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The Brewing Industry

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THE BREWING INDUSTRY

by

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Introduction

The following report is a study of structural change and performance in the brewing industry since World War II.

Since that time there has been a dramatic exit of firms from the industry, and national levels of four- and eight-firm concentration have more than doubled. Moreover, the leading firms became increasingly profitable in the 1960's and to some extent in the early 1970's. Thus, there were indications that the industry might be moving to a less competitive position. It is argued below, however, that the weight of the evidence supports the view that the industry has actually become more competitive and that, in general, performance has been good.

This conclusion is based on several facts which, when separately considered, would not necessarily prove but, when considered together, strongly suggest increasing rather than decreasing competition.

(1) Since 1950 the brewing industry has been, almost without exception, less profitable than all manufacturing. Of course, low profitability is not necessarily proof of adequate competition. For example, an artificially high price will attract new entrants if they cannot be kept out, and profits will fall as excess capacity rises. But exactly the opposite behavior occurred in the brewing industry after 1950: There was massive exit and the percentage of excess capacity fell.

The industry appeared to be reaching an equilibrium around 1971 in terms of relative profitability. However, in more recent years the industry has again become relatively unprofitable due to a slowing in the growth of demand and the building of a large amount of new capacity.

Currently, the industry is expanding capacity at a rate greater than the expected increase in demand. Discussions of the possible effects on competition of this expansion appear on pages 26-28 and pages 132-135.

(2) The relatively high profits of the leading firms in the 1960's and early 1970's appear to reflect a competitive advantage which was gained by relatively more efficient production, distribution, and marketing operations rather than any sort of noncompetitive behavior on their part. (See pp. 100-121.)

(3) The trends in national concentration mask the fact that concentration in State or regional markets has always been high. (It should be always kept in mind that, due to the high transportation costs of shipping a product consisting of over 90 percent water, beer markets are regional markets, so that national concentration figures do not necessarily indicate anything about the amount of competition in the industry.) The increase in national concentration is largely the result of the increasing penetration of the largest few firms into areas where smaller local or regional sellers or other large brewers had been dominant.

The evidence for this is contained in the market share data in appendix A. From the earliest date for which data are available through 1973, the leading firm lost market share in over 60 percent of the States for which we have data. Also, the second ranked firm lost market share in over 60 percent of these States. From 1974 to 1977 this process appears to have accelerated as the leading seller lost market share in 32 of the 34 States for which we have data. The dramatic changes in market shares in many States cast doubt on the assumption that competition at the State or regional level is declining simply because four- or eight-firm concentration at the State or regional level is rising.

(4) The Consumer Price Index for beer has risen at a slower rate than has the Consumer Price Index for all goods, indicating that the real price of beer has been falling over time. Again, by itself this fact does not necessarily indicate anything about competition in the industry. Costs in brewing may have risen less rapidly than the average because the industry is relatively capital-intensive and becoming more so. However, the data on profits indicate that the industry was unable to retain the benefits of cost reductions for itself (relative to the average for all products); thus, the implication is that competition forced any savings in cost to be passed on to consumers.

The study begins with a review of the changes that have occurred and a look at the environment in which the industry operated after World War II. Following that, we examine the

causes behind the structural change. Next, we analyze the dimensions of rivalry, concentrating on advertising and pricing. Finally, we review the performance of the industry and selected firms and then summarize the findings.

I. Changes in the Brewing Industry

Following World War II, the brewing industry went into a period of decline and stagnation which persisted until the early 1960's. 1/ Evidence of the decline and stagnation characterizing this period is shown by the trend in beer sales and industry profits. In table I, total industry beer sales, in barrels for the period 1947-77, are presented (under the heading "total taxpaid withdrawals") along with the value of shipments. In table II, we find the percentage change in beer sales, in barrels, and in value of shipments from each preceding year. It can be seen that total barrelage declined in five of the years. From 1947 through 1964, beer sales in terms of barrels increased by just 13 percent, whereas from 1965 through 1973 barrelage increased 38 percent. The period of decline and stagnation resulted in a significant amount of excess capacity; in 1951, 38.2 percent of rated capacity was unused; in 1957 the figure was up to 40.6 percent. Since then the percentage of excess capacity has decreased and by the end of 1973 it was

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1/ This has not gone unnoticed. See, for example, Ira Horowitz and Ann Horowitz, "Firms in a Declining Market: The Brewing Case", Journal of Industry Economics, 13 (March 1965). Also, see Growth and Labor Characteristics of Manufacturing Industries (U.S. Department of Commerce, Economic Development Administration, 1972), where the brewing industry was classified, on a basis of 1964-68 data, as a declining industry.

TABLE I

Taxpaid Withdrawals and Value of Shipments, for the Total Beer Industry: 1947-77

Calendar year	Total taxpaid withdrawals (thousands of barrels)	Value of shipments (mil.)
1947	87,172	$1,498.9
1948	85,067	N.A.
1949	84,558	1,503.4
1950	82,830	1,540.6
1951	83,824	1,618.9
1952	84,836	1,777.1
1953	86,045	1,952.6
1954	83,305	1,870.8
1955	84,977	1,941.6
1956	85,008	2,011.2
1957	84,371	2,057.9
1958	84,425	1,982.7
1959	87,622	2,095.4
1960	87,913	2,179.5
1961	89,028	2,200.0
1962	91,197	2,282.0
1963	93,790	2,315.1
1964	98,644	2,469.8
1965	100,421	2,497.2
1966	104,262	2,699.2
1967	106,974	2,929.7
1968	111,416	3,131.4
1969	116,272	3,418.5
1970	121,860	3,822.4
1971	127,397	4,139.7
1972	131,809	4,054.4
1973	138,468	4,344.6
1974	145,464	N.A.
1975	148,633	N.A.
1976	150,426	5,278.8
1977	156,948	N.A.

Sources: U.S. Brewers Association, Brewers Almanac, Washington, D.C., 1976; Census of Manufactures. 1977: Courtesy of U.S. Brewers Association.

TABLE II

Percentage Change in Taxpaid Withdrawals and Value of Shipments for the Total Beer Industry: 1947-77

Calendar year	Percentage change in total taxpaid withdrawals (1)	Percentage change in value of shipments (2)
1947	9.60	N.A.
1948	-2.47	N.A.
1949	-0.60	N.A.
1950	-2.09	3.05
1951	1.20	4.48
1952	1.21	9.77
1953	1.43	9.88
1954	-3.29	-4.37
1955	2.01	3.79
1956	0.01	3.59
1957	-0.76	2.32
1958	0.06	-3.80
1959	3.79	5.68
1960	0.33	4.01
1961	1.27	0.94
1962	2.44	3.73
1963	2.84	1.45
1964	5.18	6.68
1965	1.80	1.11
1966	3.82	0.83
1967	2.60	9.42
1968	4.15	5.99
1969	4.36	9.17
1970	4.81	11.82
1971	4.54	8.30
1972	3.46	-1.53
1973	5.05	14.14
1974	5.05	N.A.
1975	2.18	N.A.
1976	1.21	N.A.
1977	4.34	N.A.

