

SEPTEMBER 1988

A.E. RES. 88-12

# THE COMPETITIVE POSITION OF THE UNITED STATES GRAPE AND WINE INDUSTRY

BY

GERALD B. WHITE

DAVID BLANDFORD

DEPARTMENT OF AGRICULTURAL ECONOMICS  
CORNELL UNIVERSITY AGRICULTURAL EXPERIMENT STATION  
NEW YORK STATE COLLEGE OF AGRICULTURE AND LIFE SCIENCES  
A STATUTORY COLLEGE OF THE STATE UNIVERSITY  
CORNELL UNIVERSITY, ITHACA, NEW YORK 14853-7801

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## ABSTRACT

The declining revenue of U.S. grape growers, the increasing market share of imports, and the impact of subsidies to the European Community wine industry were factors which led to concern about the competitiveness of the U.S. grape and wine industry in the early 1980's. This research examined competition in table wine, which accounts for about 85 percent of U.S. wine production and two-thirds of European Community wine production.

In order to study the competitiveness of the U.S. industry, three factors were examined which could affect the U.S. industry's ability to compete with EC countries, particularly Italy and France, which accounted for about 90 percent of EC output prior to Spanish accession. These factors were (1) changes in the value of the U.S. dollar relative to the currency of major competitors; (2) efficiency as measured by grape yield per unit area and costs of grape and wine production; and (3) the effects of EC subsidies.

It was concluded that the strengthening U.S. dollar from 1980 to 1985 had a substantial impact on the competitive position of the EC and the United States. In terms of efficiency, the U.S. industry does not appear to be at a competitive disadvantage. California, with over 90 percent of the U.S. output of grapes and wine, in general, appears to be able to produce nonpremium table wine about as cheaply as France and Italy. Average grape yields are higher in California than in Italy and France. An examination of costs per metric ton showed that the large, important producing area in the San Joaquin Valley produces grapes about as cheaply as the lowest cost production areas in France and Italy. New York State, which is the second most important state in wine production, but with only five percent of U.S. production, appears to be at a cost disadvantage. At the exchange rates of the period when the dollar was the strongest, however, the U.S. was at a major disadvantage. Winery cost studies are fragmentary, but suggest that the U.S. is at a slight cost disadvantage.

In summary, the U.S. industry as a whole is probably more efficient in producing grapes and slightly less efficient in wine production than the EC. When transportation costs to eastern U.S. markets are considered, there does not appear to be any great difference in costs of nonpremium table wine between the San Joaquin Valley and France and Italy. This balance is obviously affected by extreme misalignment of the value of the dollar relative to its European competitors, such as occurred in 1984 and 1985.

### Acknowledgements

This research was funded by the Economic Research Service of the United States Department of Agriculture under cooperative agreement number 58-3J23-5-00386.

The authors acknowledge the work of Nicola Donadio of Italy and Vincent Hervouet of France, former graduate students in the Department of Agricultural Economics at Cornell, whose work on the effects of exchange rates on imports from the EC made possible this report.

Appreciation is expressed for helpful reviews of this manuscript by Dr. Glenn Zepp of the Economic Research Service, U.S.D.A.; Professor George Casler of the Department of Agricultural Economics, Cornell University; and Dr. Andrea Segré, University of Bologna, Italy, a Visiting Fellow in the Department of Agricultural Economics at Cornell University.

# THE COMPETITIVE POSITION OF THE UNITED STATES GRAPE AND WINE INDUSTRY

By Gerald B. White and David Blandford<sup>1</sup>

## I. INTRODUCTION

### Problem Statement

The U.S. grape industry experienced a period of expansion in the 1970's and early 1980's. The value of utilized production increased from \$292 million in 1970 to \$1.361 billion with a record crop in 1982. With the large crop in 1982, grape prices were understandably reduced, but prices continued to decline through 1985. The price of all grapes utilized fell from \$297 per ton in 1981 to \$171 per ton in 1985, and the price of grapes utilized for wine fell from \$250 to \$162 per ton. Grape farm failures and abandoned acreage were common in California and New York, the two largest grape producing states, in 1985 (McDowell et al.).

At the same time, the volume and value of imported wines in the U.S. market increased dramatically. In 1975, imports of still wine (table wine) into the U.S. market were 38 million gallons, (1.43 million hectoliters), Table 1. By 1980 imports reached about 88 million gallons (3.33 million hectoliters), and the following four consecutive years showed steady growth. By 1984 imports of still wine were 118 million gallons (4.47 million hectoliters) valued at \$659 million. In 1975, imported wines represented just 13 percent of total U.S. consumption, but by 1984 imports held a 26 percent share of the U.S. wine market.

U.S. table wine imports are dominated by the European Community (EC) member countries of Italy and France (Tables 1 and 2). West Germany is a third EC country which is an important source of imports. With the recent accession of Spain and Portugal, the European Community now supplies over 95 percent of total U.S. wine imports.<sup>2</sup>

The foundation of the EC following the signing of the Treaty of Rome in 1957 brought together in a single market the two largest wine producing and consuming nations in the world - Italy and France. With the recent accession of Spain, the third largest producer was added to the Community. These three countries account for about 40 percent of the area in the world planted to grapes and over one-half of the world's wine production. Wine production in the Mediterranean region is not only an important economic activity, but has been an important facet of the culture and the society of these countries for more than 2,000 years (Niederbacher).

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<sup>1</sup>The authors are Associate Professors in the Department of Agricultural Economics, Cornell University, Ithaca, New York, 14853-7801.

<sup>2</sup>This report uses data relating to various stages in the evolution of the European Community. The original Community (EC-6) was composed of six countries: Belgium, France, Holland, Italy, Luxembourg, and West Germany. The EC-9 dates from the accession of Denmark, Ireland, and the United Kingdom in 1973. The EC-10 was created in 1981 when Greece became a member. The Community is now the EC-12 since Spain and Portugal joined in 1986.

TABLE 1. U.S. IMPORTS OF STILL WINE, 1975 AND 1980-1985, BY COUNTRY OF ORIGIN

	<u>1975</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>	<u>1985</u>
	(million gallons)						
EC:							
Italy	11.9	54.3	59.9	63.0	63.4	62.9	58.5
France	7.4	11.4	15.1	18.1	22.3	27.9	27.6
W. Germany	6.1	11.7	13.0	13.2	15.1	16.0	14.3
Other EC	0.7	0.6	0.8	1.0	1.1	1.0	1.4
Total EC*:	26.1	77.9	88.8	95.3	101.8	107.8	101.8
OTHER:							
Spain	4.2	1.6	1.5	1.5	1.3	1.8	1.5
Portugal	6.7	5.7	5.4	5.0	4.6	4.9	4.5
All other	1.2	2.7	2.7	3.0	3.4	3.9	3.9
TOTAL WORLD*:	38.2	87.9	98.3	104.9	111.1	118.4	111.7
PERCENT EC OF TOTAL:	68.4	88.6	90.3	90.9	91.6	91.0	91.1
PERCENT EC, SPAIN, & PORTUGAL OF TOTAL:	96.9	96.9	97.4	97.0	96.9	96.7	96.5

\*Totals may not add due to rounding errors.

SOURCE: Foreign Agricultural Service, USDA, Foreign Agricultural Circular, Horticultural Products, March 1986.

Table 2. VALUE OF U.S. TABLE WINE IMPORTS, 1975 AND 1980-1985, BY COUNTRY OF ORIGIN

	<u>1975</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>	<u>1985</u>
	(million dollars)						
EC:							
Italy	44.7	241.4	229.8	238.8	243.4	240.1	229.5
France	65.0	141.0	172.9	188.6	211.2	259.3	294.1
W. Germany	33.4	94.1	97.3	98.5	103.3	101.3	95.6
Other EC	2.8	2.3	2.1	6.1	5.8	5.3	9.3
Total EC*:	145.9	478.8	502.1	532.0	563.7	606.0	628.5
OTHER:							
Spain	11.1	9.9	9.0	9.2	8.2	10.0	8.8
Portugal	27.3	32.7	30.8	28.7	23.6	24.4	25.7
All other	4.3	14.4	18.1	16.1	18.5	18.6	18.9
TOTAL WORLD*:	188.6	535.8	560.0	586.0	614.0	659.0	681.9
PERCENT EC OF TOTAL:	77.4	89.4	89.7	90.8	91.8	92.0	92.2
PERCENT EC, SPAIN, & PORTUGAL OF TOTAL:	97.7	97.3	96.8	97.3	97.0	97.2	97.2

\*Totals may not add due to rounding errors.

SOURCE: Foreign Agricultural Service, USDA, Foreign Agricultural Circular, Horticultural Products, March 1986.

The declining revenue of U.S. grape growers, the increasing market share of imports, and the impact of subsidies to the EC wine industry were factors which led to concern about the competitiveness of the U.S. grape and wine industry during the early 1980's. These concerns culminated in passage of the Wine Equity Act in 1984 and two unsuccessful attempts by a growers' organization to have the United States impose countervailing and antidumping duties on table wine imported from the Community (see Wiedert, e.g.).

The grape industry of the United States contributes about \$1 billion annually to the nation's agricultural economy and represents an important part of the agricultural sector in California and New York. Wineries are increasing in number in several other states such as Washington, Oregon, and Virginia. As the income from traditional farming enterprises fell in the 1980's, many states looked to horticultural crops as an alternative, and wine grapes have received increasing attention and publicity in states such as New Mexico, Texas, and Oregon. Thus, there is considerable interest nationally in the ability of the U.S. grape and wine industry to compete in the U.S. and world markets.

### Objectives

The purpose of this report is to evaluate the competitive position of the U.S. grape and wine industry. Specific objectives are as follows:

1. To assess trends in world production, consumption, and trade of grapes and grape products;
2. To describe and assess changes occurring in the structure of the wine production and marketing sector of the grape industry in the United States and their principal competitors, e.g. France and Italy;
3. To describe and assess governmental regulations and subsidies affecting wine production and marketing in the United States, France, and Italy;
4. To determine costs and relative net returns to wine grape production in the United States, France, and Italy;
5. To assess the effects of selected economic variables (monetary exchange rates, and farm and trade policies) on the net returns position of the United States, French, and Italian wine-grape and wine producers.

## Scope of The Study

Table wine accounts for over three-fourths of the imports of all wine. As noted previously, the EC-10 accounted for over 90 percent of these imports while the EC-12 will account for more than 95 percent. Much of the contention between the United States and the EC regarding wine policy has concerned ordinary or table wines.<sup>3</sup>

The focus of this research is, therefore, on nonpremium table wine which accounts for about 85 percent of the U.S. production (Wiedert) and about two-thirds of EC-10 production (Commission of the European Communities, Commission Report). The other one-third of EC production is comprised of premium wine and "other" wine. Primary emphasis is placed on Italy and France which together account for over 90 percent of EC-10 production and about three-fourths of U.S. table wine imports.

The U.S. industry is concentrated in California, where over 90 percent of the U.S. grape and wine production occurs. New York accounts for approximately three percent of U.S. grape production and five percent of wine production. Practically all of the production of nonpremium table wine in the United States occurs in California and New York. For these reasons, the analysis is concentrated on the producing sectors of these two states.

As is discussed later, there are many reasons to believe that premium wines will become more important in the U.S. market in the next decade. Furthermore, the number of states which now have bonded wineries, and the number of wineries, have proliferated in the last 10 years. This segment of the industry will become more important in the future, but for now, its importance is overshadowed by the nonpremium wine sector. This fact necessarily directed the scope of our research toward the nonpremium wine sectors of California and New York and the table wine sector of the EC.

## II. DEVELOPMENTS IN CONSUMPTION IN THE UNITED STATES AND THE EUROPEAN COMMUNITY

Significant changes are occurring in the consumption of wine in the United States, the countries of the European Community, and the other wine consuming countries of the world. These changes have important implications for producing countries. In the following section, trends in per capita

<sup>3</sup>The European Community in administering wine policy has three categories of wine - table wine, quality wine produced in specified regions (p.s.r.), and other wine. The United States statistics have a broad category of wine called "table wine" which includes wine of the type that the European Community designates table wine as well as wine that the EC calls quality wine, p.s.r. For exposition purposes in this report, "nonpremium wine" refers to lower priced domestically produced generic wines often sold in large bottles ("jug wines"). This category of wine roughly corresponds to EC table wine. "Premium wine" produced in the United States includes varietals such as Cabernet Sauvignon, Chardonnay, and Riesling. This category roughly corresponds to the EC designation of quality wine p.s.r. These European wines include the French A.O.C. (appellation d'origine controlée), Italian D.O.C. (demoniazione di origine controllata), German "Qualitätsweine" and "Qualitätsweine mit Prädikat", and Luxembourg wine carrying the "Marque nationale" (Niederbacher).

consumption, total consumption, and consumption of different wine types are examined.

### Per Capita Consumption

Per capita consumption in the EC-12 countries, the United States, Argentina, and the Soviet Union are shown in Table 3. Several interesting trends are evident from these data. The first noticeable trend is that large traditional producing and consuming countries with high per capita consumption, such as Spain, France, Italy, and Argentina have experienced declining per capita consumption. The decline in France extends over the entire 20-year period beginning in 1965, while the decline in Italy and Spain began in the 1970's.

A second trend is that industrialized countries without a tradition of wine production and with low to moderate per capita consumption have experienced a continued increase in per capita consumption during the 20 years. Countries which fit this pattern include West Germany, Belgium, Denmark, the Netherlands, the United Kingdom, and the United States. Luxembourg and Greece are intermediate between the high consumption and low consumption countries, and show somewhat erratic trends due to large fluctuations from year to year in domestic wine production. For example, Luxembourg's per capita consumption increased significantly in 1983 and 1984 due to high domestic production in 1982 and 1983.

A third trend, which is less discernable, is that the growth rate in consumption in certain countries has slowed appreciably in the 1980's. Countries which fit this pattern include West Germany and the United States. The Netherlands also exhibited a declining growth rate in the 1980's, while per capita consumption in Belgium as well shows some indications of stabilizing.

### Total Consumption

Changes in total consumption depend upon trends in consumption per capita, population growth, and the changes in the age profile of the population. Table 4 describes total wine consumption in countries of the EC, the U.S., and the world. Wine consumption in the world peaked about 1978 at 292 million hectoliters.

France and Italy have the largest wine markets, each in the 45-50 million hectoliter range. The total wine market in France declined from an average annual consumption of 57 million hectoliters in 1965-69, to an average of 47 million hectoliters in 1980-84. The decline in Italy was similar (59 million to 48 million hectoliters) but Italian consumption reached its maximum in the 1970-74 period at 61 million hectoliters. The Spanish market also declined in the last five-year period.

For the EC-10, consumption apparently peaked in the period 1970-74 at 138 million hectoliters. While the EC-12 was only formed in 1986, the total consumption of these countries is indicated for the entire 20 year period to show their combined market trends. The importance of these 12 countries in the world wine market is underscored by the fact that in 1975-79, the EC-12 accounted for 57 percent of the estimated consumption of wine in the world. By 1980-84, EC-12 consumption made up just 54 percent of the world's consumption, reflecting the growing importance of other consuming countries such as Japan and the United States, and the declining consumption in Italy, France, and Spain.

Table 3. Per capita consumption of wine, European countries, the United States, and Argentina, 1965-84, liters.

Year	U.S.	Belgium	Denmark	France	Greece	Ireland	Italy	Lux.	Neth.	Port.	Spain	U.K.	W.G.	Arg.	USSR
1965	3.7	8.6	4.1	117.6	39.2	1.4	109.0	37.9	3.4	108.9	63.0	2.2	14.7	85.8	9.8
1966	3.7	7.3	4.2	116.8	38.7	1.4	119.0	30.6	3.5	108.9	60.0	2.4	15.4	80.2	9.3
1967	3.9	9.2	4.4	115.3	36.7	1.5	111.0	33.9	4.2	90.0	63.0	2.6	15.1	82.8	8.9
1968	4.1	9.7	4.4	115.3	36.7	1.6	111.0	34.9	4.3	86.9	62.0	2.9	15.3	87.5	12.0
1969	4.4	10.1	5.1	112.4	40.0	1.6	112.0	33.4	4.9	98.5	60.9	2.8	15.9	88.5	10.0
1970	5.0	12.0	5.9	109.1	40.0	1.6	111.0	37.9	5.2	76.7	61.5	2.9	16.2	91.8	11.4
1971	5.6	12.8	6.7	108.0	40.0	3.3	102.0	39.7	6.2	97.2	60.0	3.5	17.5	85.3	11.8
1972	6.1	12.1	7.5	106.9	40.0	3.2	100.0	41.5	7.8	69.8	67.0	4.1	19.4	79.7	12.0
1973	6.2	14.3	11.4	105.5	37.0	3.2	109.3	40.9	8.9	72.6	92.0	5.6	21.7	72.5	12.0
1974	6.2	14.0	8.3	103.0	36.5	3.0	110.5	49.6	9.0	79.0	75.0	3.9	19.9	77.2	
1975	6.5	17.0	11.5	103.7	38.0	2.2	107.5	41.3	9.2	89.8	74.0	4.7	23.2	83.7	13.4
1976	6.6	15.0	12.5	101.3	39.8	2.4	99.7	46.2	10.4	97.8	71.0	4.9	23.6	84.8	12.0
1977	7.0	17.0	11.8	102.1	39.6	2.6	93.5	44.3	11.1	97.0	65.0	6.2	23.4	88.5	13.2
1978	7.5	16.9	11.4	96.3	42.0	4.4	91.0	43.3	11.7	91.3	70.0	5.3	24.4	83.0	11.9
1979	7.6	19.0	12.6	92.8	40.5	3.0	90.0	40.0	12.0	63.0	65.0	8.7	24.3	76.3	14.0
1980	8.0	14.3	12.8	91.0	44.9	3.2	80.0	48.2	11.9	70.0	60.0	7.5	25.5	76.3	14.4
1981	8.3	18.5	14.6	89.0	44.9	3.4	88.9	42.0	12.8	76.7	59.0	7.6	24.7	74.7	14.4
1982	8.4	19.0	17.0	88.0	35.3	3.1	91.4	46.3	13.2	78.3	57.0	7.4	24.8	73.6	13.0
1983	8.5	19.0	17.8	85.0	44.1	2.9	81.6	65.0	13.7	89.1	53.0	7.9	26.5	71.1	13.0
1984	8.9	20.9	18.4	82.0	44.0	3.3	81.6	63.0	14.6	84.2	57.0	8.9	25.7	66.3	13.0
1985	9.2	20.0	20.0	78.7	37.3	3.4	73.2	57.0	14.8	89.0	43.7	9.5	25.4	60.1	13.0
1986	9.3	20.1	19.5	78.4	37.3	3.3	73.2	54.0	13.3	70.8	45.0	9.9	23.3	59.1	13.0

Sources: 1) Bulletin de L'O.I.V., various volumes, 1967-1987. 2) Symposium International sur la consommation du vin le monde, Avignon, 15-18 June, 1976.

Table 4. Total wine consumption, the United States, European countries, and the World, 1964-1984, 1,000 hectoliters.

