domestic policies have been legislated to achieve these broad goals. In addition, the EC's CAP administers and finances selected structural policies for member countries (27).

Structural policies are most often facilitating in nature--guiding, accelerating, and assisting the structural adjustment process. Many policies are designed to prevent unnecessary hardship, but others finance expenditures needed by individual farmers as well as entire regions.

Table 34--Irrigated area as a percentage of total agricultural area, selected Western European countries

Country	1961-65	1977
	Percent	
Italy	11.8	16.4
Portugal	12.8	15.3
Netherlands	6.1	12.9
Greece	6.0	9.4
Spain	6.3	9.2
Norway	1.9	2.9
Germany	1.8	2.4
France	1.5	1.8
Finland	.1	1.8
Sweden	.5	1.6
Switzerland	1.0	1.5
United Kingdom	.5	.5

Source: (17).

Legislation to persuade farmers to release land and to encourage farm enlargement has been the cornerstone of structural policy in virtually all countries. Legislation to consolidate fragmented holdings and to break up large landed estates are also important in those countries where such problems exist (29).

EC Policies

Structural policies prior to 1972 were legislated and administered by each country. The policies varied from country to country and were designed to bring about general structural changes as well as to alleviate domestic and regional problems. In 1972, some of these domestic policies were replaced by the CAP and incorporated into three sociostructural directives concerning modernization of farms, cessation of farming and subsequent allocation of agricultural area for farm enlargement, and training of farmers for nonfarm occupations. These three directives together aimed to develop economically viable farms capable of producing an adequate income for a full-time farmer and farm family (table 35).

The CAP added a fourth directive in 1975 concerned with mountain and hill farming in less favored areas, which provided special allowances for farmers in disadvantaged regions to compensate for natural handicaps. In 1978, a total of 218,000 farmers in Germany, France, Luxembourg, the United Kingdom, and Ireland received compensatory allowances under this directive.

Table 35--Results of EC sociostructural measures, selected years

Country	Plans approved for modernization of farms, 1978	Cessation of farming, 1975-78		Persons attending training courses 1978	Beneficiaries of compensation allowances for less-favored areas, 1978
		Beneficiaries	Area released		
	Number		1,000 ha	Number	
Germany	5,820	19,224	210.8	5,455	32,711
France	4,457	23,141	369.7	83,257	66,452
Italy	NA	NA	NA	NA	NA
Netherlands	3,034	946	4.4	NA	NA
Belgium	1,985	1,074	8.7	16,536	NA
Luxembourg	NA	232	2.6	NA	1,935
United Kingdom	7,631	1,218	44.5	316	86,950
Ireland	4,197	453	7.8	3,523	29,876
Denmark	2,120	NA	NA	1,067	NA
EC	29,244	46,288	648.5	110,154	217,924

NA = Not available.
Source: (4).

The European Agricultural Guarantee and Guidance Fund (EAGGF) finances EC agricultural policies. The guarantee section is concerned with price policies, including export subsidies, and the guidance section with structural policies. In recent years, the guarantee section has accounted for about 95 percent of total expenditures. In 1979, the guidance section's budget was 655 million European units of account (EUA) of which 32 percent, or 208 million EUA's, was for the four sociostructural directives. The remaining 68 percent was for other structural and miscellaneous measures including production structures, marketing and processing, and disasters. Most structural measures, including those concerning farm structure, involve partial reimbursement of eligible expenditures to the member states (16).

The directive on farm modernization was not fully implemented until 1977 because of important differences among member states. Payments under this directive totaled 54.3 million EUA's in 1979, almost twice that in 1978. This upward trend likely continued in 1980, when payments were expected to reach 90 million EUA's. In 1977, almost half the number of modernization plans involved farms 20 to 50 ha, and only 20 percent involved farms of less than 20 ha. Indications are that most farm modernization plans concentrate on intensifying farming systems within the framework of existing farm structure.

The cessation of farming directive has generally had only limited success. The 46,000 cessation annuities granted during 1975-78 released some 648,000 ha, and enlarged some 97,000 farms. This was not sufficient to appreciably increase the size of the average EC farm. The relative lack of success can be attributed, at least in part, to the 1974-75 recession and to continuing high unemployment in some countries. There are, however, many other obstacles to land transfer such as high and rising farmland prices, the restrictive nature of land tenancy legislation, and the increasing cost of fixed and working capital (4).