Sources: U.S. Brewers Association, Brewers Almanac, Washington, D.C. 1976; Census of Manufactures. 1977: Courtesy of U.S. Brewers Association.

down to 12.5 percent. 1/ This is the result of two factors: the increase in beer sales and the exit of firms from the industry.

Throughout the 1950's and 1960's the beer industry profit rate was consistently lower than the average profit rate for all manufacturing corporations. Data on industry profits appear in table III along with the average rate for all manufacturing corporations. The difference over time between the two profit rate series is shown in table IV. The below-average profit rates in the brewing industry served as a signal to investors that a reallocation of capital and resources was required and hence it should not be surprising that there was an exit of resources from the industry. 2/

1/ Research Company of America, Brewing Industry Survey, 1974, p. 10. Based on sales and year-end capacity.

2/ Below-average profits could merely indicate below-average risk. This does not appear to be true in brewing. Value Line ranks stocks for safety primarily according to prior variability of the share price. The Dec. 23, 1977, issue awarded an average safety rank to A-B, Heileman, Pabst, and Schlitz, a below-average rank to Carling-O'Keefe and Coors, and the lowest safety rank to Falstaff and Schaefer. The Value Line Beta coefficient measures the sensitivity of a stock's price to movements of the entire stock market. These were given as follows: A-B, 1.20; Carling-O'Keefe, 0.70; Coors, 0.95; Falstaff, 0.75; Heileman, 0.80; Pabst, 1.30; Schaefer, 1.20; Schlitz, 1.35.

The coefficient of variation of the rate of return is a commonly used measure of risk. The coefficients were calculated for a sample of 545 companies for the period 1958-70, and ranked according to risk. Pabst and Falstaff were in the 2d riskiest decile of firms; Heileman in the 3d; Grain Belt in the 5th; Schlitz in the 6th; A-B, Pittsburg, and Olympia in the 8th; and Lone Star in the 9th decile. Source: COMPUSTAT, Investors Management Sciences, Inc., Denver, Colorado. Annual Industrial File, tape number 10446, dated June 29, 1973, Format--360 General Tape.

TABLE III

Profits After Federal Income Taxes
As a Percent of Stockholders' Equity:
1946-75

Year	Brewing*		All manufacturing corporations	
1946	20.4		N.A.	
1947	19.1		15.5	
1948	16.8		15.9	
1949	15.9		11.6	
1950	12.4		15.4	
1951	8.7		12.1	
1952	N.A.		10.3	
1953	7.8		10.5	
1954	6.9		9.9	
1955	7.9		12.6	
1956	6.1		12.3	
1957	6.4		10.9	
1958	6.5		8.6	
1959	6.6		10.4	
1960	6.3		9.2	
1961	6.4		8.9	
1962	N.A.		9.8	
1963	7.7		10.3	
1964	8.9		11.6	
1965	9.2		13.0	
1966	9.9		13.4	
1967	9.3		11.7	
1968	11.1		12.1	
1969	10.2		11.5	
1970	8.7		9.3	
1971	10.0		9.7	
Q3 1972	14.6	10.1	10.1	10.8
Q4 1972	5.5		11.5	
Q1 1973	9.3	10.5	11.6	13.1
Q2 1973	13.5		14.0	
Q3 1973	12.5		12.3	
Q4 1973	6.7		14.3	

(Continued)

TABLE III

Profits After Federal Income Taxes
As a Percent of Stockholders' Equity:
1946-75
(Continued)

Year	Brewing*		All manufacturing corporations	
Q1 1974	7.9		14.3	
Q2 1974	12.7	9.5	16.7	14.9
Q3 1974	13.6		15.4	
Q4 1974	3.6		13.2	
Q1 1975	7.1		9.0	
Average Quarterly Rate 1972, Q3 - 1975, Q1	9.7		12.9	

NOTE: Definitions for data reporting were changed somewhat beginning with Q4 1973.

* Includes malt industry.

Sources: Data on brewing industry profits is calculated from aggregated balance sheets in Brewers Almanac, U.S. Brewers Association (various years).

Brewing data 1972-75 are a special compilation by the Federal Trade Commission staff from Quarterly Financial Reports data.

Data on "All Manufacturing Corporations" is from the Federal Trade Commission Quarterly Financial Report.

TABLE IV

Rate of Return for All Manufacturing Corporations Minus Rate of Return for Brewing Industry*: 1947-75

Year	Difference in rate of return on equity (percent)
1947	-3.6
1948	-0.9
1949	-4.3
1950	3.0
1951	3.4
1952	N.A.
1953	2.7
1954	3.0
1955	4.7
1956	6.2
1957	4.5
1958	2.1
1959	3.8
1960	2.9
1961	2.5
1962	N.A.
1963	2.6
1964	2.7
1965	3.8
1966	3.5
1967	2.4
1968	1.0
1969	1.3
1970	0.6
1971	-0.3
1972 2d half	0.7
1973	2.6
1974	5.4
1975 Q1	1.9

* Includes malt industry.

Source: Same as table III.

TABLE V

Number of Breweries and
Brewery Firms: 1946-76

Year	Plants	Firms
1946	471	
1947	465	404
1948	466	
1949	440	
1950	407	
1951	386	
1952	357	
1953	329	
1954	310	263
1955	292	
1956	281	
1957	264	
1958	252	211
1959	244	
1960	229	
1961	229	
1962	220	
1963	211	171
1964	190	
1965	179	
1966	170	
1967	154	125
1968	149	
1969	146	
1970	137	
1971	134	
1972	131	108
1973	114	
1974 (June)	108	
1976	94	49

Sources: 1946-74: Brewing Industry Survey (New York: Research Company of America, 1973, 1974)

1947-72 (for number of firms): U.S. Bureau of the Census, Census of Manufactures

1976: Brewers Digest Brewery Directory, 1977

TABLE VI

National Beer Sales Concentration Ratios: 1935-77
(percent)

Year	Four-Firm	Eight-Firm
1935	11	17
1947	21	30
1954	27	41
1958	28	44
1963	34	52
1966	39	56
1967	40	59
1970	46	64
1972	52	70
1973	54	70
1974	58	74
1975	59	78
1976	59	80
1977	63	83

Sources: 1935-72: U.S. Bureau of the Census, Census of Manufactures (based on value of shipments) (establishment basis).

1973: Based on share of total sales of U.S. Brewers. Brewing Industry Survey (1974).

1974-75: Based on sales data in Advertising Age November 3, 1975, and December 27, 1976.

1976-77: Based on sales data in Modern Brewery Age, Feb. 14, 1977, and Feb. 13, 1978, by permission.

There are indications that in the early 1970's the brewing industry was approaching a new equilibrium. As we have noted, the percentage of excess capacity declined and the difference between the two profit rate series steadily decreased. In fact, the restructuring can be viewed as a response to the disequilibrium which was, in turn, created by changes in demand and supply conditions.