Year	Nether-lands												World				
	U.S.	Belgium	Denmark	France	Greece	Ireland	Italy	Lux.	U.K.	W.G.	EC-10	Port-ugal		Spain	EC-12	Europe <sup>1</sup>	
1965	7,184	809	154	58,488	3,258	70	57,249	143	398	1,257	8,635	130,461	9,813	18,260	158,534	NA	NA
1966	7,236	890	176	58,667	3,290	70	57,866	71	412	1,257	9,167	131,866	9,811	17,725	159,402	NA	NA
1967	7,683	891	188	56,520	3,200	70	58,675	112	478	1,456	9,021	130,611	7,962	19,517	158,090	NA	NA
1968	8,087	994	210	56,520	3,273	81	58,675	120	524	1,607	9,171	131,175	7,655	19,487	158,317	NA	NA
1969	8,919	1,055	211	56,225	3,500	87	62,332	108	642	1,533	9,620	135,313	8,733	20,742	164,788	NA	NA
1965-69	7,822	928	188	57,284	3,304	76	58,959	111	491	1,422	9,123	131,886	8,795	19,146	159,827	NA	NA
1970	8,907	1,226	264	55,500	3,500	97	61,030	125	637	1,609	9,762	133,750	6,751	20,100	160,601	212,997	NA
1971	1,363	298	298	55,282	3,500	94	61,030	139	752	1,919	10,650	135,027	8,552	20,100	163,679	216,032	251,312
1972	12,756	1,387	373	55,349	3,500	48	60,350	142	853	2,259	11,965	136,226	6,142	22,859	165,227	220,755	269,664
1973	13,142	1,397	564	55,057	3,145	90	60,000	140	1,200	3,112	13,388	138,093	7,173	32,475	177,741	238,255	285,412
1974	13,227	1,372	416	54,317	3,103	100	61,200	171	1,200	2,983	12,363	137,225	7,800	27,203	172,228	234,365	283,498
1970-74	1,349	383	383	55,101	3,350	86	60,722	143	928	2,376	11,626	136,064	7,284	24,547	167,895	NA	NA
1975	13,913	1,676	581	54,427	3,344	69	59,995	146	1,300	2,632	14,360	138,530	7,807	26,800	173,137	237,585	289,429
1976	14,253	1,443	635	53,580	3,583	75	56,020	164	1,429	2,764	14,555	134,248	8,636	21,482	164,366	229,022	283,079
1977	15,200	1,646	597	53,479	3,563	84	52,538	158	1,512	3,438	14,390	131,405	8,500	23,149	163,054	228,226	286,625
1978	16,302	1,665	583	52,408	3,690	142	51,597	156	1,637	2,978	15,004	129,860	8,947	25,746	164,553	232,606	291,925
1979	16,816	1,895	656	49,268	3,635	103	51,200	142	1,678	4,861	14,911	128,344	5,846	24,017	158,007	228,160	286,560
1975-79	15,299	1,664	610	52,632	3,563	95	54,270	153	1,511	3,335	14,644	132,477	7,947	24,239	164,663	231,120	287,524
1980	18,145	1,413	653	49,100	4,404	110	45,286	175	1,681	4,169	15,695	122,686	5,500	22,200	151,386	220,660	281,610
1981	19,142	1,862	748	49,100	4,404	117	50,054	153	1,815	4,140	15,227	127,620	7,112	22,193	156,925	216,195	227,590
1982	19,458	1,919	866	47,755	3,499	109	51,790	169	1,851	3,960	15,838	127,756	7,281	21,433	156,470	224,294	287,741
1983	20,084	1,828	911	46,495	4,365	101	46,301	237	1,970	4,443	17,138	123,789	8,466	19,503	151,758	219,902	283,808
1984	22,352	2,065	940	45,000	4,285	115	46,301	231	2,098	5,009	15,777	121,821	7,995	19,500	149,316	217,535	283,487
1980-84	19,836	1,817	824	47,490	4,191	110	47,946	193	1,883	4,344	15,935	124,733	7,471	20,966	153,170	219,707	282,847
1985	21,849	1,971	1,025	43,550	3,635	119	46,301	209	1,931	5,629	15,538	119,908	7,087	17,500	144,495	210,593	274,661

<sup>1</sup> Includes the Scandinavian countries, Austria, Yugoslavia, and Turkey.

Sources: 1) Bulletin de L'O.I.V., various volumes, 1967-1986. 2) Symposium International sur la consommation du vin le monde, Avignon, 15-18 June, 1976.

### Consumption of Different Wine Types

Total wine consumption statistics mask changes in the consumption of wine types. While total consumption in traditional wine consuming countries is decreasing, the consumption of some types of wine is increasing. Consumption statistics for quality wine p.s.r. are not available; however, all evidence points to an increase in the demand for quality wine and a decrease in the demand for table wine.

In the EC, this is indicated by production statistics indicating that the production of quality wine p.s.r. increased from 28 million hectoliters annually in 1970-74, to 36 million hectoliters in 1981-85. The EC does not have a program for distilling quality wine, as it has for table wine, and all this wine is sold and eventually consumed.

These trends are supported by consumption data in France which indicate that table wine consumption has decreased while quality wine consumption has risen. Thus, in 1965, 90 percent of the wine consumed in France was table wine, but in 1978, the table wine percentage had fallen to 80 percent, and in 1982 to 76 percent (Hervouet). In Italy, the per capita consumption of D.O.C. wines is also increasing (Donadio).

In the United States, although wine quality categories are not directly comparable to the EC, the trends in the data are similar. As explained earlier, table wine in U.S. consumption statistics is a broad category encompassing lower priced generic wines (Chablis, Burgandy, etc.) often sold in large bottles ("jug wines"), imported Lambrusco and other nonappellation wines, premium varietal wines produced in the U.S., and quality wines p.s.r. imported from the EC (AOC wines from France and DOC wines from Italy). Domestic premium wines apparently are experiencing strong growth in consumption in the U.S. and expectations are for growth rates of six to eight percent annually in the U.S. market for the remainder of the century (Bank of America).

The nonpremium end of the U.S. table wine market is, however, experiencing difficulties. Table 5 shows the amount of wine, both foreign and domestic, entering distribution channels in the United States. These statistics provide the best measure of consumption for the U.S. market. Categories of wine omitted from the table for simplicity include vermouth, other special natural wines not over 14 percent alcohol, and other special natural wines over 14 percent alcohol. Table wine, dessert wine, champagne, and wine coolers accounted for 94 percent of all wine consumed in the United States in 1985.

These data indicate table wine consumption leveled off after 1981, and actually declined in the last three years. It should be noted that premium varietals within the table wine category probably continued to increase, and therefore, the decrease of nearly six percent in 1985 actually understates the decline in consumption of the nonpremium end, or approximately 85 percent of the total wine of the table wine category. Dessert wine continues to decline in consumption, and now has lost 44 percent of its volume in the last 10 years. Champagne showed a steady increase in volume until 1985, but decreased in 1986. The most spectacular category, however, is wine coolers which in 1986 represented 20 percent of all wine consumed in the U.S., a remarkable market share for a product that first appeared in 1982.

Table 5. Wine entering distribution channels in the U.S.; table wine, dessert wine, champagne, wine coolers, and all wine, 1976-87, in million gallons and million hectoliters.

Year	Table Wine		Dessert Wine		Champagne		Wine Coolers		All Wine	
	mil. gal.	mil. hl.	mil. gal.	mil. hl.	mil. gal.	mil. hl.	mil. gal.	mil. hl.	mil. gal.	mil. hl.
1976	227.6	8.6	61.0	2.3	21.8	0.8	n.a.	n.a.	376.4	14.2
1977	261.3	9.9	57.5	2.2	24.3	0.9	n.a.	n.a.	401.0	15.2
1978	304.3	11.5	54.2	2.0	25.7	1.0	n.a.	n.a.	434.7	16.5
1979	324.2	12.3	47.3	1.8	27.0	1.0	n.a.	n.a.	444.4	16.8
1980	359.6	13.6	44.8	1.7	30.0	1.1	n.a.	n.a.	479.6	18.2
1981	386.7	14.6	42.3	1.6	34.3	1.3	n.a.	n.a.	505.7	19.1
1982	397.3	15.0	40.2	1.5	37.5	1.4	n.a.	n.a.	514.0	19.5
1983	402.1	15.2	38.1	1.4	43.5	1.6	7.6	0.3	528.1	20.0
1984	401.3	15.2	37.7	1.4	47.0	1.8	34.2	1.3	554.5	21.0
1985	377.9	14.3	34.3	1.3	46.2	1.7	88.0	3.3	580.3	21.8
1986	350.6	13.3	35.0	1.3	44.2	1.7	120.4	4.6	586.6	22.2
1987	338.6	12.8	36.3	1.4	42.5	1.6	122.0	4.6	580.9	22.0

Sources: The Wine Institute Economic Research Report (July 1987) and Wines and Vines, July, 1986, 1987, and 1988 as compiled from California Board of Equalization; Bureau of Alcohol, Tobacco and Firearms; and Bureau of the Census.

In total, wine consumption increased 5.0 percent in 1984 and 4.6 percent in 1985, not spectacular growth rates in comparison with the 1970's, but improvements over 1982 and 1983 when consumption increased by only 1.7 and 2.7 percent, respectively. Growth in consumption in 1986 was again sluggish at 1.1 percent. Wine coolers increased in volume in 1985 by 54 million gallons while all wine increased just 26 million gallons. Apparently wine coolers are substituting for other wines in consumption, particularly the nonpremium end of the table wine category.

#### Factors Affecting Declining Table Wine Consumption

European economists have studied the declining consumption of table wine in the EC. Research by Boulet and associates have suggested that declining consumption in France is associated with factors such as changes in lifestyle in which fewer calories are expended in more sedentary occupations. Another factor is the image of wine as an "old product" which does not appeal to the younger generation of potential consumers. Other beverages, such as mineral water, beer, and soft drinks are gaining popularity with French consumers. These beverages are also much more heavily advertised in Italy (Segré). To this list of factors discussed by Boulet must be added a growing recognition that excessive alcohol consumption is unhealthy. These findings, while derived from research done in France, are probably valid for Italy and Spain as well, where the exodus from the rural economy continues and old traditions are being replaced. Boulet found that even wine producers were drinking less of their own product.

In West Germany, per capita consumption leveled off, then actually declined in 1985 with the discovery of glycol in Austrian wine. In March of 1986, the incidence of methanol in Italian wine further eroded the confidence of German consumers. Hoffman attributes the downturn in German consumption to two factors. First, there is a lack of confidence in the safety of wine which formerly was regarded as a healthy, natural product. Secondly, Hoffman believes that there is a strong substitution effect among wine, beer, and low priced sparkling wine. As German consumers were shaken by the wine scandals, they rejected wine which had been a high image product, and returned to beer consumption. Premium beers are increasing in consumption and now have the high image that once was associated with wine. Hoffman attributes this type of behavior especially to the occasional wine consumer. The German experience underscores the delicate nature of consumer confidence and the importance of maintaining safeguards to insure a safe product.

In the United States, there is a noticeable trend toward lower consumption of several alcoholic beverages, as shown in Table 6. While the adult per capita consumption of all wine increased (until 1985), there is a shift from consumption of "over 14 percent" to "under 14 percent" alcohol. Distilled spirits and beer consumption have also decreased among the adult population. Coffee and tea share in the downward trend, due to what may be perceived ideas about the health effects of these beverages. Alcohol consumption has also been affected by legislative changes in many states which prohibited sales of alcoholic beverages to persons less than 21 years of age.

## Conclusions

Important changes in wine consuming habits have been occurring worldwide. Among the major wine consuming nations, a number of factors are affecting the demand for wine. In general, the demand for lower quality wine ("table wine" in the EC and nonpremium table wines in the United States) appears to be decreasing. The demand for higher quality wine appears to be increasing. The demand for wine as a broad product category appears to be decreasing, with moderate to low consumption nations experiencing slow growth in consumption, and nations with high consumption (+70 liters per capita) experiencing declining consumption. There seems to be a clear trend toward lighter, lower alcohol beverages in many different markets.

Table 6. U.S. adult per capita consumption of selected beverages, 1979-86<sup>1</sup>

Year	Wine Gallons				Pounds			
	All Wine <sup>2</sup>	Table Wine <sup>2</sup>	All Wine Not Over 14% Alcohol <sup>2</sup>	All Wine Over 14% Alcohol <sup>2</sup>	Distilled Spirits <sup>2</sup>	Beer <sup>2</sup>	Coffee <sup>3 4</sup>	Tea <sup>3 5</sup>
1979	3.01	2.20	2.56	0.45	3.04	36.2	44.6	10.5
1980	3.20	2.40	2.78	0.42	3.00	36.8	40.8	11.0
1981	3.30	2.52	2.90	0.39	2.93	36.8	40.3	10.8
1982	3.29	2.54	2.91	0.37	2.80	36.2	39.5	10.2
1983	3.32 <sup>7</sup>	2.53	2.96 <sup>7</sup>	0.36	2.71	35.7	37.7	10.2
1984	3.44 <sup>7</sup>	2.49	3.09 <sup>7</sup>	0.35	2.64	35.0	38.5	9.9
1985	3.53 <sup>7</sup>	2.30	3.21 <sup>7</sup>	0.32	2.54	34.4	38.2	10.2
1986	3.52 <sup>7</sup>	2.11	3.19 <sup>7</sup>	0.33	2.37	34.7	37.4	10.1
1987	3.44 <sup>7</sup>	2.01	3.10 <sup>7</sup>	0.34	2.30	34.4	<sup>8</sup>	<sup>8</sup>

<sup>1</sup>Based on population of age 21 years and older.

<sup>2</sup>Based on resident population.

<sup>3</sup>Based on total population.

<sup>4</sup>Includes instant and decaffeinated coffee. Converted to fluid equivalent on the basis of 60 6-ounce cups per pound of roasted coffee.

<sup>5</sup>Fluid equivalent conversion factor is 200 6-ounce cups per pound of tea, leaf equivalent.

<sup>6</sup>Preliminary.

<sup>7</sup>Includes wine coolers.

<sup>8</sup>Not available.

Source: Wines and Vines, July 1988.

### III. TRENDS IN THE EUROPEAN COMMUNITY WINE SECTOR

The EC-10 comprises the largest concentration of wine consumers and producers in the world. It accounts for about one-fourth of the world area planted to vines, including grapes used for other purposes (Table 7). These 10 countries account for 43 percent of the world's wine consumption and 47 percent of production. With the addition of Spain and Portugal, the EC-12 has 46 percent of the world's vineyard area, 54 percent of wine consumption, and 60 percent of wine production. In the following section, trends in area planted, production, and trade are discussed.<sup>4</sup>

#### Area Planted to Vineyards

Under the influences of EC policies to reduce the area planted to wine grapes and downward pressure on prices, the total area under wine-grape vines in the EC-10 showed a continuous decrease since the mid-1970's (Table 8). Total plantings, which were 2.6 million hectares had declined to 2.3 million hectares by the 1983 season. Vines not yet in production also showed a continuous decline indicating that efforts to discourage, or in the case of grapes for table wine, to prohibit planting were having an effect. Only 62,000 hectares were nonbearing during the 1983 season, compared with 170,000 in the early 1970's.

Table 7. Importance of the European Community in area planted to vines, wine consumption, and wine production.

	Total for EC		Percent of World's Total	
	EC-10	EC-12*	EC-10	EC-12*
Area planted to vines, 1984 (1,000 ha)	2,480	4,427	25.8	46.0
Wine consumption, average 1980-84 (1,000 hl)	124,733	153,170	42.9	54.2
Wine production, average 1980-84 (1,000 hl)	159,114	204,372	46.6	59.8

\*Spain and Portugal became members of the EC only in 1986. However, statistics are presented here on what would have been the wine growing area, consumption, and production in an earlier period with the 12 countries now in the Common Market.

Source: Bulletin de L'O.I.V., various volumes 1982-1986.

<sup>4</sup>Up to this point, the statistics used for the European Community have been drawn from the Office International de la Vigne et du Vin (O.I.V.) in order to ensure comparability between countries of the EC and the rest of the world. In this chapter, however, statistics provided by the Commission of the European Communities are utilized. There are slight differences in the two data sets which do not materially affect conclusions.

Table 8. Areas under wine-grape vines in the Community since 1966/70.

	Average 1966/70	Average 1971/75	Average 1976/80	1980	1981	1982	1983	1984
----- 1,000 hectares -----								
<u>West Germany*</u>								
Total	85.2	96.0	99.1	95.7	97.8	97.8	100.8	101.4
--in production	70.8	80.3	88.0	89.5	89.0	89.0	90.4	92.2
--not yet in production	14.4	15.7	11.1	6.2	8.8	8.8	10.4	9.2
<u>France</u>								
Total	1,304.4	1,278.4	1,206.9	1,138.8	1,121.1	1,102.0	1,069.0	1,082.0
--in production	1,225.2	1,193.6	1,147.2	1,095.5	1,078.0	1,064.0	1,048.0	1,044.0
--not yet in production	79.2	84.8	59.7	43.3	43.2	38.0	21.0	38.0
<u>Italy**</u>								
Total	1,438.0	1,155.8	1,169.3	1,157.5	1,141.7	1,123.0	1,053.6	1,048.3
--in production	1,389.6	1,090.5	1,122.6	1,121.9	1,107.5	1,095.5	1,025.9	1,020.8
--not yet in production	48.4	65.3	46.7	35.7	34.2	27.6	27.7	27.5
<u>Greece</u>								
Total	n.a.	113.0	106.0	101.4	95.6	94.2	90.2	89.2
-in production	n.a.	108.9	102.0	97.7	92.4	91.2	87.8	87.1
--not yet in production	n.a.	4.1	4.0	3.8	3.2	3.0	2.5	2.1
<u>EUR 6***</u>								
Total	2,828.8	2,531.5	2,476.5	2,393.3	2,362.0	2,324.2	2,224.7	n.a.
--in production	2,686.8	2,365.6	2,359.0	2,308.0	2,275.6	2,249.7	2,165.5	n.a.
--not yet in production	142.1	165.9	117.6	85.3	86.3	74.5	59.2	n.a.
<u>EUR 10***</u>								
Total	n.a.	2,644.5	2,582.5	2,494.7	2,457.5	2,418.4	2,315.0	2,322.7
--in production	n.a.	2,474.4	2,461.0	2,405.6	2,368.0	2,340.9	2,253.2	2,245.6
--not yet in production	n.a.	170.1	121.6	89.1	89.5	77.5	61.7	77.1

\*New method of counting areas in Germany from 1979/80 onwards.

\*\*Figures based on new Italian vineyard register from 1970/71.

\*\*\*Totals include 1,200 - 1,400 hectares in Luxembourg and fewer than 10 hectares in Belgium.

Source: Commission of the European Communities as compiled by EUROSTAT.

There are also approximately 127 thousand hectares planted to table-grape varieties (63 percent in Italy, the remainder in France and Greece) and 60 million hectares under vines for raisin production in Greece (Commission of the European Communities, Commission Report to the Council). These other vines have an influence on the wine market because they can be used for wine, and a certain portion are regularly crushed and fermented in Italy and then distilled under EC wine sector intervention. Table grape area in the EC-10 has been stable since the early 1970's while raisin grape acreage has diminished by 15,000 hectares.

The area planted by country shows the importance of Italy and France, each with just over one million hectares of wine-grapes. Combined, these countries account for over 90 percent of the planted area of the EC-10. West Germany has about 100 thousand hectares and Greece has 90,000 hectares. All countries except West Germany and Luxembourg have had a gradual reduction in planted acreage. Spain brings into the EC-12 another 1.5 million hectares of vines and Portugal has 366 thousand hectares (Appendix Table 1). Spain's planted area has been declining over the last 10 years while Portugal's area has shown a slight increase in recent years. Increases in West Germany, Luxemburg, and Portugal might be expected since these countries are not generally considered to have structural wine surpluses.