The directive on retraining agricultural workers also met with limited success. In 1978, approximately 700 advisors conducted courses for some 110,000 persons, a small number relative to total EC agricultural workers.

Of the four sociostructural directives, expenditures for mountain and hill farming in less favored areas were the largest. Member states' applications for reimbursement have grown steadily, reflecting the EC emphasis on regionalization since 1978. Payments in 1979 amounted to 82.5 million EUA's, and the estimate for 1980 was 93 million EUA's (4).

The less-favored EC areas include some 31 percent of all farms, and 33 percent of the agricultural area. Within member states, the percentage of farms in less favored areas varies from 15.2 percent in Belgium to 61 percent in Ireland.

Grazing livestock is the dominant enterprise in many less favored areas of the Community. The less favored area directive covers some 55 percent of the forest area, 27 percent of total bovine animals, 53 percent of sheep, 47 percent of permanent grassland, 28 percent of the arable forage area, and 21 percent of olive trees. These percentages, however, vary significantly among individual EC countries.

Average EC farm size varies very little between less favored areas and the other areas except in the United Kingdom, where the average farm size in the less favored areas is considerably larger than the average for the country as a whole. This is the result of the large sheep pastures in the Scottish highlands.

The less favored area directive also strives to maintain minimum population in regions with a suboptimal economic base. In these regions, the agricultural sector cannot adequately support minimum population levels, and nonfarm sectors are often totally lacking. To maintain minimum population in such regions, it is essential to ensure not only agricultural development but development of other sectors as well. In fact, some of the latest EC structural proposals take a more integrated approach to structural improvement in agriculture (4).

Non-EC Policies

The domestic structural policies of the non-EC countries are diverse, but policies are similar among countries in the same general region. The policies of Spain and Greece, for example, are similar to each other, but very different from those of Sweden and Finland.

Structural policy in Spain and Greece focuses on irrigation, farm consolidation and enlargement, and farmer training. In Greece, structural measures have taken the form of selective public investments in infrastructure, reform of inheritance laws and rights to land use, and subsidies for the consolidation of fragmented holdings. State irrigation schemes are also often used as an incentive for farm consolidation (33).

Structural policy in Sweden and Finland focuses on farm size and ownership, and farmland utilization. In Sweden, structural policy encourages the development of optimum size family farms, and discourages excessively large units. The state can hold land for farm amalgamation, and give loan guarantees to farmers for the purchase of more land. Purchasers of land are then required to live and work on the land for at least 5 years. In Finland, a national board acquires farm and forestry land over 2 ha in size to prevent such land from being transferred out of the hands of farmers. The state also makes loans for land purchase, building construction, and improvements (29).

Structural measures in Austria do not apply directly to the agricultural sector but are incorporated into measures to meet

more general economic objectives. For example, a policy concerned with the growth of the country's underdeveloped regions provides credit for farm investments, finances road construction and electrification projects, and promotes new markets (29).

OUTLOOK

U.S. agricultural exports to Western Europe during the 1980's will continue to be affected by trends in the performance and structure of the region's agricultural sector.

In the crops sector, inputs such as fertilizer and machinery have probably reached optimum levels in many countries. This will moderate the rapid rise in yields and output that have occurred in recent decades. For the United States, this may mean some easing of competition from the region's surplus commodities in third markets.

In the livestock sector, reduced economic growth and sluggish consumer demand for meat may cause U.S. exports of feedstuffs such as corn and soybeans to expand at a slower rate. These commodities, however, will still dominate U.S. exports to the region. An estimated annual increase in feed demand of only 1.5 percent over the next decade, coupled with continued expansion of grain production in the region (already in surplus), promises to moderate growth in import requirements for feedstuffs over the longer term.

The EC should expand to 12 members by 1990. Greece became the 10th member on January 1, 1981, and accession negotiations are in progress with Portugal and Spain. The crop-oriented agricultural economies of Spain, Greece, and Portugal emphasize such Mediterranean products as fruits, vegetables, wine, and olive oil. These products are also important in Italy, and in some regions of France. Enlargement could thus mean serious competition for the latter countries, as they would have to compete with lower wage levels and costs. The supply of certain fruits and vegetables, olive oil, and other products is also certain to exceed demand in the enlarged Community. Without appropriate action, therefore, surpluses are likely (4).