A. Dimensions of Structural Change

The essential feature of structural change in the brewing industry has been the decline in the number of brewers (table V) and the increase in national concentration (table VI). Most of the plants that have exited the industry since 1935 have been much smaller in terms of rated capacity than those remaining or those built since World War II. Elzinga found that over the period 1958-72, the average plant capacity of discontinued breweries was 345,000 barrels per year. 1/ A brewery this size has just 7.7 percent of the capacity of a modern minimum efficient size brewery. 2/

1/ See Kenneth Elzinga, "The Restructuring of the U.S. Brewing Industry," Industrial Organization Review, I(2) (1973), pp. 108-111. When referring to capacity, we shall mean "rated capacity" which denotes the volume of beer that can be produced in a year if a plant is operating at its planned rate of production. Obviously, actual output from a plant can exceed rated capacity.

2/ Estimated to be 4.5 million barrels per year in F. M. Scherer et al., The Economics of Multi-Plant Operations: An International Comparisons Study (Cambridge: Harvard University Press, 1975). See pp. 33-51, below.

The decline in the number of brewers has been going on since 1935 when there were 750 brewers. 1/ Between 1947 and 1958, 193 firms or almost half the total number in 1947 left the industry while 4-firm concentration increased from 21 percent to 28 percent. Altogether since World War II approximately 300 firms have exited the industry.

The number of firms, as can be seen from table V, has declined dramatically since the end of World War II. According to the Bureau of the Census, the number of firms dropped from 404 in 1947 to 108 in 1972. It appears that Census in fact substantially overstates the actual number of domestic brewing companies in existence in recent years since it includes entities having establishments primarily engaged in manufacturing any kind of malt beverages, even those that are kept in minimal operation or that are experimental in nature. The highly respected Brewing Industry Survey 2/ shows the following number of brewing companies for selected years.

Year	Number of Companies
1963	150
1967	125
1971	74
1974 (June)	58

1/ This was the post-Prohibition high point in terms of the number of firms. In 1880 there were 2,741 brewers. See Brewing Industry Survey, 32d ed. (New York: Research Company of America, 1973).

2/ Ibid., 1973 and 1974.

These totals are consistent with other sources as well. For example, the U.S Brewing Association listed 61 active brewing companies in the United States as of October 1973. 1/ Further, the Bureau of Alcohol, Tobacco, and Firearms, Department of the Treasury, lists only 59 companies operating licensed breweries as of July 1972. 2/ Brewers Digest Brewery Directory - 1977 lists 49 companies operating 94 breweries. 3/

It should also be noted that imports are still a small factor in the market. The quantity of beer imported in 1977 accounted for only about 1.6 percent of total U.S. sales, although this percentage has been increasing steadily since 1963. 4/

The increase in national concentration since World War II implies that the industry has been transformed from a fairly unconcentrated industry into what might be characterized, considering only concentration, as a moderately "tight" oligopoly, if it is viewed as serving a national market. Due to the implications that are often drawn from the structural characteristics of an industry, it is important that we look more closely at what has occurred.

1/ Beverage Industry 1974-75 Annual Survey, pp. 44.

2/ Breweries Authorized to Operate, U.S. Department of the Treasury, Bureau of Alcohol, Tobacco, and Firearms, ATF P 5130.1 (July 1976). The list shows 67 brewing "companies" but 8 of them run experimental breweries (such as the Department of Agriculture).

3/ Subsequent to publication, Heileman acquired Rainier. See appendix B for a listing of firms and breweries.

4/ U. S. Brewers Association.

Prior to World War II, most brewers served relatively small local areas, though some sold regionally and a few (e.g., Anheuser-Busch and Schlitz) sold beer nationally. At that time firms selling nationally operated out of one brewery. To cover additional transportation costs not incurred by local or regional brewers, the national firms advertised their beer as being of premium quality and charged a premium price. 1/ The national brewers and a number of regional brewers (e.g., Carling, Hamm, and Falstaff) began entering new areas in the 1950's and were successful in increasing their shares in those areas. The level of national concentration rose, but in regional markets concentration did not rise to the same extent since the increased sales of these national and regional firms came at the expense of local and small regional firms which had previously dominated these markets. What occurred, then, was a change in the composition of the sellers in the regional markets.

1/ This, at least, is the standard explanation given for the origin of premium prices and hence two levels of prices; viz., popular or regional prices and premium prices. Today a third level of prices, "superpremium prices," are charged for some foreign beers and a few domestic beers. On the development of the premium-popular price system, see F. M. Scherer, et al., op. cit. It is difficult to explain why some firms have been so successful in selling large quantities of beer at premium prices. There were probably some quality differences; national beers were lighter, pasteurized, and may have been more uniform in taste. Transportation costs might explain why some firms charged a higher price for their beer, but it seems that any firm--whether or not transportation costs had to be covered--would like to elicit a higher price for its beer and hence would like to promote its beer as being of "premium quality."

Evidence that regional brewers have been displaced by national brewers and that State concentration has been and continues to be higher than national concentration appears in appendix A. The evidence on State concentration levels supports the earlier contention that what has occurred has been a replacement of regional brewers who once were market leaders by the national brewers in a large number of (but not all) States. 1/ The increase in the level of concentration at the State level is not entirely attributable to success of the national brewers. There are States (e.g., Oregon, Idaho, and Montana) in which concentration increased in spite of the fact that the national brewers were never very important in terms of sales (except in the past 5 years or so). In 1970 none of the nationals had as much as 10 percent of the market in Idaho, Kentucky, Montana, Utah, Washington, and probably Oregon. For 1964, one could add Maryland, Rhode Island, and Texas to this list. In appendix A there are 17 States in which sales data are available for 1976 and years in the early 1960's, in which either A-B, Schlitz, Pabst or Miller was number one in 1976. Of these 17, in only 5 was a national brewer the leader in the earliest year for which data are available. Coors, on the other hand, was number one in the '60's in 7 of the 9 States (not counting Arizona) where it was number one in 1976.

1/ These data were made available to the Commission by Carling, Lone Star, and Beer Statistics News.

Estimates of the weighted average State concentration ratios are shown in Table VII.

TABLE VII

Weighted Average State Concentration 1/
(percent)

	1964	1973	1974	1975	1976	1977
Four-firm	67.4	79.4	82.4	81.7	80.9	82.7
Eight-firm	88.5	95.3	--	--	--	--

The 1964 and 1973 ratios are not directly comparable with those of 1974-77, because some States appear on one list but not on the other. It seems clear that average State concentration did rise in 1974 because of several mergers involving regional brewers. (Two of these mergers took place in 1975 but the figures are calculated on a combined basis for 1974.) Since then, average State four-firm concentration has been stable (the long 1976 strike at A-B may have reduced concentration in that year). A comparison of the national and State ratios yields two important conclusions: (1) Concentration (especially four-firm) has always been much higher at the State level than at the national level; and (2) the increase in concentration (especially four-firm) has been much greater at the national level than at the State level.

1/ State concentration ratios were weighted by 1976 consumption as given in Beverage World, March, 1977, p. 54. The 1964 Texas concentration is actually 1965. Including Illinois (1966 and 1973) would affect the 1964 and 1973 ratios by less than one percentage point. The States included in the 1964 and 1973 ratios accounted for 58 percent of 1976 U.S. sales; 62 percent for the 1974-77 ratios.