#### Wine Production

The total production of wine of all types in the EC, by country, is shown in Table 9. Production is on a slightly increasing trend, and averaged 157 million hectoliters for the last five years shown in the table. For 1986, the commission estimated a 206 million hectoliter harvest, a return to the upward trend in production after two years of moderate harvests.<sup>5</sup> The Commission projected production on a "normal trend" to be 209 million hectoliters in 1992/93 (Commission of the European Communities, Commission Proposals).

Production of wine by quality and color criteria is shown in Table 10. The production of table wine has fluctuated but shows no clear trend while the production of quality wine p.s.r. is increasing. There is no discernable change in the proportion of red and rosé wines compared with white wines in either the table wine or the quality wine statistics.

#### Yields

As noted in the previous paragraphs, the area of vines has decreased while wine production is increasing, indicating that yields per hectare have increased. Table 11 shows yield in hectoliters per hectare, the common measure of yields in the European Community. This measure is used because wine is the common product form at the first market for European producers, while in the U.S., the product form is typically grapes. In a later section of this report, EC yields are converted to tons of grapes for comparative purposes.

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<sup>5</sup>The 1986 figures now incorporate Spain, but not Portugal, which was given a transitional period before being incorporated into the EC intervention system.

Table 9. Wine production in the EC since 1961/62

Member States	1961/62	1962/63	1963/64	1964/65	1965/66	1966/67	1967/68	1968/69	1969/70	1970/71	1971/72	1972/73
	----- 1,000 hectoliters -----											
Germany	3,574	3,928	6,034	7,185	5,200	5,235	6,300	6,289	6,146	10,110	6,356	7,933
France	46,481	73,085	55,929	60,767	66,707	61,166	61,072	65,445	49,831	74,470	61,816	59,049
Italy	52,482	69,993	53,640	66,945	68,206	64,706	74,725	65,323	71,658	68,870	64,212	60,174
Belgium	4	4	4	3	3	4	5	13	10	10	10	5
Luxembourg	117	127	157	163	112	129	123	116	122	242	104	140
United Kingdom	0	0	0	0	0	0	0	0	0	1	1	1
Greece	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	4,515	4,740	5,587
EUR 6	102,658	147,137	115,764	135,063	140,228	131,240	142,225	137,186	127,767	153,702	132,498	127,301
EUR 10	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	158,218	137,239	132,889
	-----											
Member States	1973/74	1974/75	1975/76	1976/77	1977/78	1978/79	1979/80	1980/81	1981/82	1982/83	1983/84	1984/85
Germany	10,751	6,964	9,105	8,926	11,278	7,842	8,662	4,867	7,480	16,128	13,392	8,882
France	82,987	76,271	66,273	73,655	52,708	58,429	84,105	69,598	57,311	79,093	67,894	63,418
Italy	76,716	76,867	69,834	65,700	64,142	71,989	84,337	83,950	69,700	71,948	81,500	70,176
Belgium	5	4	4	4	4	4	4	4	4	3	2	2
Luxembourg	186	138	157	128	155	72	62	50	97	256	185	152
United Kingdom	1	1	2	3	1	1	1	2	2	9	20	15
Greece	5,019	5,648	4,577	5,407	5,183	5,605	5,243	5,395	5,470	4,500	5,250	5,025
EUR 6	170,645	160,244	145,373	148,413	128,287	138,336	177,170	158,469	134,592	167,428	162,973	142,624
EUR 10	175,665	165,893	149,952	153,823	133,471	143,942	182,414	163,866	140,064	171,937	168,243	147,664

n.a. = not available.

Sources: Commission of the European Community as compiled by EUROSTAT. Commission, DG for Agriculture.

Table 10. Community production of table wine, quality wine p.s.r. and other wine, by color and wine year (1971/72 to 1985/86).

Year	All Wine			Table Wine			Quality Wine P.S.R.			Other Wine		
	Total	Red & Rosé		Total	Red & Rosé		Total	Red & Rosé		Total	Red & Rosé	
		White	White		White	White		White	White		White	
1971/72	137.2	85.3	52.0	108.7	73.8	34.9	21.4	10.3	11.2	7.1	1.2	5.9
1972/73	132.9	79.2	53.7	98.5	65.3	33.2	24.9	11.9	13.0	9.5	2.0	7.5
1973/74	175.7	100.1	75.5	128.1	83.7	44.5	34.4	15.9	18.5	13.1	0.6	12.5
1974/75	165.9	98.8	67.1	124.3	81.7	42.6	29.1	14.9	14.3	12.5	2.2	10.3
1975/76	150.0	90.7	59.2	110.4	77.4	32.9	28.6	12.9	15.8	11.0	0.4	10.5
1976/77	153.8	95.1	58.7	110.8	79.4	31.4	31.8	15.1	16.6	11.2	0.6	10.6
1977/78	133.5	76.2	57.3	95.2	61.5	33.7	31.2	13.9	17.4	7.1	0.8	6.2
1978/79	143.9	85.6	58.4	104.1	68.6	35.5	31.9	16.7	15.2	7.9	0.3	7.7
1979/80	182.4	109.3	73.1	129.6	89.4	40.2	37.5	18.4	19.1	15.4	1.6	13.8
1980/81	163.9	99.6	64.2	125.0	82.7	42.4	28.8	15.8	13.0	10.0	1.2	8.8
1981/82	140.1	84.1	56.0	104.0	68.2	35.8	28.8	14.7	14.1	7.2	1.2	6.0
1982/83	171.9	95.1	76.9	111.5	73.8	37.7	46.4	21.1	25.4	14.0	0.2	13.8
1983/84	168.2	94.2	74.0	115.6	74.4	41.2	39.5	19.0	20.5	13.1	0.8	12.3
1984/85	145.3	87.5	57.8	105.0	71.2	33.8	30.8	15.9	14.9	9.5	0.5	9.0
1985/86	142.7	85.9	56.9	99.4	67.0	32.4	32.8	18.2	14.5	10.6	0.7	10.0

----- million hectoliters -----

Sources: Commission of the European Community as compiled by EUROSTAT. Commission, DG for Agriculture.

Table 11. Yields of wine-grape vines in production (in hl/ha) since 1961/65.

Member States	1961/65	1966/70	1971/75	1976/80	1980/81	1981/82	1982/83	1983/84	1984/85
Germany <sup>1</sup>	76.5	96.3	102.4	94.6	54.4	84.1	181.2	148.2	96.4
France	48.2	51.1	58.1	59.2	63.9	53.5	75.1	65.4	61.6
Italy <sup>2</sup>	39.0	49.8	64.1	66.4	75.5	63.7	66.3	80.1	69.5
Luxembourg	118.3	127.1	133.0	81.1	43.7	85.2	216.0	160.2	131.0
Greece	n.a.	n.a.	38.9	44.2	47.7	50.8	41.7	49.6	48.7
EUR 6	43.9	51.7	62.4	64.0	69.2	59.7	75.1	75.9	n.a.
EUR 10 <sup>1</sup>	n.a.	n.a.	61.4	63.1	68.3	59.3	73.8	74.9	66.2

n.a. = not available.

<sup>1</sup>New method of counting areas in Germany from 1979/80.

<sup>2</sup>Up to 1967/68, figures refer to production for wine-making.

Source: EUROSTAT

Yields have approximately doubled in the last 30 years, and are about 75 hectoliters per hectare. At a conversion rate of 0.72 liters of wine per kilogram of grapes (or 173 gallons of wine per short ton of grapes), yields in the EC were about 10.4 metric tons per hectare (4.6 short tons per acre). The addition of Spain and Portugal, with average yields of only 23 and 36 hectoliters per hectare, respectively, will bring down the EC average to 48 hectoliters per hectare. Yields in West Germany are the highest in the EC, reaching as high as 180 hectoliters per hectare in 1982, but are erratic because of climatic influences.

### Trade

Trade, both between member countries and with third countries, has assumed an increasing importance for the EC-10. Intracommunity trade averaged nearly 21 million hectoliters during 1981/82 - 1984/85 (Table 12). Imports from nonmember countries have remained in the four to five million hectoliter range since 1974/75 while exports to nonmember countries have approximately doubled, from four million hectoliters to nine or ten million hectoliters. Thus, the potential domestic surplus has been reduced by four to five million hectoliters by aggressive trading policy and practices.

Table 12. Intra-Community and external trade in wine 1970/71 to 1984/85

Year	Intra-Community Trade*	Imports	Exports
	----- 1,000 hectoliters -----		
1970/71	11,654	3,852	3,025
1971/72	15,638	3,457	3,287
1972/73	17,537	7,405	4,508
1973/74	11,950	7,032	4,293
1974/75	16,148	4,879	4,298
1975/76	17,696	4,428	5,237
1976/77	16,077	4,654	5,392
1977/78	16,845	4,968	6,077
1978/79	19,243	5,238	7,198
1979/80	17,259	5,262	8,366
1980/81	21,403	4,919	8,997
1981/82	20,714	5,108	10,489
1982/83	18,989	4,792	8,623
1983/84	20,065	4,780	9,039
1984/85	23,191	4,521	10,181

\*Based on statistics of importing Member States.

Sources: Commission for the European Community, as compiled by EUROSTAT.  
Information from Member States.

A matrix indicating trade between the EC-10, EC-12, the United States, and selected third party countries is shown in Table 13. In intracommunity trade, West Germany is the largest importer with an average of 7.5 million hectoliters for the four years ending in 1985.<sup>6</sup> The largest intracommunity exporting nation is Italy with 11 million hectoliters, or 55 percent of total intracommunity trade. The importance of the United States is evident in Table 13. The U.S. imported an average of about 4.3 million hectoliters (113 million gallons) of wine of all types from the EC-10. The next largest market for the EC-10 is Switzerland, with imports of 1.2 million hectoliters. Other important markets for the EC-10, in order of importance, are Canada (1.0 million hectoliters), the Soviet Union (0.8 million hectoliters), Japan (0.18 million hectoliters), and Austria (0.17 million hectoliters). Spain exported nearly 2.0 million hectoliters to the EC-10. With membership in 1986, Spanish exports to the rest of the EC will probably increase dramatically. Austria is the only nonmember country with a wine trade surplus with the EC, with net exports of about 119 thousand hectoliters. Most of the Austrian exports are to West Germany.<sup>7</sup>

The United States exported an average of 56 thousand hectoliters to the EC-10 while importing 4.3 million hectoliters. Thus, the EC-10's trade surplus with the U.S. was over 4.2 million hectoliters.

The United States and the EC-10 compete directly in two important markets, Japan and Canada. Canada is the most important destination for U.S. wine exports accounting for 35-40 percent of U.S. exports. U.S. exports to Canada decreased from 169 thousand hectoliters in 1982 to under 100 thousand hectoliters in 1985. During that period, however, EC-10 exports to Canada increased from 881 thousand hectoliters to nearly 1.2 million hectoliters. Japan represents an important potential market for U.S. wine although receiving an average of only 21 thousand hectoliters. U.S. exports to Japan increased from 11 thousand hectoliters in 1982 to 41 thousand hectoliters in 1985. The EC-10 increased exports to Japan during that same period from 133 thousand hectoliters to 227 thousand hectoliters.

#### Utilization and Supply Balance

A summary of trends in EC consumption, production, yields, and trade balance is shown in Table 14. Production averaged 158.4 million hectoliters in the most recent five year period, compared with an average of 152.3 million hectoliters in 1971-75. Human consumption was 122.2 million hectoliters compared with 133.2 million hectoliters in 1971-75. An increase in net exports, the amount by which exports exceeded imports, accounted for 6.0 million hectoliters. Noncommunity distillation was reduced by 5.3 million hectoliters. These developments led to an increasing reliance by the EC on distillation to deal with the imbalance between supply and demand. Community distillation increased from an average of 5.8 million hectoliters in the early 1970's to an average of 25.0 million hectoliters in the last five years for which statistics are available. Community "self-sufficiency",

<sup>6</sup>EC data have been used where available. For U.S. trade with third party countries, data from the Bureau of Alcohol, Tobacco, and Firearms, Department of Treasury, U.S. Treasury Department were used. The two data sets are not entirely consistent. One major difference is that the EC compiles data for the harvest season, September-August, while the U.S. Treasury data are presented by calendar year.

<sup>7</sup>Following the discovery of glycol in some Austrian wine in 1985, the imports of Austrian wine into West Germany were virtually zero.

Table 13. International trade in wine between the European Community, the United States, and selected other countries, annual average, 1981-85, in thousand hectoliters.<sup>1 2 3 4</sup>

Exporting Nation	Importing Nation													Australia				
	France	BLEU <sup>5</sup>	Nether-lands	W.Ger-many	Italy	U.K.	Ire-land	Den-mark	Greece	EC-10	Spain	Portugal	Switz-erland		USSR	USA	Canada	Japan
France	--	1,208	844	2,766	79	1,577	45	521	3	7,044	4	1	586	7	987	552	94	38
BLEU <sup>5</sup>	9	--	72	68	0	9	0	4	0	160	0	0	0	0	1	0	0	0
Netherlands	4	28	--	24	0	21	0	1	0	78	1	0	0	0	0	0	0	0
W. Germany	22	51	355	--	5	1,060	18	131	0	1,641	0	0	16	1	588	161	69	1
Italy	5,671	297	186	4,520	--	645	13	76	1	11,411	1	0	630	740	2,625	268	13	13
U.K.	8	0	15	1	0	--	12	1	0	37	17	0	0	0	48	5	1	0
Ireland	0	0	0	0	0	6	--	0	0	6	0	0	0	0	0	0	0	0
Denmark	2	0	0	0	0	1	0	--	0	14	0	0	0	0	0	0	0	0
Greece	68	28	11	155	82	8	0	3	--	352	0	0	15	74	24	11	0	4
EC-10	5,782	1,612	1,484	7,545	165	3,325	89	733	4	20,740	21	1	1,246	819	4,274	998	177	173
Spain	77	83	475	399	8	800	14	108	1	1,965	--	na	na	na	314	na	na	na
Portugal	273	123	64	85	58	118	5	40	0	765	na	--	na	na	188	na	na	na
EC-12	6,132	1,818	2,023	8,029	231	4,243	108	881	5	23,470	na	na	na	na	4,776	na	na	na
Switzerland	na	na	na	na	na	na	na	na	na	na	na	na	--	na	2	na	na	na
USSR	0	1	30	0	0	0	1	0	32	na	na	na	na	--	0	na	na	na
USA	3	4	2	7	0	38	1	2	0	56	na	na	10	na	--	128	21	na
Canada	na	na	na	na	na	na	na	na	na	na	na	na	na	na	2	--	na	na
Japan	na	na	na	na	na	na	na	na	na	na	na	na	na	na	38	na	--	na
Australia	2	5	3	273	0	9	0	2	0	292	na	na	na	na	7	na	na	--

na = data not available.

<sup>1</sup> Four-year average annual data. EC-10 data is based on harvest seasons 1981/82 - 1984/85. U.S. trade data with third party countries is based on calendar year data, 1982-1985.

<sup>2</sup> Values less than 500 hectoliters are rounded to zero.

<sup>3</sup> Spain and Portugal became members of the EC-12 in 1986. Therefore, EC-12 figures represent trade that occurred as if Spain and Portugal were members from 1981.

<sup>4</sup> Annual imports for Spain and Portugal from the other EC countries include only two years of data, 1983/84 and 1984/85.

<sup>5</sup> Combined trade statistics for Belgium and Luxembourg.

Sources: Commission of the European Communities, Commission Report to the Council, September 22, 1986.

Commission of the European Communities, Commission Report to the Council, October 10, 1984.

Wine Institute, Economic Research Report, July 11, 1986, as compiled from state beverage and tax agencies, Bureau of Alcohol, Tobacco and Firearms,

U.S. Treasury Department.

or the ratio of production to internal use, increased from 102 percent to 119 percent on average in the most recent five year period.

In the next section, the development of EC wine policy and how it attempts to deal with this excess of production are discussed.

#### IV. EVOLUTION OF EUROPEAN COMMUNITY WINE POLICY

The framework for the organization of the European Economic Community was established by the Treaty of Rome which became effective January 1, 1958. Agriculture and agricultural support were important issues in the treaty. The general objectives and principles of agricultural policy were set out. These principles have formed the basis for agricultural support in the community, including the support provided to the wine/grape industry. The original members of the EC included four important wine producing countries, France, Italy, Germany, and Luxembourg. These countries in total were also large consumers with Italy and France representing the two largest wine producing and consuming nations in the world. Annual per capita consumption at the time of the beginning of the EC was estimated at 69 liters (18.2 gallons) per person (Niederbacher).

##### Wine Policy in the Context of the Common Agricultural Policy

The authors of the Treaty of Rome recognized the social and economic importance of wine in the EC member countries. Furthermore, it was recognized that wine as a commodity was subject to recurring imbalances between supply and demand. Therefore wine, along with grape juice and must, were included among the list of agricultural products to be regulated under the Common Agricultural Policy (CAP). Table grapes were also included in the fruit category. Ethyl alcohol and vinegar were included because of their interdependence with other agricultural products, particularly wine. Aromatized wines (vermouth and wine-based aperitifs) were not in the list of agricultural products to be regulated, although they have important economic links with the wine sector.

Niederbacher summarized the initial objectives and evolution of the current wine policy. The EC had the responsibility of framing a wine policy for the Community that met the objectives of the CAP as set out by article 39 of the Treaty of Rome. These objectives were as follows:

- a) To increase agricultural productivity by promoting technical progress and by ensuring the rational development of agricultural production and the optimum utilization of the factors of production, in particular labor;
- b) thus to ensure a fair standard of living for the agricultural community, in particular by increasing the individual earnings of persons engaged in agriculture;
- c) to stabilize markets;
- d) to assure the availability of supplies;
- e) to ensure that supplies reach customers at reasonable prices.

Table 14. Wine supply balances for the EC-10 (1,000 hl).

Items	1971/75	1976/80	1977/78	1978/79	1979/80	1980/81	1981/82	1982/83	1983/84	1984/85	Average
											1980/81- 1984/85
Production	152,328	155,503	133,471	143,942	182,414	163,866	140,064	171,935	168,243	148,664	158,354
Net imports <sup>1</sup> 2	+2,115	-1,217	+964	-1,534	-3,886	-1,821	-5,262	-3,563	-2,549	-6,430	-3,925
Stock changes	-618	+2,322	-7,358	+2,288	+15,967	-2,651	-14,992	+12,846	-429	-10,770	-3,199
Community distillation	5,786	9,849	1,029	1,669	18,231	22,928	13,903	21,270	37,153	29,929	25,037
Internal use <sup>3</sup>	149,275	142,115	140,764	138,451	144,330	141,768	135,891	134,256	128,970	122,075	132,592
Processing	14,866	11,939	10,171	10,347	13,748	12,443	10,117	10,960	6,963	7,132	9,523
-of which non-Community distillation	14,055	11,166	9,414	9,580	12,868	11,733	9,355	10,147	6,109	6,320	8,733
Losses (total)	1,210	950	833	920	1,124	1,041	926	963	946	668	909
Direct human consumption	133,199	129,226	129,760	127,184	129,458	128,284	124,848	122,333	121,061	114,275	122,160
Consumption per head (liters)	50.1	48.0	48.3	47.2	47.9	47.3	46.0	44.9	44.4	41.1	n.a.
Self-sufficiency (%)	102.0	109.4	94.8	104.0	126.4	115.6	103.1	128.1	130.5	121.0	119.4

n.a. = not available.