Agriculture as a proportion of the total economy will continue to decline in importance in all EC countries by 1990. In 1980, including the three prospective members, agriculture accounted for about 7 percent of GDP and 11 percent of the total workforce. By 1990, agriculture should represent only 4.5 percent of GDP and 7 percent of the total labor force (4).

Declining agricultural area and increasing woodland and forest area are expected to continue in the 1980's. The growing deficit of timber and the surplus production of several agricultural commodities call for a transfer of area from agriculture to forestry. The increase in the timber supply, however, cannot be expected until after 1990 (4).

The trend toward fewer and larger farms will continue. The 1977 average farm size of 17.2 ha for the enlarged Community

should increase by about 2.3 percent a year to 24 ha by 1990. At the same time, the number of farms can be expected to decrease by about 2.5 percent a year from 9 million in 1977 to 6.6 million in 1990 (4).

Land prices and rents should climb during the 1980's as inflation continues and the demand for land for nonagricultural purposes increases. In some areas of low population density, however, where the demand for land for social infrastucture and other nonagricultural purposes is weak, land prices and rents may even decline.

At least 3.5 million people are expected to leave agriculture by 1990 (including Greece, Spain, and Portugal), or 2.3 percent annually (4). This figure corresponds closely with the expected retirement of older workers. At least 44 percent of EC farmholders and 25 percent of all EC agricultural workers were over 55 years of age in 1975, compared with 14 percent in the total economy. Retirements will be substantially influenced by the attractiveness of retirement incentives and expected income.

The outflow of agricultural workers to other sectors of the economy will depend to a large extent on the performance of the total economy in relation to farm income. Wage and salary increases in nonagricultural sectors will lead farmers to expect similar increases in farm income. Any discrepancies may be resolved partly by improved productivity, and partly by an outflow of labor from agriculture, provided job opportunities are found elsewhere.

The relative importance of part-time farming is likely to increase. Some of this increase will partly depend on farmers eventually moving out of agriculture into full-time nonagricultural employment (4).

The reduction in the agricultural labor force must be offset by an increase in capital, but opportunities for self-financing are limited. Agriculture will be faced with strong competition on the capital market, and will have to pay high interest rates and high capital charges. Investments in the agricultural sector, therefore, will require sufficient returns to offset these added costs.

Mountainous and other less-favored regions will be adversely affected by increasing input costs and restrictive price policies. These regions cover about 3 million ha in the EC, or one-third of the agricultural area. The entry of Spain, Greece, and Portugal into the Community will increase regional disparities, since such areas account for a large proportion of the total agricultural area of these countries (4).

BIBLIOGRAPHY

(1) Andrews, Davis, Mark Mitchell, and Adolf Weber. The Development of Agriculture in Germany and the United Kingdom. Vol. 3: Comparative Time Series 1870-1975, Wye College, University of London, 1979.

(2) Breitenlohner, Cynthia A. The Agricultural Economy and Trade of West Germany. ERS-Foreign 325. U.S. Dept. Agr., Econ. Res. Serv., 1971.

(3) Debailleul, Guy. Vertical Integration in Western Europe. Introductory notes for a panel discussion, Second European Conference of Agricultural Economists, Dijon, France, September 1978.

(4) European Communities Commission. Agricultural Situation in the Community. Annual issues, Brussels, 1978-80.

(5) _____, Directorate General Press and Information. Land Tenure in the European Community. March 1977.

(6) _____. Projections for the Agricultural Sector--Forecasts of the Trends in Farm Structures and Factor Input in Agriculture in the EC. Vols. 64-66, Brussels, 1979.

(7) _____. Report of the Working Party on Land Mobility. Agricultural Statistics Committee, Brussels, 1977.

(8) _____. The Milk and Beef Markets in the EC. Report No. 10, Brussels, April 1976.

(9) European Communities Statistical Office. Agricultural Prices, 1973-1980. Luxembourg, 1981.

(10) _____. Agriculture Structure 1950-76. Luxembourg, 1977.

(11) _____. Community Survey on the Structure of Agricultural Holdings, 1975. Luxembourg, 1978.