Thus, one must be careful in the inferences and conclusions drawn from the increase in national concentration. Most consumers face markets which are and always have been more concentrated than is indicated by the level of national concentration. The rise in national concentration reflects a displacement of local and regional brewers by the national brewers rather than a dramatic decrease in the number of sellers faced by consumers. In short, few if any beer consumers were ever served by 400 brewers.

1. Concentration and Market Share Stability

Inspection of appendix A indicates that the market shares of brewers at the State level have been rather unstable over the past 10 to 15 years. Instability of market shares is often regarded as an indication of the presence of competition.

M. Gort postulated that increased concentration should stabilize market shares because collusion is facilitated by high concentration. 1/ However, this relationship requires the presence of barriers to entry because, without such barriers, high prices and profits will attract entry into the market.

To test this relationship in the brewing industry a market share instability index of the following form was constructed:

1/ "Analysis of Stability and Change in Market Shares," Journal of Political Economy, LXXXI, Feb. 1963, pp. 51-63.

$$I_t = \frac{\sum_{j=1}^{m} \left| S_{j,t} - S_{j,t-1} \right|}{m}$$ where $S_{j,t}$ is

the market share of the j^{th} firm in year t. I_t was then summed over the years in each State for which data were available through 1973 and the sum was divided by the number of years. The resulting index of average market share instability was then regressed on the State four-firm concentration ratio in the first year that the data were available. The estimated coefficient had the negative sign predicted by Gort, but was not significant, having a t-value of 0.72. Furthermore, the R^2 for the equation was only 0.015, suggesting that concentration explained almost none of the subsequent market share instability in the brewing industry. With the aid of hindsight, it was postulated that instability should be greatest in those States in which today's five largest brewers had the smallest total shares at t = 0. In this regression the concentration coefficient had the predicted negative sign and the t-value was 1.72, significant at the .05 level in a one-tail test. The R^2 was also higher (0.08). It was suspected that the values of R^2 were low because of the formula for instability. That is, I_t gives excessive weight to firms that have very small market shares, especially when those shares remain almost constant over the years, as often was the case. An attempt was made to avoid this problem by calculating an index of instability using the changes in market shares of only the initial four leading sellers. The results were even less

favorable to the notion that high concentration stabilizes shares: High initial concentration was positively (but not significantly) associated with high instability thus measured.

For what they are worth, the above tests are consistent with the propositions that (1) barriers to entry into State beer markets are not high, and (2) instability of State market shares is better explained by the initial share of today's big five than by the initial level of four-firm concentration. This is, of course, what one would expect because the big five attained their positions largely through a process of displacement.

2. Trends in Shares of National Barrelage

Table VIII gives shares of national barrelage for selected firms for the period 1951-77. It shows that since the mid-1950's Anheuser-Busch, Schlitz, and Pabst have made almost uninterrupted progress in gaining share, with A-B clearly the leader. (A-B lost volume and share in 1976 because of a strike, but surpassed its 1975 volume in 1977.) These three firms were often referred to as the national brewers. Miller, which also had national distribution, until recently had a much smaller share.

Several regional firms like Falstaff, Hamm, and Carling made progress in gaining shares until the mid-1960's but have since fallen on hard times. The declines in shares of these firms, and some others, have been very large in several States in which they had been market leaders in the early 1960's. In particular, these include Falstaff in many Southern and New England States, General in the West, Hamm and Grain Belt in the

TABLE VIII

Shares of National Barrelage,
by Brewer, 1951-77

Year	Anheuser-Busch	Schlitz	Pabst	Falstaff	Miller	Schaefer	Stroh
1951	6.53	6.82	4.71	2.74	3.12	3.10	0.76
1952	7.11	7.48	4.77	2.68	3.59	2.83	0.97
1953	7.80	6.11	4.94	3.38	2.48	2.95	1.32
1954	7.00	6.49	4.20	3.95	2.52	3.23	1.74
1955	6.61	6.81	4.12	4.30	2.58	3.15	2.53
1956	6.90	6.99	3.66	4.55	2.64	3.20	3.19
1957	7.25	7.14	3.20	5.09	2.75	3.48	3.06
1958	8.27	6.98	3.02	5.33	2.63	3.30	2.28
1959	9.20	6.69	5.14	5.42	2.69	3.48	2.41
1960	9.64	6.48	5.00	5.59	2.70	3.64	2.36
1961	9.56	6.48	5.86	5.75	3.03	3.65	2.28
1962	9.91	7.53	6.41	5.83	3.08	3.97	2.27
1963	10.02	8.35	7.11	5.92	3.11	4.12	2.18
1964	10.51	8.37	7.55	5.99	3.33	4.31	2.32
1965	11.79	8.57	8.20	6.27	3.65	4.34	2.39
1966	13.02	9.08	8.68	6.71	3.98	4.39	2.34
1967	14.52	9.71	9.39	6.20	4.28	4.53	2.25
1968	16.51	10.68	9.79	5.65	4.35	4.53	2.28
1969	16.09	11.79	8.79	5.33	4.46	4.69	2.53
1970	18.19	12.40	8.04	4.51	4.22	4.73	2.68
1971	18.76	12.89	9.10	3.96	4.01	4.32	2.84
1972	19.88	14.17	9.44	4.62	4.05	4.13	3.17
1973	21.30	15.21	9.36	4.28	4.93	3.91	3.31
1974	23.17	15.58	9.83	3.99	6.23	3.30	3.00
1975	23.81	15.73	10.59	3.11	8.69	3.97	3.47
1976	19.31	16.06	11.32	2.63	12.23	3.52	3.83
1977	23.35	14.10	10.20	N.A.	15.43	2.99	3.90

TABLE VIII

Shares of National Barrelage,
by Brewer, 1951-77
(Continued)

Year	Schmidt	Hamm	Ballan-tine	Lucky (General)	Olympia	Carling	National	Coors
1951	1.36	1.37	4.76	1.48				
1952	1.43	1.63	4.76	1.74				
1953	1.60	1.96	4.51	2.02				
1954	1.82	2.70	4.46	2.13				
1955	2.32	3.91	4.65	2.15				
1956	2.18	3.91	4.67	2.31		3.52	1.31	
1957	2.08	4.00	4.72	2.45	1.20	3.73	1.54	
1958	1.97	4.02	4.78	2.68	1.48	4.18	1.53	
1959	1.98	4.05	4.94	2.49	1.61	5.04	1.51	
1960	2.05	4.44	5.02	2.47	1.70	5.48	1.54	
1961	2.08	4.17	5.07	2.51	1.76	5.66	1.54	
1962	2.05	4.08	4.98	2.37	1.91	5.88	1.53	
1963	2.06	4.08	4.77	2.22	2.31	6.06	1.49	
1964	2.23	3.78	4.48	1.80	2.20	5.85	1.73	
1965	2.36	3.82	4.22	1.66	2.37	5.24	1.87	
1966	2.47	4.04	3.62	1.68	2.55	4.89	1.93	
1967	2.49	4.03	3.35	1.60	2.68	4.58	1.95	
1968	2.53	3.87	2.78	1.36	2.76	4.51	1.92	4.68
1969	2.51	3.60	2.51	1.12	2.88	4.68	1.91	5.34
1970	2.49	3.31	2.04	0.92	2.77	4.10	1.85	5.85
1971	2.44	2.85	1.72	1.10	2.39	3.50	1.70	6.58
1972	2.39	2.95	0.22	1.16	2.49	3.15	1.61	7.33
1973	2.51	2.32	-- 2/	0.95	2.59	2.49	1.57	7.80
1974	2.40	2.13	--	--	2.96	2.34	1.45	8.59
1975	2.25	-- 1/	--	--	3.75	3.28 4/	--	8.07
1976	2.26	--	--	--	4.23	2.87	--	9.08
1977	2.28	--	--	--	4.35 3/	2.77	--	8.17