<sup>1</sup>A plus sign means an import surplus; a minus sign means an export surplus.

<sup>2</sup>Musts, wine, vermouth; vermouth and aromatized wines reduced by 75 percent of actual quantity. Figures for France do not include vermouth and aromatized wines.

<sup>3</sup>Excludes wine distilled under Community measures.

Sources: Commission of the European Communities, as compiled by EUROSTAT. Information from Member States.

Predictably, the roots of the current crisis in the CAP can be traced to its initial objectives. For those commodities which had recurring surpluses, including wine, increasing agricultural productivity, ensuring a fair standard of living for persons engaged in agriculture, and stabilizing markets have been irreconcilable policy objectives. Agricultural price support programs have resulted in a budgetary drain of \$10-19 billion European Currency Units (ECU)<sup>8</sup> annually in the 1980's (Commission of the European Communities, Commission Report to the Council). The problems arising from the CAP are similar to those experienced in U.S. agricultural programs in that policies have been directed toward commodity prices as a means of obtaining "a fair standard of living" and the result has been accumulating surplus stocks, e.g. "mountains of butter and grain and lakes of wine" (Krause).

Total EC expenditures for price supports (the Guarantee Section of the agricultural budget) and the percentage expended on wine is shown in Table 15. Declining wine consumption and increasing production led to surplus production which resulted in the wine sector claiming an increasing share of total Guarantee expenditures, from about one percent in the late 1970's to as much as six percent in 1984.

Table 15. Total CAP expenditure on price supports (Guarantee Section)<sup>9</sup>, wine sector expenditure, and wine sector percentage, European Community, 1977-85.

Year	Total Expenditures		Wine Sector Expenditures		Percentage Wine Sector of Total
	Bil. ECU	Bil. \$	Bil. ECU	Bil. \$	Percent
1977	6.830	7.793	0.090	0.103	1.3
1978	8.673	11.049	0.064	0.082	0.7
1979	10.644	14.590	0.062	0.085	0.6
1980	11.315	15.750	0.300	0.417	2.6
1981	10.967	12.244	0.459	0.510	4.2
1982	12.406	12.154	0.571	0.559	4.6
1983	15.812	14.076	0.659	0.587	4.2
1984	18.346	14.480	1.223	0.966	6.7
1985	19.843	15.140	0.921	0.703	4.6

Source: Commission of the European Communities. E.C.U./dollar conversions are based on Eurostat, Agricultural Prices, 1974-85.

The Treaty of Rome specified that the CAP was to be developed by degrees through a transitional period of 12 years (to 1970). There was to be full implementation of a customs union which included the fixing of a Common Customs Tariff on imports from nonmember states. Agriculture in general was to be managed as a single market with the following governing principles:

<sup>8</sup>The ECU or European Currency Unit is used for budgetary purposes in the EC. Its value fluctuates against the dollar. In September 1988, it was \$1.12.

<sup>9</sup>The European Agricultural Guidance and Guarantee Fund (EAGGF) is the instrument by which the EC finances and implements the common agricultural policy. It is divided into two parts: the Guidance Section (expenditures on structural improvements in farming or farming related activities) and the Guarantee Section (expenditure on supporting agricultural markets).

free circulation of agricultural products, community preference (achieved through common customs duties on imports from nonmember states), and financial integration. The latter meant that the member states assumed a common responsibility for the expenditures necessary to administer the agricultural policy regardless of the amount spent in each member state.

These principles were not achieved easily in practice for wine even though production and consumption were roughly in balance in 1958. In particular, the first difficulty was integrating the huge French and Italian markets into a common market for wine. These countries were protected from competition by an almost total ban on imports of French wines into Italy and Italian wines into France. The French and Italian wine sectors were different in certain crucial aspects (Niederbacher). There was considerably greater purchasing power, with higher per capita incomes, in the French market than in the Italian market. Average wine prices had been about 25 percent higher in France than in Italy. As a consequence, vineyard values in France were higher and French growers had a standard of living above that of Italian growers. Thus, the first concern in the design of CAP wine policy was to prevent France being flooded by Italian wines.

In 1958 there were many differences in regulation of the French and Italian wine sectors, most of which can be summarized by saying that the French employed far more restrictive measures for their industry than did the Italians. For example, in France (as well as in Germany and Luxembourg) there was a detailed register of vineyards which permitted reasonably accurate assessments of production potential, while in Italy the ordinary general land register was out of date. In France, the planting of new vineyards was prohibited, in contrast to Italy where a subsidy could be received for new plantings. In France, the state had a price support program involving financial payments for storage and the distillation of surpluses by the State monopoly while in Italy, there was only a relatively minor provision, intermittently applied, to reduce duties on the products of distillation to encourage the disposal of surpluses. In France, there was a classification system for wines which required designation of origin (i.e., appellation d'origine controllee [AOC]) while in Italy, there were no specific rules on origin designation, but rather a general prohibition on the use of inaccurate names. The integration of the French and Italian markets, while largely accomplished, continues to pose difficulties for the CAP wine policy. With the accession of other major producing countries into the EC (Greece in 1981, and Spain and Portugal in 1986) the problems loom even larger.

#### Evolution of Policy to 1982

Niederbacher outlines a series of measures enacted from the beginning of the CAP until the major reform of wine policy in 1982. The first policy measure, adopted in 1959, was the Common Customs Tariff (CCT). The CCT applies not just to wine, but to all agricultural products regulated by the CAP. The CCT established the principle of "Community preference", in which the EC's wine production is protected from competition by duties based on the type of wine and its alcohol and sugar content. The customs duties are shown in Table 16 below. They range from about 31 cents per gallon on wine with less than 13° to \$1.16 for a gallon of champagne.

Table 16. European Community customs duties for wine.

Wine Type	ECU per Hectoliter	\$ per Hectoliter <sup>1</sup>	\$ per Gallon <sup>1</sup>
Sparkling wine	40.0	\$30.52	\$1.16
Wine ≤ 13°			
bulk	10.9	8.32	.31
bottled	14.5	11.06	.42
Wine from 13° to 15°			
bulk	13.3	10.15	.38
bottled	16.9	12.90	.49
Wine from 15° to 18°			
bulk	16.9	12.90	.49
bottled	20.6	15.72	.60
Wine from 18° to 22°	23.0	17.55	.66

<sup>1</sup>1985 ECU/\$ value of .76.

Source: Neiderbacher, pp. 36-37.

A second group of measures was adopted in 1962. These measures, which are still operational, established the following:

- a) A viticultural land register based on a vineyard census;
- b) compulsory annual notification by producers of the quantities of must and wine produced and annual notification by producers and merchants of stocks held;
- c) rules covering "quality wines produced in specified regions" (quality wines psr); and
- d) establishment of a management committee to design rules for implementation of CAP wine policy.

After these regulations were established, there followed an eight year period in which supplies were roughly in balance with demand. It had been feared initially that viticulture in Italy would expand, but the Italian economy grew rapidly, stimulating the movement of large amounts of labor from agriculture to industry. There was also a large decline in Italy of "mixed crop vineyards" in which other crops were intermixed with plantings of grapes. Imports had declined from 17-18 million hectoliters to 7-8 million hectoliters, primarily because France was no longer required to import approximately seven million hectoliters annually from Algeria. As the end of 1969 approached, wine was the last major agricultural product, except potatoes, which was still subject to national regulations.

In December 1969, as the time initially established for the transitional period for setting up the EC was ending, the Council of Ministers of the EC adopted two regulations. The first regulation pertained to provisions relating to "quality wines produced in specified regions". These "psr" wines were comprised of French AOC and VDQS wines; Italian DOC

wines; German 'Qualitätsweine' and 'Qualitätsweine mit Pradikat'; and Luxembourg wines denoted as the 'Marque nationale'.

The second regulation specified additional provisions for the common organization of the wine market. This regulation has gone through several revisions, but the essential features remain in place. These provisions pertained to the following items:

- a) Classification of wine varieties (recommended, authorized, and provisionally authorized);
- b) product definitions;
- c) rules on wine production, including regulation of enrichment (adding sugar);
- d) establishment of guide (target or desired price) and intervention (support) prices for market regulation;
- e) establishment of a reference (minimum support) price to guarantee Community preference against nonmember countries, and aid in the form of refunds for exports;
- f) aid for short-term and long-term storage;
- g) distillation of excess production in times of surplus production; and
- h) free movement of wine throughout the EC.

With the implementation of these provisions in 1970, the policy instruments for CAP wine policy were essentially in place, and, although rules of implementation have been modified, they remain the means for market regulation in 1988. No sooner had these provisions been enacted, however, than a bumper harvest of 1970 of 154 million hectoliters (in comparison with the usual 135-140 million hectoliters) placed a major strain on the wine policy. A further strain resulted from the ending of relatively stable exchange rates under the Bretton Wood Agreement. Intervention in the form of distillation removed 3.4 million hectoliters in 1970/71 and a further 3.5 million in the next year. Then large harvests again followed in 1973/74 (171 million hectoliters) and in 1974/75 (161 million hectoliters). In the meantime, the Italian lira had been devalued considerably in relation to the French franc. The result was a so-called "wine war" in which French growers blockaded the port of Sète to prevent the importation of cheap Italian wine. Eventually, France imposed a tax on imported Italian wine, in defiance of EC rules to maintain free movement of agricultural products between member countries. By 1976, it was clear that a reappraisal of wine policy was necessary.

The reappraisal resulted in a ban on planting for two years (1976-1978) except for the production of quality wines, and the introduction of subsidies for vineyard removal. To increase the effectiveness of the intervention program, provision was made for optional preventive distillation and price maintenance through long-term storage. The distillation of wine made from table grapes was made mandatory. The policy shifted toward a realization that there could not be intervention to support prices in periods of surplus without restricting wine production. The 1976 measures were temporary, with the intention of introducing a new policy by 1978.

A review of the so-called "structures" policy was conducted. Prior to 1976, there was a regulation which provided subsidies for planting vineyards and creating new wine-making establishments or expanding existing ones. This approach was replaced with a system directed toward containing or limiting table wine production, while improving structures in areas suited to the production of quality wines. Subsidies were given to producers of table wines for temporary or permanent abandonment of vineyards, and new plantings of vineyards for table wines were prohibited. Subsidies were also given to improve structures in quality wine areas.<sup>10</sup>

Two additional large harvests, 1979/80 (182 million hectoliters) and 1980/81 (164 million hectoliters) again revealed the inadequacies of the CAP wine policy. This brought forth adjustments in the intervention system in 1982 which are still in use in 1988. These were as follows

- a) Revision of the minimum price guarantee (which never was fully employed because of budgetary restrictions). Intervention was now to be "an objective to be pursued" rather than a quantitative commitment. Market intervention was to be aimed toward assuring producers at least 82 percent of the guide price, or the average market quotations for the two previous wine-harvest seasons.
- b) Adjustments in optional preventive distillation, bringing the prices to 60 percent of the guide price if there is compulsory distillation or 65 percent of the guide price if there is no compulsory distillation.
- c) Initiation of compulsory distillation, allowing the commission to intervene in years where stocks were in excess of five to six months' consumption. The Commission can decree compulsory distillation of a percentage of each producer's production (less any preventive distillation). The price to be paid to the producer is 60 percent of the guide price.
- d) Support distillation. Whenever the council decides upon compulsory distillation, the Commission is required to decide upon another optional distillation for up to five million hectoliters at 82 percent of the guide price. The purpose of this provision was to compensate for the compulsory distillation at 60 percent of the guide price.

In December 1984 in Dublin, further measures were advocated by the Council of Ministers and introduced for the 1985/86 wine season in an attempt to restore balance to the table wine market. These measures were aids for vineyard removal, a freeze on guide prices for all types of table wine, more stringent rules on distillation and more effective and balanced application of compulsory distillation, and a reduction in the prices for wine delivered for compulsory distillation to discourage the production of surpluses (Commission of the European Communities, The Situation on the Agricultural Markets, 1986 Report).

#### Assessment of the Current Situation with European Community Wine Policy

When new regulations were implemented in 1982, it was hoped that the policy would lead to a period of stability that would ensure a future free from crises and wine wars. However, at least three major types of criticisms continue to be directed toward EC wine policy.

<sup>10</sup>"Structures" include projects such as building of access roads and retaining walls in vineyards, upgrading bottling lines in wineries, etc.

The first of these, made even as the policies were first implemented, was voiced by wine producers and merchants (Niederbacher). These groups have argued that compulsory distillation creates many technical problems and, furthermore, that it is unreasonable to expect wine producers to accept the penalty of distillation without any permanent guarantee of an adequate price.

A second criticism has been directed at the complexity of the intervention mechanisms. That is, the eight different types of distillation do not provide a basis for definite, reliable, and timely action. Furthermore, the rules tend to favor those who become experts in matters of Community regulation. Niederbacher notes that some industry spokesmen would prefer that, other than storage aid, only one form of intervention would be applied - optional distillation, on a permanent basis and at a price to be established at or near the intervention price. In essence, these groups would prefer a minimum price guarantee for table wine such as exists for cereals, beef, milk, etc. This argument involves a northern European vs. Mediterranean overtone since most of the EC expenditures for grain and livestock commodities are directed toward more northerly parts of the community, while wine expenditures would be directed toward the southern regions.

The EC's regulation of the wine industry is subject to a third criticism, that the required budgetary expenditures are excessive. Niederbacher notes that there are now difficulties with surpluses on the alcohol market. In 1985, it was estimated that 250 thousand tons of alcohol was being put into storage each year and that EC stocks had risen to 600 thousand tons (House of Lords). In Table 15, it was noted that budgetary expenditures for the wine sector had risen to as high as 1.2 billion E.C.U.'s (\$1.0 billion), or nearly seven percent of total EC expenditures under the Guarantee Section of the CAP in 1984. Furthermore, successively larger amounts of wine have had to be distilled in order to keep the market in balance (Table 17). By the 1983/84 season, the quantities distilled reached 37 million hectoliters. In the September 1986 EC Commission Report to the Council on trends in the wine sector, it was estimated that, with the application of the intervention system in Spain, the surplus in the 12 country Community may be 20-25 million hectoliters by the 1990's.

Table 17. Distillation of wine under EC regulation, 1976/77 - 1984/85, in 1,000 hectoliters.

Year	Type of Distillation		Total
	Compulsory	Voluntary	
1976/77	538	4,852	5,390
1977/78	132	897	1,029
1978/79	1,288	381	1,669
1979/80	1,565	16,666	18,231
1980/81	2,413	20,515	22,928
1981/82	722	13,181	13,903
1982/83	2,692	18,578	21,270
1983/84	1,655	32,111	37,153
1984/85	9,796	20,133	29,929

Over the longer term, changes in the CAP will affect wine trade with the U.S. The debate in Europe regarding agricultural programs in general, and wine policy specifically, is similar to the debate about the farm program in the U.S. There are nearly three million growers of wine grape vines in

the EC-12, and European governments are reluctant to make policy changes which they perceive could cause an exodus from small farms. On the other hand, agricultural economists recognize that a policy which focuses primarily on prices is not effective in solving an income problem. Furthermore, budget expenditures under the CAP have become alarmingly high and are generating controversy in the community. These forces shaped the 1984 Dublin agreement to freeze wine guide prices (the basis on which support levels are set) and to rely heavily on compulsory distillation to discourage surpluses. This reversed a period of over 10 years of continuously increasing guide prices, and, if adhered to, will gradually reduce the real price support over time as inflation raises the general price level.

Any radical change of the CAP for the wine sector is unlikely and, if it does occur, would probably be phased in over a number of years. There is little likelihood that the pressure to find outlets for surplus table wine will abate in the EC in the near future.

#### V. TRENDS IN THE U.S. GRAPE AND WINE SECTOR

The U.S. consumption and production of wine is miniscule in comparison with that of the EC-10, but experienced rapid growth in the 1970's while the EC-10's total wine market was declining. The area planted to grapes for all uses in 1984 was 343 thousand hectares (848 thousand acres) in the United States, or 3.6 percent of the world's total area, compared with 2.5 million hectares in the EC-10 and 4.4 million hectares in the EC-12 (Table 18). Wine consumption in 1980-84 averaged 19.8 million hectoliters (523 million gallons), seven percent of the world's total, compared with the EC-10 consumption of 125 million hectoliters and EC-12 consumption of 153 million hectoliters. U.S. wine production averaged 17.9 million hectoliters (474 million gallons) or seven percent of the world's total, compared with EC-10 production of 159 million hectoliters and EC-12 production of 204 million hectoliters. The longer tradition of wine consumption and the relative importance of wine in the EC compared to the United States is illustrated by the fact that in 1984, the per capita consumption of wine in the U.S. was 8.9 liters (2.35 gallons) compared with EC-10 per capita consumption of 45 liters. As suggested by the extreme importance of the U.S. market for EC exports, however, developments in the U.S. market are observed very closely by Europeans. The U.S. wine market is regarded as having excellent growth potential, and changes in consumer behavior are studied with interest as possible harbingers of change in other developed countries.

Table 18. Importance of the U.S. in area planted to vines, wine consumption, and wine production.

	U.S.	Percent of World's Total
Area planted to vines, 1984 (ha.)	343,000	3.6
Wine consumption, average 1980-84 (1,000 hl.)	19,836	7.0
Wine production, average 1980-84 (1,000 hl.)	17,942	7.0

In the following section, trends in the utilization of grapes, area planted to vines, and grape and wine production in the United States are

discussed. The analysis relies mainly on statistics from the National Agricultural Statistics Service, USDA for grape production data, and the Wine Institute which bases its statistics on reports from the Bureau of Alcohol, Tobacco, and Firearms of the U.S. Treasury Department and the Bureau of the Census, U.S. Department of Commerce. As noted previously, there are slight differences with statistics from O.I.V. which do not materially affect conclusions.

#### Utilization of Grapes

There are four major segments of the U.S. grape industry which are interrelated. Grape utilization is summarized in Appendix Table 3. In the most recent five year period, total utilized production has averaged 4.9 million metric tons (5.4 million short tons) as shown in Table 19. Wine accounted for 2.6 million metric tons, or 52.2 percent of the total. Raisins accounted for 1.4 million metric tons and 27.4 percent of the total. The utilization for fresh grapes was 647 thousand metric tons (13.1 percent) and juice accounted for 322 thousand metric tons, or 6.5 percent. Miscellaneous other uses such as canned raisins and jelly accounted for the remainder, or less than one percent of the total utilization.

Table 19. Average annual utilization of grapes in the United States, 1982-86.

Utilization	Total (metric tons)	Percent
All uses	4,932,571	100.0
Wine	2,575,414	52.2
Raisins	1,353,905	27.4
Fresh	647,323	13.1
Juice	322,155	6.5
Other	33,774	0.8

Source: National Agricultural Statistics Service, USDA, Non-Citrus Fruits and Nuts, Annual Summary, 1984-86.