(12) _____. Economic Accounts. Luxembourg, 1978.

(13) _____. Enquete sur la Structure des Exploitations Agricoles, 1966/67. Vol. I, Luxembourg, 1970.

(14) _____. Yearbook of Agricultural Statistics. Annual issues, Luxembourg, 1970-82.

(15) Epp, Donald J. Changes in Regional Grain and Livestock Prices under the European Economic Community Policies. Reseach Report No. 4, Michigan State University, East Lansing, Mich., 1968.

(16) Fennell, Rosemary. The Common Agricultural Policy of the European Community. Institute of Agricultural Economics, University of Oxford, England: Granada Publishing Ltd., 1979.

(17) Food and Agriculture Organization of the United Nations. FAO Production Yearbook. Rome, various issues, 1965-79.

(18) French Ministry of Agriculture. "Price of Agricultural Land in France," Agra Europe. July 4, 1980.

(19) Government of the Netherlands, Ministry of Agriculture and Fisheries. Aspects of Dutch Agriculture. The Hague, October 1976.

(20) International Federation of Agriculture Producers. Land Mobility and Tenancy. Paris, February 1980.

(21) Keefe, Eugene K. and others. Area Handbook for Germany. Foreign Area Studies, The American University, Washington D.C., 1975.

(22) Knudsen, P.H., Ed. Agriculture in Denmark--A Survey of Structure and Development. London: Land Books Ltd., 1967.

(23) Mears, Leon G. Current Developments in Spain as They Relate to U.S. Agriculturel Exports. Senior Seminar in Foreign Policy, 18th Session, U.S. Department of State, 1975-76.

(24) National Farmers' Union of England, Wales and Scotland and Ulster Farmers Union. EC Policies for Improving Farm Structures. London: Agriculture House, 1974.

(25) Organization for Economic Cooperation and Development. Food Consumption Statistics. Various issues, Paris.

(26) _____. Labor Force Statistics 1967-78. Paris, 1980.

(27) _____. Review of Agricultural Policies in OECD Member Countries. Agricultural Policy Reports, Paris, 1980.

(28) _____. National Accounts of OECD Countries 1961-1978. Paris, 1980.

(29) _____. Review of Agricultural Policies. Agricultural Policy Reports, Paris, 1975 and 1979.

(30) _____, Working Party of the Committee for Agriculture. Land Mobility. Paris, 1976.

(31) _____. Land Use. Paris, 1976.

(32) _____. Part-time Farming. Paris, 1977.

(33) Panhellenic Confederation of Unions of Agricultural Cooperatives. Greek Agriculture. Athens: Agricultural Cooperative Editions, 1978.

(34) Rossmiller, George E. The Grain-Livestock Economy of West Germany with Projections to 1970 and 1975. Research Report No. 1, Michigan State University, East Lansing, Mich., 1968.

(35) Sorenson, Vernon L., and Dale E. Hathaway. The Grain-Livestock Economy and Trade Patterns of the EEC. Research Report No. 5, Michigan State University, East Lansing, Mich., 1968.

(36) U.S. Department of Agriculture, Economic Research Service. Feed Use and Feed Conversion Ratios for Livestock in the Member Countries of the European Community. IED Staff Report, Edmund Neville-Rolfe, Bureau Europeen de Recherches, Brussels, 1980.

(37) _____. Growth Potential of Corn Production in Western Europe through 1975 and 1980. FAER Report No. 88, 1973.

(38) _____. Indices of Agricultural and Food Production for Europe and the U.S.S.R. Various issues.

(39) _____. and North Central Regional Public Policy Research Committee. Policy Research Notes. No. 9, January 1980.

(40) U.S. Department of Agriculture, Foreign Agricultural Service. The Common Agricultural Policy of the European Community. FAS M-255, November 1973.

(41) World Agriculture, "Land Prices," International Federation of Agricultural Producers. January 1980.

(42) World Bank, Middle East & North Africa Regional Office. Portugal, Agricultural Sector Survey. Washington D.C., 1978.

(43) Wormell, Peter. Anatomy of Agriculture, A Study of Britain's Greatest Industry. London: George G. Harrap & Co., Ltd., 1978.

END

FILMED

DATE

10-10-83

NTIS