1/ Acquired by Olympia
2/ Acquired by Falstaff
3/ Includes Lone Star
4/ Includes National

Source: Advertising Age. 1976 and 1977 data are calculated from Modern Brewery Age, Feb. 14, 1977 and Feb. 13, 1978, and do not include imports.

Midwest, Rheingold in New England, Carling-National in Maryland, and Lone Star and Pearl in Texas.

In the last decade rapid gains have been posted by Coors, which has nearly doubled its share of national barrelage, and by Miller, which increased its barrelage by over 40 percent per year in 1975 and 1976, moving into third place ahead of Pabst. Miller's growth continued in 1977 at a 31.6 percent rate as it moved into second place ahead of Schlitz. 1/ Thus, it is now common to hear of the "Big Five": A-B, Miller, Schlitz, Pabst, and Coors. Miller and Coors will be discussed in more detail below.

Several other firms have experienced increasing sales in the past few years, including Genesee, Latrobe, Olympia, Stroh, and Heileman. These firms appear to be in a position to provide considerable competition for the larger companies in the next few years. Heileman's growth and profitability have been especially notable and will be discussed below.

B. Exit and Entry

The slow rate at which beer sales grew, coupled with the years in which total barrelage actually declined throughout the 1950's and early 1960's, helped to induce the exit of a large number of small and relatively inefficient brewers from the industry. Although beer sales grew at a faster rate after 1962, exit was further induced by technological changes which gave rise

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1/ Advertising Age, Jan. 21, 1978; and Wall Street Journal, Feb. 3, 1978, p. 14.

to increases in the minimum efficient-size brewery. From 1947 to 1963 an average of 15.9 firms per year left the industry, and from 1963 to 1973 an average of 8.6 firms exited.

Although there have been only a few rare instances in which a new firm has attempted to enter the industry, entry has occurred in other forms. First, there have been successful attempts by brewers to expand the size and/or number of markets they serve. For example, Coors has gradually entered new States, thereby presenting other brewers with new competition. As another example, Anheuser-Busch, Schlitz, and Pabst appear to have adopted new strategies around 1949-50 with the goal of expanding their sales in markets in which they had once been "content" to have market shares of 4 to 6 percent. Entry and the injection of new competition can be said to have occurred in the sense that relatively passive strategies were replaced by more competitive strategies.

The recent behavior of Miller is the most obvious example of the adoption of a more competitive strategy. Some of the results of this can be detected by a close look at the State market shares. For example, from 1974 to 1977, 4-firm concentration rose in 16 States and fell in 18, while the weighted average rose slightly. However, the leader lost market share in 32 of the 34 States, and the number 2 firm lost market share in 27 of the 34.

While Miller has been the big winner recently, Schlitz and Pabst have had gains in several States, mainly in the western half of the country, where they had been well down the list. Stroh's 1977 shipments rose to an all-time high, 1/ and Coors had a big gain in Texas in 1976 as it expanded into the southeastern part of the State. Coors entered Montana in 1976 and grabbed 5 percent of the market. It was reported that there were 2,000 applicants for the 10 Montana distributorships. 2/ It appears that Coors will be a formidable competitor in the new areas it chooses to enter.

There has also been a large amount of new plant capacity brought on stream by existing brewers, especially in the last few years. The 1968, 1973, and 1976 rated capacities of 10 brewers other than A-B, Schlitz, and Pabst appear along with the changes in capacity figures in table IX. These 10 firms alone added 13.4 million barrels to industry capacity between 1968 and 1973, a figure which was equal to about 8.3 percent of the industry's 1973 capacity. Between 1973 and 1976 Miller nearly tripled its capacity, moving into third place, while Coors expanded significantly.

Between 1973 and 1976 A-B, Schlitz, and Pabst also made significant additions to capacity. A-B added 8.2 million barrels; Pabst, 3.25 million; and Schlitz, 7.3 million. These

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1/ Brewers Digest, January, 1978, p. 51.

2/ Business Week, Nov. 8, 1976, p. 62.

TABLE IX

Additions to Capacity: Selected Firms
(Figures in 1,000's of barrels)

	Capacity			Increase in capacity	
	1968	1973	1976	1968-73	1973-76
Coors	5,337	10,950	15,000	5,613	4,050
Olympia	3,100	3,700	8,500 1/	600	300 1/
Latrobe	475	670	750	195	80
Genesee	1,600	2,000	3,000	400	1,000
Blitz-Weinhard	600	900	800	300	-100
Schaefer	5,340	7,200	6,500	1,860	-700
Stroh	3,500	5,500	6,500	2,000	1,000
Miller	6,000	6,950	20,000	950	13,050
Huber	180	300	340	120	40
C. Schmidt	3,100	4,500	3,540	1,400	-960
Totals	29,232	42,670	64,930	13,438	17,560

1/ Includes 3,000 from Hamm and 1,500 from Lone Star. The net additions figure does not include this acquired capacity.

Sources: Brewing Industry Survey; Brewers Digest Brewery Directory, 1977.

expansions, coupled with those shown in table IX, caused industry total rated capacity to rise to 185 million barrels in 1976. Thus, despite the closing of many breweries during this period, total rated capacity exceeded industry sales by 23 percent in 1976.

Appendix B notes the new plants and expansions that are to be completed by 1980. These total at least 50 million barrels. If no existing breweries were to close, total rated capacity would rise to over 235 million barrels. If sales were to grow at a 3 percent annual rate (which is not an excessively conservative forecast in light of recent trends), the industry would sell about 170 million barrels of beer in 1980, and capacity would exceed sales by about 40 percent. The latter is unlikely to happen. More likely is an increased rate of exit from the industry of the less efficient plants and firms. Almost all of the new capacity is being built by the 5 largest firms, and some observers believe there may be as few as 15 survivors by 1980. 1/ Concentration on a national basis will surely increase by 1980, but competition in State and local markets can be expected to intensify during this period. A discussion of the potential effect on competition post-1980 is contained in the summary.

II. Causes of Structural Change

In this section we shall see how changes in demand and supply conditions interacted to bring about a significant change in the structure of the U.S. brewing industry.