Grape varieties which are primarily intended for use as raisins, table grapes, or juice can be used for wine. This happened in 1982 when total U.S. grape production was a record 5.9 million metric tons (6.6 million short tons) and total utilization was 5.4 million metric tons (5.9 million short tons). This resulted in a record crush of 2.9 million metric tons (3.2 million short tons) for wine and was one of the factors that had a depressing effect on prices in the following three years as there was a large wine inventory carry-over. Two grape varieties which have multiple uses are the Thompson Seedless and the Concord. Thompson Seedless, grown primarily in California, is a raisin grape variety, but can be used for fresh grapes, crushed for wine, or blended into grape juice. Even though it is a raisin variety, Thompson Seedless usually accounts for about 500 thousand tons, or one-fifth of the total grapes utilized for wine. The Concord grape is mainly utilized for juice and "other" uses, but, particularly in New York State, is

crushed in significant quantities (24 thousand tons) for wine. There is also a small amount of Concord, usually about three thousand tons, used for fresh grapes.

#### Area Planted to Vineyards

Until recently, the Agricultural Statistics Board of the USDA did not publish an estimate of grape acreage in the United States. Estimates were, however, made for the state of California on a regular basis. O.I.V. in Paris has attempted to provide an annual estimate of total U.S. grape acreage for many years, and this probably constitutes the best published source. These data are shown in Appendix Table 1. The U.S. total acreage (bearing and nonbearing) was 236 thousand hectares (583 thousand acres) in 1965. By 1984, total acreage was estimated at 343 thousand hectares (848 thousand acres). The annual rate of increase over the 20-year period was about two percent, or 5,600 hectares annually.

In recent years, the Agricultural Statistics Service published estimates of the United States bearing grape area. The total bearing area was approximately 312 thousand hectares (Table 20). (Note that this figure is consistent with the total grape area of 343 thousand hectares, which includes bearing as well as nonbearing area, in the O.I.V. statistical series.) By 1986, the estimated bearing area was 320 thousand hectares, with California showing a growth of nine thousand hectares and New York showing a decline of 1,300 hectares.

Table 20. Hectares of bearing grapes, United States, 1984.

State and Type	Bearing Hectares
Arizona	1,809
Arkansas	809
California	
All types	270,255
Wine type	124,524
Table type	30,676
Raisin type	115,055
Michigan	5,018
New York	15,783
North Carolina	607
Ohio	1,133
Pennsylvania	4,047
South Carolina	364
Washington	10,765
Other	1,174
United States	311,764

Source: National Agricultural Statistics Service, USDA, Noncitrus Fruit and Nuts 1986 Summary.

These data indicate that in the U.S., planted acreage has increased substantially in the last 20 years while grape acreage in the world and the EC-10 and EC-12 has decreased. It is impossible to derive an exact estimate of U.S. grape acreage used for wine because the figure changes from year to year with changes in the utilization of Thompson Seedless and other varieties. With an average annual utilization of 2,575,414 metric tons in 1982-86 and average yields of approximately 15.7 metric tons per hectare, it would appear that about 164 thousand hectares annually are used for wine in the U.S. About 130,000 hectares of this area is comprised of California wine varieties. In contrast, bearing area in the EC-10 is approximately 2.2 million hectares.

### Production

#### Grapes

The U.S. production of grapes since 1965 is shown in Table 21. Production averaged 5.2 million metric tons (5.7 million short tons) in the last five years. Since a record crop of 5.9 million metric tons in 1982, production has been at more modest levels. Prior to that time, grape production has been on a steadily increasing trend. As shown in Appendix Table 3, the percentage of the utilized crop which is used for wine is usually 50 to 60 percent of the total utilized production. New York had a declining share of total grape production in the last 10 years while "other" states, primarily Washington, have gained. The large production in "other" states in 1978 and 1983 is associated with unusually large crops in Washington state.

Table 21. Production of grapes in the United States, California, New York, and other states, 1965-87, 1,000 metric tons.

Year	California	New York	Other States	Total
1965	3,605	139	202	3,946
1966	3,084	120	183	3,387
1967	2,449	143	192	2,784
1968	2,952	105	162	3,219
1969	3,261	110	164	3,535
1970	2,492	138	185	2,815
1971	3,203	181	239	3,623
1972	2,063	93	183	2,339
1973	3,529	116	163	3,808
1974	3,441	161	206	3,808
1975	3,580	139	241	3,960
1976	3,608	168	213	3,989
1977	3,615	92	191	3,898
1978	3,644	171	327	4,142
1979	4,134	150	240	4,524
1980	4,648	159	268	5,075
1981	3,622	136	285	4,043
1982	5,511	142	293	5,946
1983	4,462	173	359	4,994
1984	4,236	180	295	4,711
1985	4,723	131	232	5,085
1986	4,326	149	265	4,740
1987	4,172	161	387	4,720

Source: National Agricultural Statistics Services, USDA, Noncitrus Fruit and Nuts, various years.

Wine

Wine production showed a steady increase from 1965 to 1982 as shown in Table 22. Production has approximately doubled in the 20 year period, a growth rate of about 3.5 percent. New York's share of national production decreased in recent years.

Table 22. United States wine production, 1965-87, in 1,000 hectoliters.

Year	California	New York	Other	United States
1965	7,134	549	625	8,308
1966	5,941	662	736	7,339
1967	6,342	721	737	7,800
1968	6,681	708	729	8,118
1969	8,679	810	736	10,225
1970	8,012	911	764	9,687
1971	11,620	1,154	924	13,698
1972	9,953	1,203	884	12,040
1973	13,664	1,320	828	15,812
1974	12,195	1,388	657	14,240
1975	12,468	1,388	950	14,533
1976	12,506	1,246	612	14,364
1977	13,970	1,278	571	15,819
1978	14,134	1,356	663	16,153
1979	15,035	994	544	16,246
1980	17,382	1,128	894	19,404
1981	15,947	1,147	416	17,510
1982	19,466	1,101	484	21,051
1983	14,567	1,128	505	16,200
1984	15,078	1,058	549	16,685
1985	15,689	1,043	549	17,281
1986	16,628	1,086	627	18,341
1987	14,785	1,291	597	16,673

Source: 1981-87, Wine Institute. 1964-80, O.I.V.

The number of wineries in the United States has increased dramatically in the last 10 years (Table 23). Most of the growth in numbers of wineries is in the small winery category producing under 3,785 hectoliters (100,000 gallons) of premium wine. This growth has occurred in states such as Ohio, Pennsylvania, Oregon, Michigan, and New Jersey, but their combined production is less than one percent of the U.S. total (Wines and Vines, July 1986). It is the large wineries in California and New York producing in excess of one million gallons which make up the major share of total U.S. wine production and compete directly with EC table wine. Although definitive studies on wine marketing are lacking, it is to be expected that a high percentage of the premium wine produced in states other than California is sold by direct sales, and does not compete directly for retail space with quality wine p.s.r. produced in the EC, all of which is sold in the United States through normal retail channels.

Table 23. Bonded winery premises<sup>1</sup>, by states 1976-1985.

Year	CA	NY	OH	PA	OR	MI	NJ	Other States	All States
1976	344	38	32	16	17	14	16	108	585
1977	352	38	34	22	19	18	15	121	619
1978	377	45	38	23	26	18	15	134	676
1979	406	48	40	26	31	18	15	140	724
1980	470	54	41	28	33	20	14	162	822
1981	540	65	44	29	36	22	15	183	934
1982	591	71	43	34	40	24	9	216	1,028
1983	639	78	44	41	41	26	11	234	1,114
1984	662	83	45	43	47	27	15	284	1,206
1985	676	95	48	51	46	31	18	324 <sup>2</sup>	1,289

<sup>1</sup>Excludes experimental premises.

<sup>2</sup>Includes: Alabama 4, Arkansas 7, Arizona 3, Colorado 3, Connecticut 11, Delaware 1, Florida 9, Georgia 6, Hawaii 1, Idaho 7, Illinois 8, Indiana 12, Iowa 19, Kentucky 2, Louisiana 1, Maine 2, Maryland 12, Massachusetts 12, Minnesota 4, Mississippi 5, Missouri 35, North Carolina 4, New Hampshire 1, New Mexico 17, Oklahoma 3, Rhode Island 4, South Carolina 3, Tennessee 6, Texas 18, Utah 1, Virginia 32, Washington 54, West Virginia 6, Wisconsin 11.

Source: Wines and Vines, July 1986. Compiled by the Wine Institute from Bureau of Alcohol, Tobacco, and Firearms data.

#### Yields

Yields of California grapes, which comprise more than 90 percent of total U.S. production, are shown in Table 24. California Crop Reporting Statistics contain estimates of yields by varietal class. California data are shown for wine varieties and the total for all uses. The data for all uses are shown because they include the Thompson Seedless variety for California and the Concord variety for New York, both of which are used for wine. In New York, there is not a great difference between yields of the Concord grape and most other varieties used primarily for wine since other similar native grapes (Niagara, Catawba, Dutchess, and Delaware) are the predominant varieties utilized (New York Agricultural Statistics Service).

Table 24. Grape yields for California and New York, 1970-1987, metric tons per hectare.

Year	California, Wine Grapes	California, All Uses	New York, All Uses
1970	9.03	13.74	9.70
1971	12.80	17.75	12.46
1972	10.42	11.59	6.25
1973	15.60	19.16	7.58
1974	15.33	17.39	10.24
1975	13.07	16.81	8.65
1976	10.13	14.84	10.22
1977	11.03	14.34	5.51
1978	12.19	14.59	10.15
1979	13.96	17.21	8.92
1980	15.43	19.25	9.57
1981	14.36	15.11	8.29
1982	18.52	21.96	8.81
1983	14.09	17.10	10.85
1984	13.82	15.60	11.39
1985	14.94	17.88 <sup>1</sup>	8.71
1986	15.10	17.20 <sup>1</sup>	10.26
1987	14.34	16.11 <sup>1</sup>	11.07

<sup>1</sup>Bearing acreage adjusted for acreage not harvested.

Source: For California, Wines and Vines Annual Statistical surveys. New York data for 1984-1986, National Agricultural Statistics Service, USDA, Noncitrus Fruits and Nuts 1988 Annual Summary. For 1970-1983, computed by the authors based on bearing acreage and production as estimated in New York Agricultural Statistics Service, New York Agricultural Statistics, various years and in the New York Orchard and Vineyard Survey, various years.

### Trade

U.S. trade in the wine sector is shown in Table 25. Imports of all wine rose tremendously from 1976 through 1984, reaching 5.4 million hectoliters (142 million gallons). Since then, imports have receded due primarily to the declining value of the dollar (Blandford and White). The importance of the EC-10 and the EC-12 in the imports is shown elsewhere in Tables 1 and 2. However, the EC-10 accounts for over 90 percent of all wine imports and the EC-12 accounts for over 95 percent.

Exports of wine from the U.S. are small in comparison to imports. Exports peaked in 1981 at 401,000 hectoliters (10.6 million gallons), but declined for the next three years as the value of the dollar internationally increased. Exports rose again beginning in 1985, and reached a record 450,000 hectoliters in 1987. The volume of U.S. exports by destination was shown earlier in Table 13. Major destinations in order of importance in 1981-84 were as follows: (1) Canada, average annual imports of 128 thousand hectoliters; (2) United Kingdom, 38 thousand, and (3) Japan, 21 thousand hectoliters. The EC-10 had average imports of 56 thousand hectoliters per year from the U.S. during this period. Exports of U.S. wine at the moment are not important for most of the U.S. industry, but producers of premium wine in California and New York, in particular, are attempting to gain a

foothold in overseas markets. Most of the U.S. exports to Canada are lower-priced wines sold in bulk while the United Kingdom and Japan are seen as potentially large markets for premium wine. Canada has significant market potential for U.S. premium wines if the Free Trade Agreement is signed into law. The market potential also depends upon the actions taken by Canada in response to a recent GATT ruling which could result in more open markets for EC wine as well.

Table 25. Wine imports and exports, United States, 1970-1987, hectoliters.

Year	Imports	Exports
	----- 1,000 hectoliters -----	
1970	1,136	n.a.
1971	1,369	n.a.
1972	1,781	n.a.
1973	2,098	n.a.
1974	1,945	n.a.
1975	1,867	n.a.
1976	2,230	53
1977	2,619	74
1978	3,561	94
1979	3,489	195
1980	3,880	298
1981	4,342	401
1982	4,627	345
1983	4,959	288
1984	5,390	230
1985	5,174	238
1986	4,114	276
1987	3,645	450

Source: Wine Institute based on data from Bureau of Census, U.S. Department of Commerce, and Bureau of Alcohol, Tobacco, and Firearms.

## VI. ANALYSIS OF FACTORS AFFECTING COMPETITION

In this study, three areas which could potentially affect competition between the United States and EC countries are analyzed. First, an examination is made of the effects of the appreciation of the U.S. dollar against the Italian Lira and the French Franc, two countries which have accounted for 77 percent of the imports of table wine into the U.S. in recent years. It is hypothesized that much of the change in imports is attributable to changes in the value of the dollar.

Secondly, the comparative efficiency in the production of grapes and wine is explored. Grape yields per hectare for the EC-10, California, and New York are compared. However, high yields alone do not guarantee efficient production. Hence, cost of production data for table wine grapes and for table wine are compared. If EC producers can produce and transport table wine to important markets in the U.S. for less than American producers, then the EC would have an important competitive advantage in producing table wine.

Finally, EC wine policy and subsidy programs that benefit EC producers are explored. These programs could lower the unit cost of production, thereby giving EC producers an advantage in supplying wine to world markets.

In the following section, each of these factors is discussed.

### Exchange Rates

#### Determinants of Imports to the United States from France

As indicated in Table 3, the French share of total U.S. wine imports has risen sharply during the 1980's. In 1980, 13 percent of the total volume of table wine imports were from France. By 1985 the proportion had risen to 25 percent. French wines are a highly differentiated product, spanning the range from prestigious and highly-priced appellation wines such as those from Bordeaux and Burgundy, to relatively inexpensive nonappellation table wine.

In order to examine the determinants of French imports, a series of per capita import equations was estimated for four categories of wine: Bordeaux, Burgundy, still quality wine from other regions (other AOC), and nonappellation table wine (non-AOC). Annual data on exports of these product categories for 1960 to 1984 in both volume and value terms were obtained from French customs data. The basic variables included in the equations were the price (unit value) of imports in dollars deflated by the U.S. consumer price index, and real per capita disposable income (CEA). In all cases the equations derived explain a large proportion (more than 90 percent) of the actual variation in imports (Table 26). Using these equations, the response of imports to changes in import price and income can be estimated. Table 27 gives the percentage change in imports associated with a one percent change in price or income for the period as a whole and the most recent three years used in estimating the equations (1982-84).

In general, imports of all the categories appear to be fairly sensitive to changes in price and income, although this sensitivity has declined as the volume of imports has increased. A reduction in real price generates an increase in per capita consumption as does an increase in real disposable consumer income. Bordeaux wine imports are the least sensitive to changes in price. In recent years a one percent decline in their price would have generated an increase of roughly 0.4 percent in per capita consumption. Such wines have an extremely strong image in the marketplace. Consumers are willing to pay the price for these wines, and their consumption is strongly affected by increases in income. In recent years a one percent rise in real consumer income would have generated an increase in per capita consumption of almost two percent.

Burgundy wine imports are also sensitive to income growth but are more responsive to price changes than Bordeaux wines. The other AOC category (composed largely of wines with the appellations of Alsace, Anjou, Cotes de Rhone, Cotes du Provence, and Muscadet) are about as responsive to price changes as Burgundy wines, but are less responsive to the growth in income. The large price and income response of nonappellation table wine reflects the rapid growth that this product category has experienced since 1970. Nonappellation wine appears to have benefited from the fact that it has both the image of quality and product characteristics associated with French wines in general, but is far less expensive than its appellation counterparts.

Table 26. Estimated import equations.

Form	Constant	Variables								Statistics			
		$M_{t-1}$	$P_t$	$P_{t-1}$	$P_{t-2}$	$P_{t-4}$	Y	D1	D2	D3	$R^2$	DW	DH
<u>French</u>													
Bordeaux	Linear	-0.051 (-4.7)		-0.029 (-5.86)			0.037 (19.7)					.95	1.28
Burgundy	Linear	-0.017 (-3.6)	-0.004 (-1.4)	-0.021 (-7.1)			0.025 (15.8)					.93	1.97
Other AOC	Linear	0.035 (1.5)	0.793 (5.4)	-0.065 (-4.1)			0.011 (2.2)					.91	.78
Nonappellation	Linear	-0.142 (-2.9)	-0.193 (-6.1)		-0.183 (-4.5)	-0.154 (-2.8)	0.109 (12.4)					.97	2.03
<u>Italian</u>													
Inexpensive ( $< \$4/\text{gallon}$ )	Linear	0.030 (4.2)	0.652 (7.6)	-0.013 (-4.1)								.96	.23
Expensive ( $> \$4/\text{gallon}$ )	Double log	-3.477 (-2.3)	0.522 (5.0)	-1.260 (-3.4)			1.897 (1.7)	0.393 (3.6)	0.375 (3.8)	0.422 (4.4)		.95	.02

Notes: Dependent variable is per capita imports (M) in liters for French; gallons for Italian.

P = import price in dollars deflated by U.S. consumer price index (1967 = 100).

Y = real per capita disposable income (1972 dollars).

D1, D3, D3 = seasonal dummy variables.

Estimation period is 1960-84 for French (annual data) except for nonappellation, which is 1970-84, and 1967-

84 for Italian (quarterly data). All equations estimated by ordinary least squares.

t ratios are in parentheses

DW indicates the Durbin-Watson statistic for autocorrelation.

DH indicates the Durbin-H statistic for autocorrelation.

Sources: Hervouet and Blandford; Donadio, Blandford and White.

Table 27. Percentage change in per capita imports resulting from a one percent increase in real price and real income.

	<u>Whole Period Average*</u>		<u>1982-84 Average</u>	
	Price	Income	Price	Income
<u>French</u>				
Bordeaux	-0.96	3.06	-0.39	1.97
Burgundy	-1.27	2.75	-0.80	2.12
Other AOC	-1.53	0.99	-0.78	0.70
Nonappellation	-4.69	8.14	-1.67	3.61
<u>Italian</u>				
Inexpensive (<\$4/gallon)	-3.08	0	-0.69	0
Expensive (>\$4/gallon)	-2.64	3.98	-2.64	3.98

\*1960-84 for French, except nonappellation which is 1967-84. 1967-84 for Italian.

Note: These figures relate to long-run response, after all adjustment lags have worked their way through the system.

Sources: Hervouet and Blandford; Donadio, Blandford and White.

#### Determinants of Imports to the United States from Italy

U.S. imports of Italian wines are generally less diverse than French wines. In 1985, 53 percent of the total volume of imports from Italy were made up of inexpensive wines of the Lambrusco type (IFCI). These slightly carbonated sweet wines are popular with the new wine drinkers, and those who consume wine as an alternative alcoholic beverage to beer or liquor rather than as a complement to food. U.S. customs data on wine imports distinguish between inexpensive wines with a customs value of less than \$4 per gallon and more expensive wines of over \$4 per gallon. In the case of Italian wines this provides a reasonably good breakdown of imports into appellation and nonappellation categories.

Import equations similar to those for French wines were estimated for these two categories. Quarterly statistics on volume and total value spanning the period 1967 through 1985 were employed. As in the case of French imports, variations in real prices (unit import value) and incomes explain most of the variation in per capita imports (95 percent or more). The percentage response of imports to a one percent change in price or income is given in Table 27.