A. Demand-Induced Structural Change

As has been noted, beer sales declined and stagnated in the 15 years following World War II. In fact, total sales of 1947 were not surpassed until 1959. This stagnant demand is a major reason why so many firms exited the industry during this time. Many people have blamed this lack of growth in demand upon demographic factors. According to Brewers Almanac 1976 (p. 82) past industry surveys have shown that persons aged 21-44 account for about 69 percent of beer consumption. Since this age group was almost constant in size during 1951-59, demographics appear to be a good explanation for beer demand during this period. However, after 1959 beer sales grew more than twice as fast as did the number of people aged 20-44.

Brewers Almanac 1/ constructed an index of beer consumption per capita by eliminating the under-21 population and weighting the older age groups according to their relative beer consumption (the "weighted beer consuming population"). Between 1957-59 and 1975, the per capita consumption of the "weighted beer consuming population" rose by 41.9 percent, while per capita consumption based on total population grew 43.0 percent. This suggests that

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1/ 1976, p. 82.

factors other than demographics explain much of the increase in beer demand after 1957-59. Real income is a variable used in most statistical demand studies, and it usually has significant explanatory power. But according to Table X, beer sales rose much less rapidly than did real disposable personal income from 1951 to 1967, whereas from 1967 to 1976 sales increased somewhat more than did income.

TABLE X

Percentage Increase in Beer Sales, Population, and Income: 1951-76

	1951-59	1959-67	1967-76
Total taxpaid withdrawals 1/	4.5	26.8	40.6
Population aged 20-44 2/	0.8	7.4	19.7
Disposable personal income, 1972 dollars 3/	28.5	40.3	33.0

1/ Table I.

2/ U.S. Dept. of Commerce, Bureau of the Census.

3/ Ibid. and Bureau of Economic Analysis.

Thus it is likely that other factors may be partly responsible for the change from the stagnant demand of the 1950's to the more rapid growth of the late 1960's and 1970's. One of these may have been a shift in tastes away from distilled liquor and toward beer and wine. Another may have been an easing of the legal restrictions on beer sales; e.g., in the areas of minimum ages, alcohol content, Sunday sales, etc. An increased acceptability of beer drinking by women may also have been a factor, although we have no statistical documentation of this possibility.

In addition to the aggregate demand conditions during the 1950's and 1960's which encouraged the exit of many firms from the industry, there were other changes on the demand side of the market that tended to work to the advantage of the national brewers. First, there appears to have been a change in tastes on the part of consumers away from dark, strongly flavored beers to lighter, drier beers. Brewing formulas have been altered over time so that today's beers are generally lighter. This may have been in response to a change in tastes, to a change in price of agricultural inputs, or to the discovery by some brewers that lighter beers appealed to more people. In any event, it was the local, smaller brewers who generally specialized in the darker, more flavorful beers while the national and some regional brewers generally provided lighter beers. The shift towards lighter beers seems to have worked to the benefit of brewers of light beers and hence it is puzzling why the brewers of darker beers did not perceive the shift in demand and alter their formulas accordingly. Technically it would not have been costly. One explanation that has been advanced is that the darker, more flavorful beers were modeled after the native beers of the foreign-born brewmasters or owners who were more interested in producing what they thought was a "good" beer rather than trying to please a broad segment of the population.

Another trend on the demand side has been the steadily increasing importance of packaged beer relative to draught

beer. In 1946 66.6 percent of all beer sold was packaged, whereas in 1976, 87.9 percent 1/ was packaged. This, too, gave the national brewers an advantage in that they had always marketed relatively more packaged beer. Their packaging processes and marketing strategies were geared toward the packaged market and to the extent other brewers were slow to respond the nationals gained. 2/

In summary, on the demand side of the market the brewing industry has gone through successive phases of decline, stagnation, and resurgence since World War II. During the first two phases, demand forces helped to induce exit, playing a complementary role with changes on the supply side. As we argue later, the changing demand conditions were also important because of the effect they had on firm decision-making.

B. Supply-Induced Change

Even had there never been changes on the demand side of the market, the brewing industry would have undergone a significant structural transformation as a result of changes on the supply side of the market which favored increased firm size. The first factor was an increase in the minimum

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1/ Brewers Digest, May 1977, p. 13.

2/ The trend toward packaged beer indicates a shift among the purchasing agents facing the brewers away from tavern owners to consumers. Obviously, this trend inured to the benefit of the national brewers since they could then reach more potential (and less sophisticated) customers per advertising dollar expended.

efficient-size plant. The second factor was the growing importance of multi-plant economies of scale.

1. Increases in the Minimum Efficient Size Plant

a. Sources

On the basis of interview evidence obtained from brewing executives, Scherer found that "modest but persistent scale economies" originate from general plant overhead and utilities. 1/ These include the cost of wells, water-processing equipment, sewage facilities, refrigeration equipment, management, laboratories, and custodial costs. Scale economies from some of these sources are said to continue out to plant capacities of 10 million barrels per year, though beyond sizes of 4 to 5 million barrels, the cost savings are negligible. Before 1960 there were a few very large breweries owned by Anheuser-Busch, Schlitz, Pabst, and Miller, but these did not appear to be much more efficient than other smaller breweries. 2/ These large but old breweries grew slowly over time by replication of existing, relatively labor-intensive units. Some of the advantages of large size mentioned above were offset by increased coordination problems and the cost of complex plumbing and materials flows. 3/

1/ F.M. Scherer, "The Technological Bases of Plant Scale Economies in Twelve Manufacturing Industries" (mimeograph), p. 4. These findings are based on intensive interviews with U.S. and foreign brewers.

2/ Ibid., p. 3.

3/ Ibid.

It was not until the 1960's that the inducement for larger scale operation became stronger. The first reason behind the increase in the minimum efficient size of plant is the fact that there have been significant technological improvements in the packaging of beer. The improvements have been in the form of faster canning and bottling machinery. Modern canning lines are capable of running at a rate of 1,500 twelve-ounce cans per minute, whereas 12 years ago a typical high-speed canning line filled just 750 cans per minute. 1/ It is estimated that a brewery would have to produce at a rate of 1.5 million barrels per year to keep a modern canning line operation at its planned (i.e., optimal) rate. 2/ Scherer found that the fastest bottling lines ran at a rate of 750 bottles per minute. To keep such a line fully utilized would require an annual rate of production

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1/ Brewers Digest, June 1972, p. 130; and Federal Trade Commission Investigative Hearings, (Schlitz).