In the case of the cheaper category of Italian wine, changes in consumer income do not appear to have a significant impact on consumption. The principal factor appears to be price. Furthermore, as imports have grown, the response to price changes has declined. In recent years a decline in price of one percent would have led to an increase in per capita consumption of 0.7 percent. The low price response coupled with the lack of income response suggests that a saturation point has been reached for Italian imports of low-cost wines in the U.S. market, a view which has been confirmed by recent developments. Since 1981, total imports of this category of wine have basically remained stable, at between 45 and 47 million gallons. These wines appear to be suffering the most from competition with wine coolers and

other beverages. In addition, the Italians relied heavily on imports of red wine, which was declining in consumption.

The situation with respect to the more expensive Italian imports is significantly different. These imports are highly responsive to both price and income in the longer term. A one percent decline in price results in a 2.6 percent increase in consumption. A one percent increase in consumer income results in almost a four percent increase in consumption. This sensitivity to income growth compares favorably with appellation French wines. However, their greater consumer sensitivity to price in comparison to French wines probably reflects the fact that Italian appellation wines are generally less well-known to U.S. consumers than French Bourdeaux or Burgundy, and have less "brand" loyalty. Because of their weaker marketing image, Italian appellation wines have consumption characteristics which are more similar to French nonappellation wines than to French appellation wines.

#### Effects of Exchange Rates and Income Growth on Imports

The depressed state of the U.S. wine market during the early 1980's was not reflected in the volume of imports. One of the major factors contributing to the sustained growth in the volume of most categories of imports was the substantial appreciation of the U.S. dollar against other major currencies. Between 1980 and 1985, the value of the dollar on a trade-weighted basis increased by more than 55 percent (CEA). This substantial appreciation lowered the cost of many imported goods and increased their competitiveness with respect to domestic products. Wine was no exception to this trend. The average unit value of all imported wine remained virtually constant during the period 1980 to 1985. After adjusting for inflation the real price of imports declined by just over 30 percent.

The estimated import equations were used to determine the impact of the appreciation of the dollar on the volume of French and Italian imports. The import volumes predicted by the equations when the exchange rate was fixed at the 1979 level (annual average in the French case, first quarter average in the Italian case) were compared to those predicted with the actual exchange rate. The annual average difference is summarized in Table 28. The additional change in imports due to the growth in consumer income was calculated by fixing both income and the exchange rate at the 1979 level. These results are also included in the table.

The figures in Table 28 imply that the depreciation of the U.S. dollar against the French franc and the Italian lira had a major effect on the volume of imports of all categories of French and Italian wine. The appreciation of the dollar accounted for between 63 percent and 100 percent of the increase in imports over the period. In terms of the total change in imports, the effect was strongest in those cases where consumer response to changes in price was the greatest. Thus, for example, the high price sensitivity of nonappellation French wines meant that their imports were affected strongly by the decline in the value of the franc. In comparison to the effect of changes in income, the reduction in real price generated by the strong dollar had a much greater impact upon consumption. The growth in the market share of imports, while not totally due to the high dollar, was substantially generated by strength of the U.S. currency overseas.

Table 28. Increase in U.S. imports of French and Italian wines during the early 1980's due to the appreciation of the U.S. dollar and income growth.

	Increase	Increase Due to Currency Change	Increase to Income Growth	Proportion of Total Due to Currency Change
----- percent -----				
<u>French (1980-84)</u>				
Bordeaux	32	20	12	63
Burdundy	51	38	13	75
Other AOC	68	64	4	94
Nonappellation	71	54	17	76
<u>Italian (1979.2-1984.4)</u>				
Inexpensive (<\$4/gallon)	19	19	0	100
Expensive (>\$4/gallon)	34	31	3	91

Sources: Hervouet and Blandford; Donadio.

The importance of the appreciation in the exchange rate during the early 1980's suggests that the growth in imports will decline over the next few years if the dollar remains at its current lower level or falls further. The value of the dollar against most European currencies has declined sharply since its peak early in 1985. On a trade-weighted basis, the decline is over 30 percent. The fall in the value of the dollar has made imports less attractive and in 1986 the volume of imports fell by 20 percent (FAS).

#### Comparative Efficiency

##### Yields

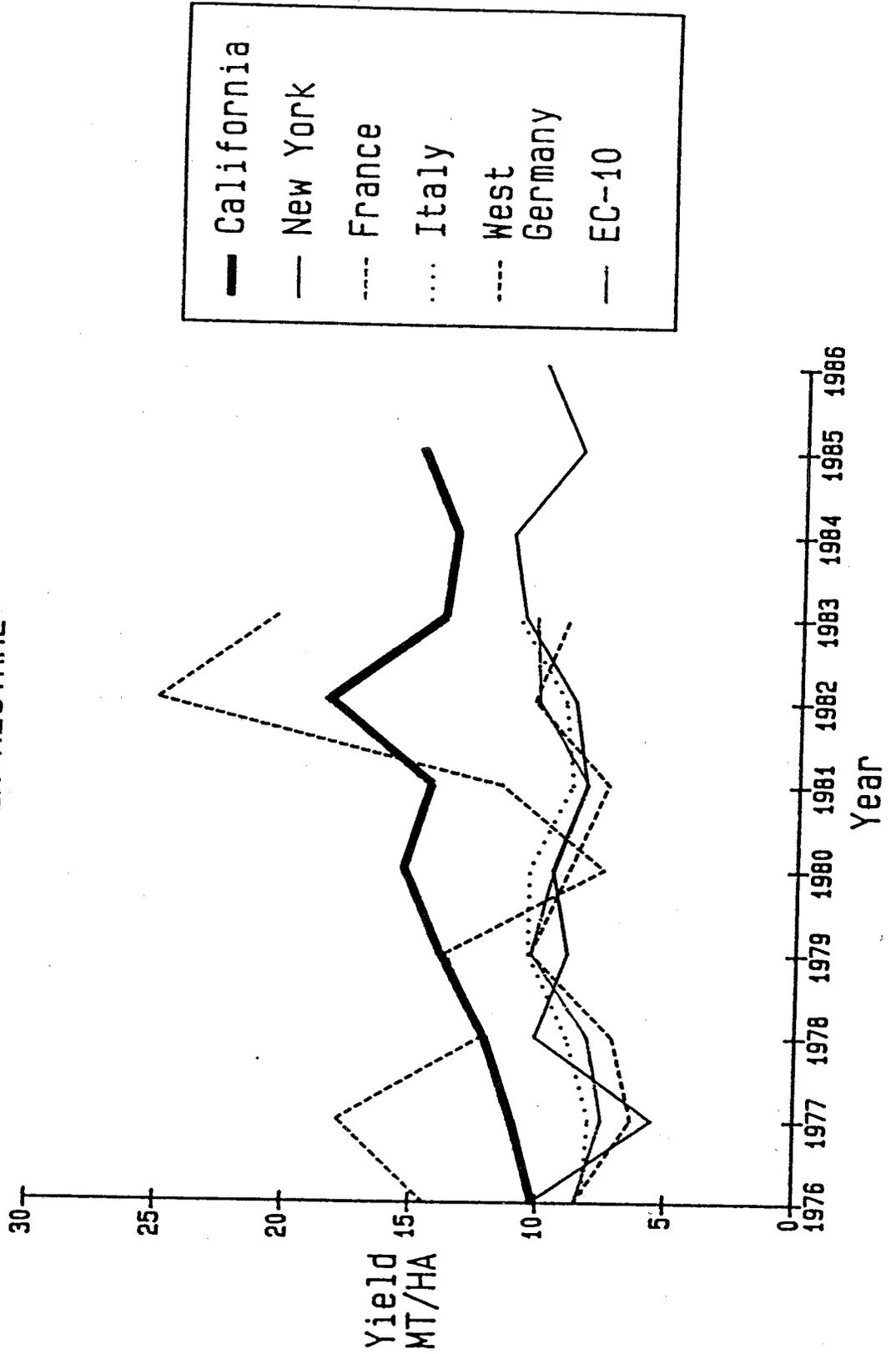
Grape yields in metric tons per hectare were compared for California, New York, France, Italy, West Germany, and the combined yields for the EC-10. Yields in the EC are computed on the basis of hectoliters per hectare since the first market for European producers is usually wine, not grapes. Conversions were made based on one kilogram of grapes yielding 0.72 liters of wine or one short ton of grapes yielding 172.5 gallons of wine.

This comparison is shown in Figure 1. EC data were available only through the 1983 harvest. Yields for California and the EC-10 were for grapes from wine grape varieties while New York's yields were computed for yields from all grapes.

From the figure it may be seen that West Germany has the highest yield performance although its yields are highly variable due to its northerly climate which causes winter and/or frost damage in many years. Germany's vineyards are managed intensively and water availability is not usually a problem.

California also has a high yield level and has much more stable yields than Germany. Irrigation is used for California's production of grapes for wine except for some of the premium wines which constitute only 15 percent of the total production.

FIGURE 1. GRAPE YIELD COMPARISON, IN METRIC TONS PER HECTARE



France and Italy have somewhat lower yields. However, it should be kept in mind that much of the production in southern Italy and France is in somewhat arid areas and is not irrigated. The yields of the EC-10 in total has been around 10 metric tons per hectare (4.5 tons per acre) in recent years.

The yield of grapes per hectare is an indication of production efficiency, but cost considerations are more important. In the next section, cost comparisons are made.

### Costs of Production

International comparisons of costs of production are fraught with difficulties. Stanton identifies major problems such as the following: the difficulty in obtaining a representative sample and the different methodologies used by analysts. With the latter problem, as Stanton notes, costs for the use of land, family labor, and operator's management must be charged using some method approximating market prices. Generally the opportunity cost principle is used in valuing these resources, but there are a number of approaches to establishing these costs. There is also the problem of allocating general fixed costs such as insurance, telephone, etc. and the use of vehicles such as automobiles. To this list one must add the difficulty in selecting an appropriate exchange rate for comparisons, and different languages which serve as barriers to effective communication among analysts. In the case of table wine, there is an additional problem of quality differences.

Although both are table wines, one cannot assume that a "burgundy" from California is the same quality as a table wine from the Languedoc region of Southern France or a Lambrusco wine from Emilia-Romagna. Nevertheless, these wines compete in similar markets, and there are valid reasons for wanting to compare relative production costs. Shea notes that understanding the structure and variance of production costs is an important determinant in predicting the survival of farms in the future. Reflecting upon an EC survey of production costs in Italy, France, and Spain, Shea noted that, if the EC were to set its intervention price at a low enough level so as to encourage more farmers to quit grape growing, the number of farms that would go out of business and which regions would lose the greatest number of farms would depend both on the level and the structure of their costs. For example, if family labor were a large component of costs, it would be possible for farms to stay in business by "paying" less than the market rate for wages. If a country or region has a significant cost disadvantage relative to other competitors in the market, its long run competitive position is weak. The cost of grapes is an important factor because it typically constitutes about half the cost of a bottle of wine (Moulton).

### Review of Grape Cost Studies

A number of cost studies for the U.S. and European countries were reviewed. Some of these studies are summarized in Table 29. Costs per metric ton of grapes are presented at the dollar exchange rate for the year in which the study represented, and no attempt was made to standardize methodology for the different studies.

Caballero Villar surveyed 82 farms in the Valencia region of Spain and estimated costs at \$152 per metric ton, the lowest cost reported among the various studies. This study was unique in that the author attempted to ascertain the opportunity cost of the primarily family labor employed. The

Table 29. Cost comparisons, grapes for table wine, countries of the European Community and States of the United States.

Source	Region/ State/Country	Year	Cost/Hectare	Yield (MT/ha.)	Cost/MT	\$ Cost /MT	Comments
Caballero Villar	Valencia, Spain	1984	115,539 Sp. ptsa	6.10	18,941 Sp. ptsa.	152	Surveyed 82 farms. Labor valued at "true" opportunity cost.
California Coop. Ext.	San Joaquin Valley, Cal.	1980	\$4,774	21.30	\$224.13	224	Extension professional estimated cultural practices and costs of "good management practices".
Commission of the European Communities	France	1980	2,369 ECU (13,893 Fr. F)	10.71	221 ECU (1,296 Fr. F)	308	Median costs, average yields.
	Italy	1980	2,995 ECU (3,553,598 It. L)	12.91	232 ECU (275,270 It. L)	323	Median costs, average yields.
	Spain	1980	722 ECU (73,660 Sp. ptsa)	2.73	264 ECU (26,934 Sp. ptsa)	377	Median costs, average yields.
	Spain	1980	722 ECU (73,660 Sp. ptsa)	5.73	126 ECU (12,855 Sp. ptsa)	175	Median costs, sample yields.
Facchini	Emilia Romagna, Italy	1982	7,530,590 It. L	20.0	376,530 It. L	292	Lambrusco variety, important exporting area.
White	Finger Lakes, New York	1985	\$3,941	10.09	\$390	390	Budgets constructed from survey whole-farm data and economic engineering. Yields above State average.

Sources: See the list of references for complete citations.

resulting wage rate of 250 Pesetas per hour (\$1.58 in 1984) is much lower than that reported in the other studies which were reviewed.

The California Cooperative Extension Service provides annual estimates of costs for the San Joaquin Valley, California. These estimates provide a guide for growers to analyze their own costs and practices, and budgets are based on what are considered "good management practices". The costs are determined on the basis of information supplied by Extension professionals who prepare the estimates rather than from survey data. The yield figure assumed for the study was 21.3 MT/ha (9.5 tons per acre), higher than industry averages. The costs of production from this area are very significant because about half the grapes crushed for wine in the U.S. are grown in these counties (Fresno, Kern, Kings, Madera, and Tulare).

The Commission of the European Communities commissioned a study of the costs of grape production and vinification costs of table wine for the 1980 season in Italy, France, and Spain. Samples chosen for the study were from regions which comprised 34 percent of the table wine production area in Italy and 70 percent of the table wine area in France. The failure to include the region of Emilia-Romagna, an efficient and important producer of table wine in Northern Italy, was a significant omission. Results reported in Table 29 representing the median costs showed costs in excess of \$300 per metric ton in each of the three countries. Two values are reported for Spain because the yields on sample farms were over two times as great as average yields reported in Spanish agricultural statistics. This was due to the choice of farms for inclusion in the sample, which was done in consultation with Extension Advisory Service, and resulted in a sample of farms which were more progressive than the average farm.

In May of 1987, interviews were conducted with three of the national experts who conducted the EC cost study: Professor Dubos of France, Professor Calo of Italy, and Dr. Ambrosio of Spain. Questions were asked which would aid in interpreting results from the EC cost studies. These cost estimates were prepared to (1) enable the EC to gauge the differential effects of intervention prices in the three countries, and (2) to study the consequences of Spain's entry into the EC. The following observations emerged from a study of the Commission des Communautés Européennes Synthèse document and the interviews:

1. Farm surveys were used as a basis for the cost estimates. However, these were supplemented in Italy by the experience of the researchers in specifying cultural practices. The respondents for the surveys did not constitute a random sample. "Better than average" farms were probably represented.
2. The interest rate for operating capital and amortization of vineyards was assumed to be zero. This was partially due to the different interest rates in the three countries which resulted from different levels of interest subsidies and different inflation rates.
3. Wage rates in all three countries were based on wages paid to unionized farm workers. Much of the labor for growing grapes in each of these countries is, however, furnished by family members. Since the opportunity costs of family labor is often below the official wage rate, the cost estimates are biased upward in this respect. Labor usually accounted for about half of the total costs of production in the various regions included in this study.

4. Land costs were not included, although the synthesis document contained some general information about land values in the three countries.
5. Average yields as computed in regional statistics were used for the cost computation except for Spain, which computed costs both for the average yield and the sample yield, as noted earlier.
6. The intent was to achieve estimates which were comparable across the three countries. The authors noted, however, that this was not always achieved, particularly because of the wage assumption. Costs for regions where family labor makes up a high proportion of total labor and where other farming or employment opportunities are limited will not be comparable to other regions with different characteristics.
7. The cost estimates best reflect the longer run average costs of production. Even though capital costs and land costs were not included, other fixed costs for machinery and vineyard establishment were estimated and labor was valued at market rates. Over the longer run, those regions and countries having higher costs will tend to experience a greater reduction of area devoted to vineyards than those areas with lower costs. The authors noted that costs were lowest in the plain areas and highest in lower yielding hillside vineyards. In the future, it is expected that competition will intensify between these two production zones rather than among regions or countries.

In a following section, studies from the U.S. and the EC were standardized with respect to methodology so that results are more directly comparable.

Facchini investigated costs in Emilia Romagna, Italy for the 1982 season. This region is where the Riunite Cantine Cooperative, the major source of Lambrusco wine exports into the U.S., is located. Estimated costs are for a typical planting system and the Lambrusco variety. The yields (under irrigation) of 20 MT/ha. are comparable to California. Cost per ton was 376,530 lira or \$292 at 1982 exchange rates.

Periodic whole farm business summary estimates have been conducted for the Finger Lakes region which is the major production area for table wines in New York State. Wine is produced from the native varieties of grapes. Costs were estimated for 1985 using a combination of farm business summary survey data and economic engineering methods. Costs were estimated at \$390 per metric ton, the highest of any study reviewed. The computed cost was the most recent of any study and, therefore, costs were higher due to inflation.

#### Adjusted Grape Cost Comparisons

As noted above, a substantial difficulty in comparing costs between regions or countries is the difference in methodology used by researchers. In this section, an attempt was made to standardize some of the different assumptions behind the various studies cited earlier. The methodology used in the EC study was followed by assuming that (1) there was no interest charged on operation capital, (2) no interest was charged on vineyard amortization, and (3) there was no charge for land. Costs were adjusted by the Eurostat price index of purchased inputs used in farming to reflect 1980 costs, and exchange rates were adjusted to 1980 dollar values using IMF data.

The results of this comparison are shown in Table 30. The lowest cost (\$96/MT) producer in this comparison is Valencia, Spain. It must be kept in

mind, however, that this was the only analysis in which an attempt was made to value labor at its true opportunity cost. San Joaquin Valley, with cost figures which represent over half of the table wine production from the United States, had the second lowest cost at \$143 per metric ton. Languedoc, France, on large, mechanized plain vineyards showed a cost of \$188 per metric ton, while Emilia Romagna, Italy had costs of \$243 per metric ton. At the high cost end of the estimates were Toscane, Italy (small hillside, \$329/MT, and \$302/MT for large hillside vineyards, and New York, \$300/MT). The figures from Italy and France probably overstate costs considerably due to the values at which labor was charged.

The costs as of 1980 represented a period in which the U.S. dollar was at its weakest against its EC competitors' currencies. As noted before, the stronger dollar of the mid-1980's caused EC imports to be relatively lower as the dollar strengthened. The effects of changes in currency values and inflation rates are shown in Table 31. Cost per metric ton of grapes, as shown in Table 30, were adjusted to reflect this later period for some of the regions. Two adjustments were made. First, costs were adjusted based on the Eurostat price index of purchased inputs used in farming to reflect the effect of inflation in each country; and (2) exchange rates were adjusted to 1984 dollar values by IMF data. The results change the ranking of cost competitiveness as Languedoc, France (large vineyards on the plain) have lower-cost production than San Joaquin Valley, California. In interpreting the data in Table 31, it should be kept in mind that the regions shown, except for the Finger Lakes region of New York, are the lowest-cost producing sites found in the survey of cost studies. It should also be recognized that the costs are presented as if growers made no adjustments, in terms of input use, as grape and wine prices decreased, and as input prices rose due to inflation. This over simplification was necessary in order to make comparisons over time and at different exchange rates.