2/ Scherer, "The Technological Bases of Plant Scale Economies in Telve Manufacturing Industries," op. cit., estimates that a canning line operating at a rate of 1,200 twelve-ounce cans per minute, or 3.63 barrels per minute, would require 1.2 million barrels, assuming a 250 day and 3-shift operation which apparently is normal in the U.S. in breweries. Scherer places the required capacity for a 1,200-can-per-minute machine as somewhere between 1.0 and 1.3 million barrels per year, if it is to be run at its planned rate. This range allows for line breakdown and changeover, and the possibility of running the canning lines overtime on weekends during the summer peak. If we accept the fact that a 1,200-can-per-minute machine requires 1.2 million barrels to keep it fully utilized, then this implies that a 1,500-can-perminute machine requires 1.5 million barrels.

of approximately 600,000 to 800,000 barrels. Finally, Scherer found that a minimum cost kegging line required 1.0 to 2.2 million barrels per year. 1/

If brewers could get by with just one type of package it would seem that packaging would not provide much of a compulsion for large-scale operation. For example, if a brewer could get by with bottles of a specific size, he would need a capacity of just 600,000 to 800,000 barrels to keep the most efficient bottling lines fully utilized. However, consumers appear to demand a fairly wide range of package types and sizes so that a brewer's marketing strategy dictates more than one packaging line. 2/ If a brewer wanted to have one package line for cans, one for bottles, and one for kegs, he would need a capacity of at least 3.3 million barrels (1.5 million for cans plus 0.8 million for bottles plus 1.0 million for kegs), if he wanted to use the fastest machines available at their planned rate of operation. Slower machines are available, but Scherer found that the unit capital cost on slower machinery

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1/ Scherer, Ibid., p. 6. Faster bottling lines have come into use since Scherer's study. For example, Miller's new Eden, North Carolina, plant has individual lines capable of handling 1,200 bottles per minute. Beverage Industry, April 21, 1978, p. 4.

2/ In 1972 the package mix was as follows: cans, 50.5 percent; one-way bottles, 20.2 percent; returnable bottles, 16 percent; and kegs, 13.3 percent. See Brewers Almanac (1973). We presume that marketing strategies dictate several packages since few if any brewers are known to have prospered with one package. If different containers were not necessary, we might expect to see some brewers attempting to get by with one packaging line.

was higher than on faster machines and that the amount of labor required to operate a fast machine is about the same as for a slow machine. 1/

The brewer with a smaller plant in terms of capacity is faced with choosing among the following alternatives: 2/

(1) Operating slower but higher unit cost packaging lines for low-volume products.

(2) Operating additional high-speed lines at rates below their optimal (i.e., cost-minimizing) rate.

(3) Operating a limited number of packaging lines and thereby incurring appreciable changeover costs--the latter being termed by Scherer as substantial.

(4) Doing without special package sizes and hence suffering loss of sales.

(5) Building a brewery with a capacity of 4-5 million barrels so that one can achieve a better balance with respect to utilization of filling equipment.

It is this last alternative which brewers like Anheuser-Busch, Schlitz, Pabst, and Miller are choosing. The advantages of a better balance of filling equipment utilization are complementary to the economies gained from general plant overhead and utilities we discussed earlier.

1/ Scherer, "The Technological Bases of Plant Scale Economies in Twelve Manufacturing Industries," op. cit., pp. 5, 6.

2/ Ibid., p. 6.

A second significant innovation has been the introduction of automated brewhouses run by a few attendants who add ingredients and push buttons. In Schlitz's oldest brewery in Milwaukee, 24 men were used on a shift in the brewhouse (in 1974), whereas in its newer Winston-Salem and Memphis breweries 2 men were used. 1/ Yet all 3 plants produced beer at roughly the same rate per year. Automation (which generally implies an increase in the capital-labor ratio) of the brewing process requires a fairly high rate of production if variable brewing costs (as distinct from packaging costs) are to be minimized. Scherer found that the size of the brewhouse crew was invariant over an output range of from 1 to 4 million barrels per year. He estimates the savings in unit labor costs to be 6 cents per barrel when moving from an automated brewhouse with a 1-million-barrel capacity to one with a 4-million-barrel capacity. 2/

A third factor behind the increase in the optimal output per brewery is a relatively recent innovation by Schlitz in the brewing process, an innovation which is being imitated by

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1/ "Gussie Busch's Bitter Brew," Forbes, June 1, 1974.

2/ Scherer, "The Technological Bases of Plant Scale Economies in Twelve Manufacturing Industries," op. cit., p. 5.

others. Schlitz has developed a special fermentation process which significantly shortens the aging time of beer. 1/ Schlitz has used this new process in some of its breweries since 1967 and it is estimated that the traditional aging process of 30 days is shortened by one-third so that it takes Schlitz just 20 days to brew and age beer. 2/

According to Schlitz officials, the special fermentation process significantly reduces the capital costs of brewing since the throughput rate of a given size plant is increased. 3/ It was estimated that the capacity of a brewery could be increased by 27 percent without expanding the brewery, except perhaps for an additional packaging line. The primary source of savings came from the fact that cellars, where beer is aged, could support a larger volume over a year. Apparently cellars act as a "bottleneck" in the production process and the faster aging and fermentation process expanded their capacity. Schlitz estimates that it realized a considerable saving in constructing its Winston-Salem brewery. 4/ The faster brewing process also yields interest cost savings since the interest

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1/ This process entails injecting some air into the brew, thereby stimulating the yeast to grow faster. See "Who Rules the Foam," Forbes (December 15, 1972). Apparently this is a very simple process and does not require major changes in the brewing process, thereby making it relatively easy to integrate into current production processes.

2/ Federal Trade Commission Investigative Hearings (Schlitz), March 22, 1974.

3/ Ibid.

4/ Ibid.

cost on what is essentially inventory is reduced as beer flows through the production process at a faster rate.

These technological changes imply that the production process has become more capital-intensive, an indication of which is the trend in the number of production workers which has steadily declined from a high of 61,537 in 1953 to just 34,200 in 1975, while production for those years rose from 90.4 million barrels to almost 147 million barrels. 1/ An indication of Schlitz's highly capital-intensive production processes is the estimate that a Schlitz employee in the Winston-Salem or Memphis brewery is used for 9,100 barrels of beer per year, while one Falstaff employee is used for 2,277 barrels per year. 2/

b. Extent of the Increase in Size of the Minimum Efficient Size Plant

Our concern in this section is with estimates of what constitutes a minimum efficient size brewery, or, what amounts to the same thing, the relationship between size and efficiency.

There are several methods available to test the relationship between size and efficiency, one of the most important being engineering studies which are attempts by industrial engineers to calculate construction and production costs for plants of different sizes. There are potential problems with

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1/ Brewers Almanac (1976).

2/ Charles G. Burck, "While the Big Brewers Quaff, the Little Ones Thirst," Fortune, November 1972.

these engineering estimates in that they do not consider managerial and marketing variables and, hence, they are confined to the purely technical aspects of production. Nonetheless, engineering studies can lend some insight into the extent of plant-specific economies of scale. Scherer reviewed engineering studies made by different brewers and found--taking all aspects of production and packaging into account along with the capital costs of different size breweries--that the minimum efficient size brewery is one capable of producing 4.5 million barrels per year. 1/ This estimate helps to explain the significant change in structure, but it does not account for the development of multi-plant firms and the actual level of concentration that now exists. By themselves, the plant-specific economies of scale which we have discussed could have implied a four-firm concentration ratio of just 11.5 percent in 1977 (versus the actual 63 percent) in a world in which all plants are of minimum efficient size but no larger. 2/ This discrepancy between the actual level of concentration and the level of concentration explained by plant-specific economies of scale is one reason why Scherer suggests that it is important to look at the advantages gained by nationally-based, multi-plant operation if we want to understand the restructuring that has occurred.