#### Cost of Wine Production Studies

Reviews of wine production costs studies are provided by Shea and Moulton. Studies of U.S. production costs are not readily available to the public since most large firms (which are typical in the U.S. table wine sector) regard these data as proprietary. The International Trade Commission collected data in 1984 from 10 U.S. wineries for wineries shipping an estimated 7.68 million hectoliters (203 million gallons) of nonpremium table wine. The average value obtained was \$10.15 per nine liter case. Using these sales data and information from other sources, Moulton inferred that the cost of nonpremium table wine was approximately \$10.15 per case. Moulton constructed estimates of comparative costs for 1986 (Table 32).

European producers probably derive advantages from lower costs for bottles and other packaging costs and labor. Transportation costs in shipping to the eastern U.S. was estimated by Wiedert at about \$3.00 per case for Italy and France and \$2.00 for California. Moulton concluded that the average cost of producing nonpremium table wines and shipping to the eastern U.S. were about the same for Italy, France, and California. Market shares of the most efficient U.S. wineries support this conclusion.

Table 30. Adjusted cost comparisons, grapes for table wine, 1980 dollars.

Source	Region/State/Country	Labor	Mach. & Equip.	Materials	Overhead	Amortized Planting	Other Costs	Total Cost/ha.	Total Cost /MT
Caballero-Villar	Valencia, Spain	238*	161*	79*	0*	34*	75*	587*	96*
California Coop. Extension	San Joaquin Valley, California	1,441	126	403	203	460	420	3,053	143
Commission of the European Comm.	Languedoc, France (large plain)	728	450	1,400	335	464	0	3,378	188
	Languedoc, France (small plain)	2,426	472	898	334	553	0	4,683	293
	Mancha, Spain	491	60	205	48	84	0	889	178
	Pouilles, Italy	1,985	195	628	424	654	0	3,885	216
	Venezia, Italy	2,622	349	592	237	801	0	4,601	329
	Toscana, Italy (large hillside)	1,952	172	730	118	651	0	3,623	302
	Toscana, Italy (small hillside)	1,402	291	374	149	649	0	2,866	329
Facchini	Emilia Romagna, Italy	2,217	1,092	509	606	431	0	4,855	243
White	Finger Lakes, New York	803	758	395	533	227	21	2,737	300

\*Input price index not available, 1984 costs represented.

Sources: See the list of references for complete citations.

Table 31. Adjusted cost comparisons, grapes for table wine, 1980 and 1984 dollars.

Source	Region/State/Country	Total Cost/Metric Ton	
		1980 Dollars	1984 Dollars
Caballero-Villar	Valencia, Spain	n.a.	96
California Cooperative Extension	San Joaquin Valley, California	143	176
Commission of the European Community	Mancha, Spain	178	n.a.
	Languedoc, France (large plain)	188	132
	Pouilles, Italy	216	181
Facchini	Emilia Romagna, Italy	243	204
White	Finger Lakes, New York	300	350

n.a. = Not available.

Sources: See the list of references for complete citations.

Table 32. Estimated average costs to produce table wine in bottles, per nine liter case, 1986.

	California \$/case	France \$/case	Italy \$/case
Cost of grapes	1.72	2.00	1.40
Crushing & fermenting	.56	.49	.70
Finishing costs	<u>7.70</u>	<u>6.88</u>	<u>6.00</u>
Total	9.98	9.37	8.10

Source: Moulton

### Analysis of European Community Subsidies

The competitive position of the U.S. relative to the EC countries in the production of grapes and wine could be altered by government subsidies, either at the EC level or by national and provincial government aids. Numerous programs and aids benefit EC wine producers. Weidert conservatively estimated the value of subsidies in 1984 as 22 cents per liter (89 cents per gallon) for France and 14 cents per liter (53 cents per gallon) for Italy and West Germany. These estimates did not include a myriad of other national and provincial subsidies which could not be estimated. For example, Donadio lists support in the range of \$310 million to \$378 million paid annually by Italian intervention agencies during 1981-83. In addition, Italian producers benefit from interest rate subsidies for farm improvement loans and operating loans. It is impossible to determine the amount of these subsidies going to the grape and wine sector.

#### Guarantee Section Expenditures

EC expenditures are of two types: "Guarantee" section expenditures support agricultural market prices. "Guidance" section expenditures are for structural improvements in farming, processing, or marketing. Guarantee expenditures in recent years are shown in Table 33.

Expenditures to support prices in the wine sector varied from \$81 million in 1978 to \$966 million in 1984. In 1985 the expenditure on the wine sector by the Guarantee Section was \$703 million or about five percent of guarantee section expenditures (Commission of the European Communities, Commission Report to the Council, 1988). Over the period shown in Table 33, distillation of wine was by far the largest program, representing over 60 percent of total wine sector guarantee expenditures. The wine sector expenditure in proportion to the total CAP Guarantee budget reached a maximum at 6.7 percent in 1984.

#### Guidance Section Expenditures

Expenditures under the Guidance Section of the CAP are much less than for the Guarantee Section. The 1985 budget for Guidance expenditures amounted to 1.0 billion E.C.U. (\$760 million) for all sectors (European Commission, Fifteenth Financial Report on the European Agricultural and Guarantee Fund, Guidance Section). This is about the same amount as was spent in the wine sector alone in the Guarantee Section. Two of the largest programs for the wine sector are for improvements in marketing and processing structures and for restructuring vineyards.

For capital improvements in marketing and processing structures the EC provides up to 25 percent of the total investment for approved projects (Weidert). Member states must provide an additional five percent of the funding, but according to Weidert, often provide 25 percent of the total cost. The budget expenditure by the EC for this program was 19.7 million E.C.U. (\$14.9 million) in 1985.<sup>11</sup> In the eight years ending in 1985, expenditures in the wine sector amounted to 222.9 million E.C.U. (\$239 million), or about \$30 million annually. Thirty-six percent of this aid went to Italy, 38 percent to France, and 16 percent to West Germany.

<sup>11</sup>Since this is expenditure for capital investments, the annual value of the subsidy should be calculated by amortizing over the projected lives of the investments.

Table 33. EC Guarantee Section expenditure for the wine sector, 1977-1985

Type of Expenditure	Expenditure (million dollars)									
	1977	1978	1979	1980	1981	1982	1983	1984	1985	
Export refunds	1.3	2.0	6.3	36.7	28.9	31.3	18.0	14.7	14.4	
Market intervention	101.2	78.9	78.5	379.6	485.6	527.9	568.7	951.2	688.6	
Private storage aid	40.6	44.8	30.8	99.2	96.0	103.0	121.8	97.3	66.5	
Restorage aid	1.3	2.8	2.6	6.8	5.6	3.2	5.0	9.8	0.0	
Distillation of wine	50.7	13.8	19.9	270.4	352.7	382.7	348.3	673.4	457.0	
Compulsory distillation of byproducts	8.6	12.4	12.2	0.1	0.0	8.8	56.2	70.0	49.8	
Aid for use of musts	0.0	0.0	12.6	2.4	31.2	30.2	37.5	100.0	113.1	
Other	0.1	5.0	0.4	0.7	0.1	0.0	0.0	0.6	1.1	
Total	102.5	80.9	84.8	416.3	514.5	559.2	586.7	965.9	703.0	
Total expenditure by Guarantee Section, All Sectors	7,786.7	11,014.3	14,582.4	15,727.9	12,282.9	12,157.5	14,072.3	14,493.7	15,140.2	
Wine sector percent	1.32	0.73	0.58	2.65	4.19	4.60	4.17	6.66	4.64	

Source: European Commission, Commission Report to the Council, September 1986.

Restructuring payments for vineyards include "conversion premiums" to promote the production of crops or wine products not in surplus. About 12 million E.C.U. were spent for this program in 1985 (\$9 million) and a sum of 41.5 million E.C.U. since 1976. Under EEC Regulation Number 1163/76, over 78 thousand hectares were removed from wine production for a total expenditure of 47.8 million E.C.U., none of which was spent in 1985. Premiums totaling 77 million E.C.U. were paid for the temporary or permanent abandonment of about 42 thousand hectares of vineyards (European Commission, Fifteenth Financial Report on the European Agricultural Guidance and Guarantee Fund). New plantings of vines were prohibited in 1980 (Niederbacher), with the ban extending to 1990. The planting of certain vines for quality wine production is permitted. Payments for these various conversion and abandonment schemes range from 2 to 4 thousand dollars per hectare, some part of which is borne by the member country (Weidert). The commission estimates that up to 1985, 64 thousand hectares were permanently abandoned with EC aids while 122 thousand hectares were temporarily abandoned (Commission of the European Communities, Commission Report to the Council, 1988). Regulations were modified in 1985 to pay higher premiums for higher yielding vineyards and to restrict replanting rights on the residual part of the vineyard to prevent increased production on other land. The goal of the Commission is the permanent abandonment of 180 thousand hectares by 1990.

#### Effects of Wine Sector Subsidies

Substantial expenditures have been made for three general types of subsidies. The highest payments have been made through the Guarantee Section programs for distillation. Substantial payments have also been made for structural programs such as investments in new or improved processing/marketing facilities and vineyard conversion or abandonment. Each of these types of programs have different effects on wine competition in international markets.

These programs represent a substantial transfer of income from the general public to grape growers and wine producers. In terms of their effects on wine production prices, and trade, however, each type of subsidy must be examined separately and each need to be analyzed for long-run as well as short-run effects.

These effects are illustrated in Figures 2a, 2b, and 2c. Each diagram represents the demand and supply curves for a given category of table wine.

#### **Distillation**

Figure 2a illustrates the market effects of the distillation program. This Guarantee program supports the price for a particular category of table wine in the short-run at  $p'$ , a price level above market clearing price,  $p$ , and causes the production ( $c$ ) of more wine than would otherwise be produced. A surplus production of table wine of  $ac$  results, but this surplus is converted (at a cost which is not shown on the diagram) to alcohol in the form of crude brandy. The net effect on table wine reaching the market is a reduction of  $ab$  from what would have occurred without the Guarantee program. The quantity  $ac$  has been in the range of 13 to 37 million hectoliters (446 million to 977 million gallons) in recent years, as shown in Table 17. Without a specification of the demand and supply curves, one cannot say how much wine production has been reduced in the short-run.

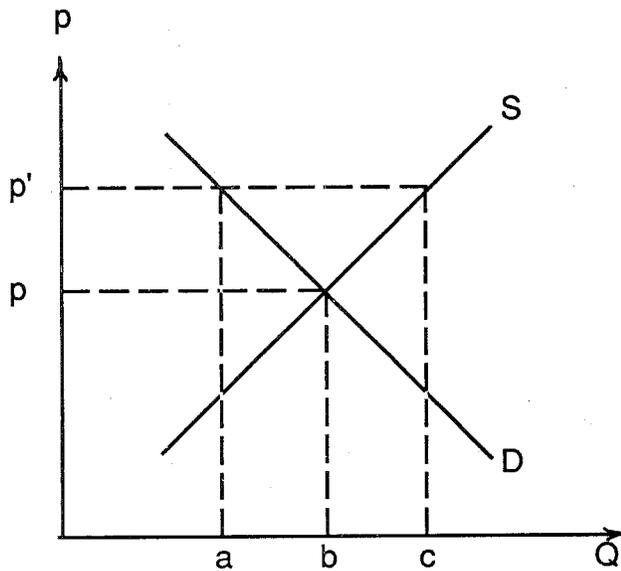


Figure 2a. Short run effects of distillation of table wine

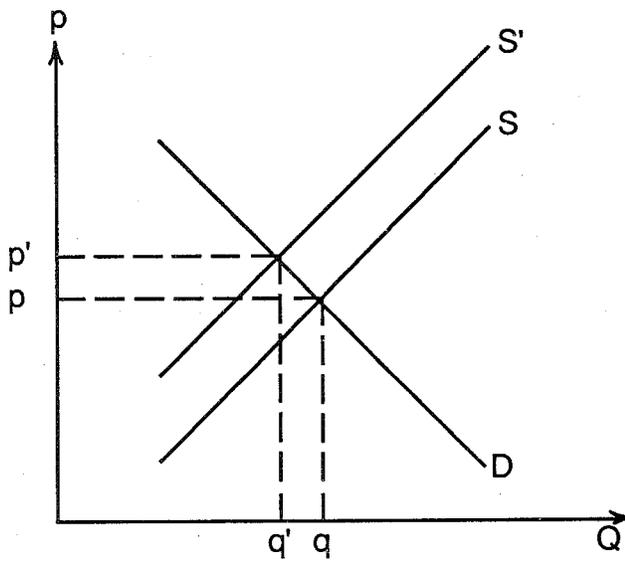


Figure 2b. Short run effects of conversion and abandonment premiums paid to reduce area of vines for production of table wines

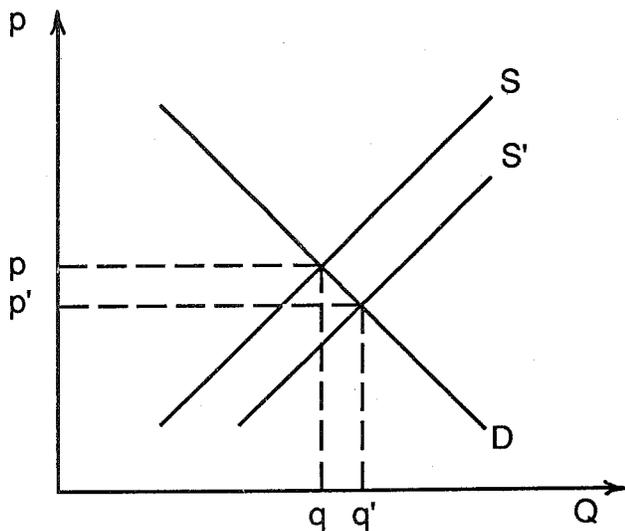


Figure 2c Effects of aids for investment in new or improved marketing and/or processing facilities

The effects do not end, of course, with the table wine market. Stocks of alcohol in the EC have increased dramatically, leading to ever-larger storage costs. Most of the distilled wine alcohol has no market. By one estimate, 250 thousand tons of alcohol is put into storage in recent years, and EC stocks have risen to about 600 thousand tons (House of Lords). With the growth of these surpluses, the stored alcohol hangs as a threat over the ethyl alcohol market. The Commission has taken the position, however, that the disposal of surplus alcohol must be done in a manner not to disturb either the ethyl alcohol market or the spirits beverage market (House of Lords), which is impossible.

The long-run effects of distillation on the table wine market are less clear. By supporting price above the market level, wine producers who otherwise would exit the industry are kept in production. If the distillation program were stopped, the price of table wine would decrease. Producers would be forced out of business until table wine supply was aligned with demand. The end result would be fewer farms and lower table wine production.

#### Conversion and Abandonment Premiums

The short-run effects of subsidies paid to producers to convert to other crops or abandon vineyards are shown in Figure 2b. The programs result in a shift of the supply curve to  $S'$  and an increase in price to  $P'$ . When many producers change to alternative crops, however, the supply and price of these crops will be affected.

Marginal producers with few crop alternatives are unlikely to exit unless they are close to retirement or are willing to seek alternative employment, most probably in urban areas. Marginal wine producers who have other crop alternatives will take advantage of the program if payments compensate for loss in the value of existing assets (primarily vines) or investment costs in alternative crops.

In the longer run, the effects depend partially on the effectiveness of enforcement to prevent growers from replanting grapes for table wine on marginal land with no alternatives. The enhanced market price acts as a signal to efficient producers that more grapes would lead to increased profits. The natural inclination is for growers to try to circumvent the rules against replanting. The Commission has recognized these possibilities with a strengthening of the structures policy in 1985 to increase abandonment premiums and to vary payments on the basis of yield per acre. To prevent permanent abandonment on one part of the vineyard being offset by increased production on another part, replanting rights on the residual area were restricted (Commission of the European Communities, Commission Report to the Council, 1986). The existing regulations still leave open the alternative for growers to increase yields in their existing vineyards. Hence, there has been much discussion and speculation that yield limitations will be put into place in the near future.

#### Improved Marketing/Processing Structures

The EC, with additional grants from member countries, has enabled the construction or improvements of capital structures for processing wine. Funds of this type are provided, not only by the EC for approved projects, but by national, regional, and provincial governments. It is not clear how much of these funds were expended in projects in which table wine was produced after plant construction or improvements. Weidert estimated that

between \$700 million and \$1.1 billion was spent on structures between 1978 and 1983, including national support. Some of this may have been paid to firms which upgraded the quality of wine produced.

It is certain that much of this expenditure was used to improve capacity or efficiency of table wine production. The subsidies would have both a short and long run effect of increasing the supply of table wine available (from S to S') at any given price and reducing the price of table wine in the absence of market support, as shown in Figure 2c. With the existence of market support, firms which expanded their capacity make higher profits while EC expenditures under the Guarantee Section to support market prices increase. To the extent that expenditures were made for table wine plants, as they were in the early years of the Guidance program, they contributed to the development of the structural surplus and the increasing Guidance Section expenditures that have generated problems for the Commission.

#### Summary of Effects of CAP Wine Sector Subsidies

EC subsidies have resulted in a transfer of funds from the general public to wine producers and industrial concerns which distill and store alcohol. The three cases selected for analysis, however, have different effects on table wine prices. The distillation program and the conversion and abandonment programs both have supply reducing and price enhancing impacts in the table wine market in the short-run. The long-run effects are uncertain, as production may have expanded in response to the higher prices induced by the subsidies.

In the case of new marketing/processing investments, the subsidy has the effect of increasing output and reducing the price of table wine. Thus, the cases examined show the conflict which exists between the different sections of the EC program for the wine sector. It is impossible to account for the costs and additional capacity resulting from the subsidized construction and improvements of plants that were financed by the member countries at various levels of government.

The net effect of the mix of programs, some of which enhance prices and reduce production, and others which have the opposite effect, cannot be estimated with certainty. However, the best estimate of the authors is that on balance, the Community programs have held prices and production of table wine above what they would have been in the absence of the Guidance and Guarantee Section expenditures. If Guarantee Section support measures were eliminated, table wine prices would fall and competition for export markets such as the U.S. market would intensify greatly in the short run, resulting in at least a temporary flood of low-priced table wine imports.

## VII. CONCLUSIONS

### Summary of Major Findings

Changes in the structure of demand for wine have had important effects on the grape and wine industries in the countries of the European Community and the United States. There are several significant underlying trends in major world wine markets, both in countries with very high per capita consumption and countries with low per capita consumption. These trends are as follows: (1) The demand for lower quality table wine (table wine in the EC

and nonpremium table wine in the U.S.) is decreasing in countries with high consumption and is flat in countries with lower consumption; (2) the demand for higher quality wines (quality wines p.s.r. in the EC and premium varietal table wines in the U.S.) is increasing; (3) the overall demand for wine as a broad product category is decreasing in countries with high consumption and is flat in countries with lower consumption; and (4) lighter, lower alcohol wines are gaining popularity in many markets.

The grape and wine industries of the EC and U.S. have had difficulty in the 1980's in responding to these changes. The long lag between the time vineyard and winery investments are made and production occurs has resulted in a period in which certain types of wine are in surplus. The effects on wine prices have been pronounced. In the EC, the main attempts to deal with this situation have been through direct market intervention which has resulted in large-scale distillation to remove table wine from the market. This approach has required mounting government expenditures. In the U.S., without a government program for market intervention, the period of the 1980's has been characterized by intense price competition, mergers and acquisitions among large wineries, and the exit of grape growers from the industry.

In order to study the competitiveness of the U.S. industry, three factors were examined which could affect the U.S. industry's ability to compete with EC countries, particularly Italy and France, which accounted for about 90 percent of EC output prior to Spanish ascension. These factors are (1) changes in the value of the U.S. dollar relative to the currency of major competitors; (2) efficiency as measured by grape yield per unit area and costs of grape and wine production; and (3) the effects of EC subsidies.

It is concluded that the strengthening U.S. dollar from 1980 to 1985 had a substantial impact on the competitive position of the EC and the United States. In general, imported wines from Italy and France were quite sensitive to changes in prices and incomes. The appreciation of the dollar against the French franc and the Italian lira had a major effect on the volume of imports of all categories of French and Italian wine. The appreciation of the dollar accounted for between 63 and 100 percent of the increase in imports over that period. With the subsequent depreciation of the dollar relative to these currencies, imports decreased by four percent in 1985, 21 percent in 1986, and 11 percent in 1987. The decrease in imports in 1986 also reflects the methanol scandal which affected Italian imports and the sluggish demand in general, which has characterized the U.S.'s nonpremium table wine market since 1982.

In terms of efficiency, the U.S. industry does not appear to be at a competitive disadvantage. California with over 90 percent of the U.S. output of grapes and wine, in general, appears to be able to produce nonpremium table wine about as cheaply as France or Italy. Average grape yields are higher in California than in Italy and France, although it should be kept in mind that irrigation is used more widely in California than in any EC country. An examination of costs per metric ton showed that the large, important producing area in the San Joaquin Valley produces grapes about as cheaply as the lowest cost production areas in France and Italy. (Spain appears to be the lowest cost producer of the countries examined.) New York State, which is the second most important state in wine production, but with only five percent of U.S. production, appears to be at a cost disadvantage in producing grapes for nonpremium table wine. At the exchange rates of the period when the dollar was the strongest, however, the U.S. was at a major disadvantage. Winery cost studies are fragmentary, but suggest that the U.S.

is at a slight cost disadvantage.

In summary, the U.S. industry as a whole is probably more efficient in producing grapes and slightly less efficient in wine production than the EC. When transportation costs to eastern U.S. markets are considered, there does not appear to be any great difference in costs of nonpremium table wine between the San Joaquin Valley and France and Italy. This balance is obviously affected by extreme misalignment of the value of the dollar relative to its European competitors, such as occurred in 1984 and 1985.

Over the last 10 years, the table wine marketed by "other states" has declined from about 830 thousand hectoliters (22 million gallons) to 490 thousand hectoliters (13 million gallons), an average annual decline of about six percent. This category is mostly the nonpremium table wine from New York; thus, the New York industry appears to be at a distinct disadvantage compared with California and the EC.

It must be recognized that cost comparisons between the U.S. and the EC are difficult to interpret because of the difficulty in valuing the true opportunity costs of certain resources, particularly in the European setting. Farms are very small (about one hectare or 2.47 acres per holding) and operated predominantly by family labor. Most of the cost studies available value labor in the EC at the wage received by regular full-time hired vineyard workers. Over the longer run, as workers in rural areas of the EC respond to employment opportunities in urban areas, this labor will be less and less available for grape and wine production. There will remain areas, particularly in southern Italy, southern France, and central Spain, where family labor will continue to accept low wages because employment alternatives are not readily available. The situation is further affected by the incidence of part-time farming, which is prevalent in the small holdings of the EC. There will continue to be a surplus of labor resources in EC wine production, but one that will slowly adjust to the realities of the market, intervention policy permitting.

European Community and national subsidies to the wine sector are a factor in competition, but it is not clear what effect they have on trade. The largest program, distillation, keeps EC prices higher than they would otherwise be in the short-run, leading to less imports by the U.S., since export subsidies are not paid for the U.S. market. However, other programs, such as grants for processing/marketing structures, lead to increased supplies of wine and lower prices. On balance, it is likely that the subsidies paid through the CAP wine sector program have played a role in increased imports by the U.S. by slowing down the long-run supply adjustments necessary to bring markets into balance. This factor has not had nearly as important an impact, however, as changes in the value of the dollar such as those which occurred during 1980-1985 when imports from the EC were increasing substantially.

Other factors such as advertising and promotion have played a role in the expansion of EC imports into the U.S., an area which is not explicitly analyzed in this study. Major advertising efforts, financed by government grants, grower assessments, and brand advertising, have probably been an important factor in the success of European wines in the U.S. market.

### Implications for the Future

This analysis has focused primarily on table wine from the EC and nonpremium table wine from the U.S. The next decade will be characterized by continued intense competition both domestically and internationally for this stagnant or declining part of the market. The ability to respond quickly to new opportunities and the potential development of new products, such as wine coolers in the 1980's, will be an important asset. The U.S. industry, with a more flexible regulatory structure and less bound by tradition, has been able to exploit this now important market in a manner that the EC finds difficult to duplicate. Responsiveness to changing opportunities will continue to be an important asset for the American industry.

There has been quite a growth in the number of wineries in the U.S.; they have more than doubled in the past 10 years. Much of the growth has occurred outside of the traditional wine producing states of California and New York and is oriented toward the production of premium wine. Competition in this part of the industry will intensify, but will be of a different character.

An assessment of retail prices of wines in the EC and the U.S. markets was beyond the scope of this study. Casual observation, however, suggests that the retail prices of quality wines p.s.r. in EC markets are considerably lower than the price of domestic premium wines in the U.S. Quality differences are important and impossible to analyze objectively, but overall it appears that retail prices for quality wines in Europe are considerably lower than the prices of similar wines produced in the U.S. This could imply increasing competition in this segment of the U.S. market in the future. There are a large number of quality wines on the market, and this poses difficulties for consumer choice. Marketing becomes paramount for success. In the coming decade, successful marketing will depend on the ability to differentiate brands or appellations in the premium wine market. Marketing strategies will be the key to determining which of the premium wineries attain a modest level of success. Premium wineries in states where the wine industry is relatively new (e.g. Virginia, Washington, Oregon, and Texas), can capitalize on the possibility for retail sales at the winery door in markets that are not yet saturated by competition. In this setting, price in comparison with the prices of imported wines is not the main criterion for sales.

The analysis of the effect of changes in the exchange rate had important implications in marketing both nonpremium and premium table wines. It demonstrates that for many categories of wine, U.S. consumers are responsive to price, and that their consumption is sensitive to disposable income. The lowest price sensitivity was shown by two markedly different types of wine -- the most expensive, well-known and perhaps most sophisticated types of imports represented by French Bordeaux-type wine, and the least sophisticated and cheapest Italian Lambrusco-type wine. In the case of Bordeaux wines, this lack of sensitivity is an asset, particularly since price-insensitive consumers increase their consumption of this type of wine as their incomes grow. In the case of Lambrusco wines, it reflects the fact that market saturation appears to have been reached and there is probably little opportunity for a further increase in per capita demand in the U.S.

Generally, imported wines with the greatest "brand" identification such as Bordeaux and Burgundy, have the lowest consumer sensitivity to price and the highest sensitivity to changes in disposable income. The consumption of

other wine types, such as the more expensive Italian imports and nonappellation French imports, both of which are less well-known and have less consumer loyalty are also responsive to changes in income, but are far more sensitive to changes in price.

In the nonpremium table wine market, U.S. producers will be able to compete successfully in the next decade as long as the value of the dollar remains at reasonable levels. California is just as efficient in supplying this market as Italy or France. The entry of Spain into the EC will pose challenges for France and Italy, as well as California, in this market. In the quality wine sector, low-cost production is not the overriding factor. As the structure of the U.S. wine sector changes, marketing strategies will be a major determinant of the success of premium wineries.

It is expected that the value of the U.S. dollar will remain relatively low over the next three or four years, similar to the early 1980's when the value was equivalent to approximately 4 French francs, 1.7 German marks, and 850 Italian lira. This suggests a relatively strong competitive position for the U.S. grape and wine industry internationally. California is a low cost producer of nonpremium table wines at these exchange rates.

In the quality wine market, costs of production are not the overriding factor. In this segment, product differentiation and the ability to establish an image for consumers are important factors. France and, to a lesser extent, West Germany, will build on their strengths in the marketing of premium wine while Italy and Spain will seek to improve the image of their premium wines in the market place.

The entry of Spain into the EC will pose challenges for Italy and France and the Community's wine policy as a whole. Spain is a very low cost producer of nonpremium table wine. The volume of wine produced in Spain, and its relatively low price, will put a strain on EC wine policy. How this policy will evolve in response to these pressures is uncertain.

Current policy is probably unsustainable because of its budgetary costs, which will increase with the entry of Spain into the EC. There is a possibility that some national governments may begin to take a greater financial role in supporting their wine industries, although this is unlikely for countries with more limited resources such as Spain. There seem to be two possible directions that EC wine policy could take in order to control expenditures in the wine sector. One response could be to control production. Possible options include a continuation of grants for vineyard removal and prohibitions on replanting. In addition, strict yield limitations are currently being considered. The impact of these measures would be to increase the domestic price of table wine, and place the EC in the continuing position of supporting the world price of table wine.

The second possible response would be to lower the support price and let market forces bring supply into balance. If this policy is pursued, the price of European table wine on world markets would decrease and international competitive pressures would intensify. Each of these policy options has different implications for U.S. producers.

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Appendix Table 1. Total area planted in vines, European countries, the United States, and the World, 1965-1985, 1,000 hectares.

Year	W. Germany	France	Greece	Italy	Luxembourg	EC-10	Spain	Portugal	EC-12	U.S.	Europe	World
1985	100	1,063	168	1,103	1	2,435	1,593	387	4,415	334	6,736	9,558
1984	101	1,079	169	1,130	1	2,480	1,581	366	4,427	343	6,758	9,630
1983	101	1,095	171	1,138	1	2,506	1,610	364	4,480	341	6,856	9,751
1982	99	1,111	175	1,341	1	2,727	1,624	364	4,715	338	7,097	9,987
1981	101	1,134	185	1,360	1	2,781	1,650	360	4,791	325	7,179	10,056
1980	100	1,197	185	1,376	1	2,859	1,697	358	4,914	316	7,198	10,104
1980-84	100	1,123	177	1,269	1	2,671	1,632	362	4,665	333	7,018	9,906
1979	100	1,225	191	1,379	1	2,896	1,717	356	4,969	306	7,295	10,239
1978	102	1,214	194	1,386	1	2,897	1,719	390	5,006	300	7,289	10,108
1977	101	1,206	195	1,397	1	2,900	1,729	359	4,988	298	7,309	10,224
1976	101	1,310	197	1,406	1	3,015	1,721	359	5,095	297	7,433	10,307
1975	100	1,320	199	1,400	1	3,020	1,740	358	5,118	304	7,409	10,332
1975-79	101	1,255	195	1,394	1	2,946	1,725	364	5,035	301	7,347	10,257
1974	99	1,323	202	1,385	1	3,010	1,705	357	5,072	301	7,306	10,129
1973	96	1,318	205	1,369	1	2,989	1,664	356	5,009	286	7,197	9,981
1972	94	1,303	201	1,354	1	2,961	1,601	351	4,913	265	7,080	9,929
1971	92	1,327	211	1,335	1	2,961	1,590	350	4,901	246	7,097	9,870
1970	88	1,338	218	1,524	1	3,169	1,578	350	5,097	235	7,280	10,017
1970-74	94	1,321	209	1,393	1	3,018	1,628	353	4,998	267	7,192	9,985
1969	85	1,342	218	1,524	1	3,170	1,645	348	5,163	233	7,365	9,947
1968	84	1,367	221	1,613	1	3,286	1,669	347	5,302	233	7,531	10,098
1967	88	1,368	228	1,676	1	3,311	1,673	347	5,331	239	7,519	10,086
1966	83	1,385	230	1,643	1	3,342	1,653	346	5,341	240	7,520	10,082
1965	83	1,385	229	1,667	1	3,365	1,688	345	5,398	237	7,565	10,059
1965-69	85	1,369	225	1,615	1	3,295	1,666	347	5,307	236	7,500	10,054

Sources:

1) Bulletin de L' O.I.V., various volumes, 1967-1987.

2) Symposium International sur la consommation du vin dans le monde, Avignon, 15-18 June, 1976.

Appendix Table 2. Wine production, European countries, the United States, and the World, 1965-1984, 1,000 hectoliters.

Year	W. Germany	France	Greece	Italy	Luxembourg	Other EC	EC-10	Spain	Portugal	EC-12	Europe	World	U.S.
1985	5,402	69,249	4,559	63,340	107	12	142,669	33,103	9,744	185,516	240,901	301,237	n.a.
1984	7,993	63,709	5,175	70,235	152	12	147,276	35,537	8,447	191,260	256,648	326,561	18,561
1983	13,040	68,123	5,250	83,280	185	12	169,890	31,238	8,277	209,405	279,367	350,784	17,269
1982	15,403	79,230	4,678	72,648	256	14	172,229	37,435	10,041	219,705	292,216	365,812	19,494
1981	7,159	57,000	5,500	70,560	97	14	140,330	33,867	8,872	183,069	244,819	310,988	16,385
1980	4,635	69,203	5,395	86,545	50	14	165,842	42,402	10,172	218,416	281,590	353,305	18,000
1980-84	9,646	67,453	5,200	76,654	148	13	159,114	36,096	9,162	204,372	270,928	341,490	17,942
1979	8,181	83,543	5,242	84,337	62	14	181,379	50,045	14,300	245,724	307,235	378,159	16,380
1978	7,297	58,170	5,605	72,439	72	14	143,597	29,031	6,594	179,222	232,284	295,858	17,123
1977	10,338	52,345	5,183	64,072	155	14	132,107	22,590	6,908	161,605	222,839	281,088	16,824
1976	8,659	73,035	5,637	65,700	128	14	153,173	25,093	9,400	187,666	248,377	319,300	14,364
1975	9,015	65,975	4,747	69,834	157	14	149,742	36,353	8,887	194,982	252,248	315,439	13,177
1975-79	8,708	66,614	5,283	71,276	115	14	152,009	32,622	9,218	193,849	252,597	318,636	15,574
1974	6,805	75,482	5,698	76,867	138	25	165,015	38,267	14,085	217,367	267,936	339,828	13,224
1973	10,697	82,425	5,079	76,716	186	7	175,110	42,016	11,322	228,448	283,163	350,417	14,253
1972	7,456	58,498	5,820	60,174	139	20	132,107	26,988	8,361	167,456	223,965	283,834	12,040
1971	6,361	61,330	4,771	64,212	104	22	136,800	25,073	8,977	170,850	223,707	288,672	13,698
1970	10,117	74,373	4,537	68,870	242	22	158,161	26,007	11,544	195,712	249,862	305,907	9,687
1970-74	8,287	70,422	5,181	69,368	162	19	153,439	31,670	10,858	195,967	249,727	313,732	12,580
1969	6,151	49,803	4,640	71,658	123	20	132,395	24,618	8,271	165,284	216,960	271,523	10,225
1968	6,894	65,120	4,783	65,323	117	23	142,260	23,555	11,944	177,759	222,115	280,874	8,118
1967	6,300	60,993	4,464	74,725	124	16	146,622	23,448	9,870	179,940	218,656	279,033	7,800
1966	5,235	60,935	3,869	64,706	129	13	134,887	31,497	9,019	175,403	215,023	268,933	7,339
1965	5,200	66,568	3,878	68,206	113	13	143,978	27,543	14,928	186,449	225,976	283,651	8,308
1965-69	5,956	60,684	4,327	68,924	121	17	140,029	26,132	10,806	176,967	219,758	276,945	8,358

Sources: 1) Bulletin de l' O.I.V., various volumes, 1967-1986.

2) Symposium International sur la consommation du vin dans le monde, Avignon, 15-18 June, 1976.

Appendix Table 3. U.S. Grape Crop Utilization, 1969-1986

Year	Fresh			Juice			Wine		
	Tons	\$/Ton	%*	Tons	\$/Ton	%	Tons	\$/Ton	%
1969	561,963	100	14	204,892	139	5	2,054,155	61	53
1970	390,006	181	13	254,595	146	8	1,583,229	79	51
1971	392,650	181	10	337,730	135	8	2,309,740	85	58
1972	358,585	329	14	211,975	161	8	1,520,190	138	59
1973	405,805	305	10	196,917	198	5	2,567,328	133	61
1974	434,490	267	10	263,599	177	6	2,415,711	110	58
1975	498,190	337	11	386,300	155	9	2,275,400	92	52
1976	466,330	369	11	274,440	149	7	2,321,710	115	57
1977	481,350	438	11	215,350	210	5	2,411,500	149	56
1978	437,250	496	10	395,100	196	9	2,671,450	192	62
1979	524,100	417	11	310,600	203	6	2,713,100	196	55
1980	568,990	560	10	344,710	181	6	2,996,300	190	54
1981	526,290	530	12	333,760	188	7	2,521,450	250	57
1982	706,380	455	12	348,050	166	6	3,227,300	195	55
1983	671,090	436	13	445,900	143	8	2,422,700	193	46
1984	676,890	371	13	376,260	113	7	2,693,150	174	52
1985	781,090	292	14	295,500	129	5	2,919,310	162	52
1986	732,920	463	14	310,170	181	6	2,934,510	178	57

Year	Dried (Raisins)			Total Processed		Utilized Production	
	Tons	\$/Ton	%	Tons	\$/Ton	Tons	\$/Ton
1969	1,010,200	66	26	3,335,547	68	3,897,510	73
1970	821,800	67	26	2,713,324	82	3,103,330	94
1971	895,900	72	22	3,601,770	87	3,994,420	96
1972	437,400	135	17	2,220,065	139	2,578,650	165
1973	969,300	175	23	3,792,545	148	4,198,350	162
1974	1,023,800	141	24	3,764,310	124	4,198,800	139
1975	1,252,400	151	29	3,866,880	116	4,365,070	142
1976	982,500	157	24	3,626,650	129	4,092,980	155
1977	1,134,000	184	26	3,814,850	163	4,296,200	194
1978	759,000	243	18	3,880,550	203	4,317,800	233
1979	1,380,900	253	28	4,399,600	215	4,923,700	236
1980	1,620,000	230	29	5,026,110	203	5,595,100	240
1981	1,032,000	329	23	3,930,710	266	4,457,600	297
1982	1,547,500	220	26	5,158,520	202	5,864,900	232
1983	1,785,000	132	33	4,689,110	165	5,360,200	199
1984	1,392,500	153	27	4,491,910	162	5,168,800	190
1985	1,610,700	136	28	4,870,510	152	5,651,600	171
1986	1,127,700	N.A.	22	4,412,380	174	5,145,300	215

\*Percent of total utilization.

SOURCE: Agricultural Statistics, 1980, 1977, and 1971.  
NONCITRUS FRUITS AND NUTS, 1986, 1985, 1984, 1983, 1982.