1/ F. M. Scherer et al., The Economics of Multi-Plant Operation: An International Comparisons Study, op. cit.

2/ The estimate of 11.5 percent was arrived at by dividing 18 million barrels, the output of 4 one-plant firms (4.5 times 4), by the number of barrels sold in 1977.

Next, we have the test of survivorship proposed by Stigler. 1/ Although this technique is not without its problems, it does have the advantage of being fairly tractable. Basically, the rationale behind the survivorship test is that over time plants that are inefficient because they are too small or too large will either exit the industry or change in size, while those plants that have efficient scales of operation will grow in number--or at least not decline. Elzinga conducted a survivorship test for the brewing industry and found that there has been a steady decline in the number of breweries capable of producing at the rate of 750,000 barrels per year or less, while those capable of producing at a rate of 1.75 million barrels or more are increasing in number. According to Elzinga, this is "prima facie evidence that they [the larger breweries] are even lower cost operations," and that "there is an inducement for management either to build or expand into such plants." 2/

A different but analogous approach to the survivorship test is one which arrays profit rates against different firm asset size categories. 2/ A problem with this approach is that

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1/ George J. Stigler, "The Economies of Scale," Journal of Law and Economics, 1 (October 1958), pp. 54-71.

2/ Elzinga, "The Restructuring of the U.S. Brewing Industry," op. cit., p. 106.

3/ This approach is similar to statistical cost studies and shares many of the same accounting problems; e.g., there is a problem in placing a value on assets.

it does not distinguish plant-specific from multi-plant economies. However, of the 33 firms listed in appendix B as having under 1.5 million barrels of capacity in 1976, 32 had only 1 plant. The 16 larger firms had from 1 to 10 plants each. Table XI shows the after-tax rates of return on stockholders' equity by asset size of firm for selected years. Although not monotonic, there is a general tendency for firms with greater assets to earn higher rates of return, thereby indicating a potential positive relationship between size and realization of economies. 1/ The evidence also supports the results of Elzinga's survivorship test. It is obvious from the negative rates of return why small firms exited the industry rapidly following World War II. The weighted average rate of return for the national multi-plant brewers (Anheuser-Busch, Schlitz, and Pabst) is also presented for the last 3 selected years and it shows that since 1964 they have been more profitable as a group than any group of brewers in any of the asset categories. This suggests that profit performance is a function of more than mere size, a point to be taken up in the section on performance. Table XI-A, covering 1972-75, points out the continuing relatively poor profit performance of the small firms.

1/ The higher rates of return of the larger firms could have been due to other factors, such as "market power," which is discussed later.

TABLE XI

Rate of Return After Taxes on Stockholders' Equity by Asset Size - Selected Years 1/
(percent)

Total assets (Thousands of dollars)	1946		1949		1953		1958		1960		1964		1966		1970	
$0-49	12.5	(10)	-15.7	(8)												
50-99	34.4	(13)	-3.2	(21)	-9.3	(50)	-11.3	(101)								
100-249	20.9	(48)	-23.1	(52)												
250-499	18.1	(91)	-6.3	(67)	-5.2	(32)			1.3	(20)	6.5	(113)	6.8	(63)	9.2	(97)
500-999	22.5	(90)	1.4	(68)	-0.8	(42)	-3.4	(43)								
1,000 - 4,999	21.5	(148)	10.6	(119)	1.7	(82)	1.0	(68)	0.6	(62)	5.0	(48)	3.9	(39)		
5,000 - 9,999	19.2	(28)	16.4	(38)	6.5	(30)	7.2	(26)	1.6	(17)	6.5	(6)	1.0	(4)	4.4	(3)
10,000 - 49,999	21.3	(18)	16.8	(24)	9.4	(33)	8.6	(29)	7.1	(31)	8.7	(28)	8.6	(28)	6.8	(25)
50,000 - 99,999	14.3	(1)	25.4	(3)	6.7	(1)	7.2	(4)	9.2	(5)	9.8	(8)	9.2	(6)	4.4	(6)
100,000 & Over	--		--		11.9	(2)	6.2	(3)	7.0	(3)	9.0	(3)	11.8	(5)	11.8	(8)
Industry	20.4	(447)	15.9	(400)	7.8	(272)	6.5	(274)	6.3	(325)	8.9	(206)	9.9	(145)	8.7	(139)
Nationals 2/	N.A.		N.A.		N.A.		N.A.		7.4		10.2		13.1		15.5	

N.A. - Not available.

1/ Numbers in parentheses indicate number of firms in the corresponding category.

2/ Nationals include Anheuser-Busch, Schlitz, and Pabst. The rates of return for the nationals as a group are weighted averages.

Source: Brewers Almanac (various years).

TABLE XI-A

Profit in the Beer Industry,
Averages for Firms Grouped by Asset Size, Q3 1972 - Q1 1975

After-Tax Profit on Stockholders' Equity

	Assets under $50 million	Assets $50 million and over	All firms
Q3 1972	7.0	15.7	14.6
Q4 1972	-0.1	6.4	5.5
Q1 1973	1.3	10.8	9.3
Q2 1973	5.2	14.8	13.5
Q3 1973	6.2	13.4	12.5
Q4 1973	-3.8	8.1	6.7
Q1 1974	1.0	8.8	7.9
Q2 1974	6.2	13.7	12.7
Q3 1974	3.1	15.1	13.6
Q4 1974	-1.9	4.4	3.6
Q1 1975	-0.4	8.2	7.1
Average	2.2	10.9	9.7

After-Tax Profit on Sales

Q3 1972	2.8	5.7	5.3
Q4 1972	-0.1	2.8	2.4
Q1 1973	0.6	4.6	4.0
Q2 1973	1.6	5.5	4.9
Q3 1973	2.3	4.8	4.5
Q4 1973	-1.7	3.7	3.0
Q1 1974	0.3	4.2	3.6
Q2 1974	2.6	5.0	4.7
Q3 1974	1.2	5.4	4.9
Q4 1974	-0.8	1.9	1.6
Q1 1975	-0.2	3.4	3.0
Average	0.8	4.3	3.8

Source: Computed by the Federal Trade Commission staff from data received under the Quarterly Financial Reports program.

If the engineering estimates of 4.5 million barrels per year are correct, almost all existing breweries operate at a relative cost disadvantage. Scherer estimates that a plant of comparable vintage (1965) one-third the minimum efficient size (i.e., 1.5 million barrels) has unit costs 5 percent higher than a plant capable of producing at a rate of 4.5 million barrels. 1/ Another test involves comparison of actual firm cost data on different sizes and ages of plants.

Data on Schlitz's labor costs per barrel and total costs per barrel for each of its breweries and for the company as a whole are in table XII. Labor costs at each plant include wages, salaries, and fringe benefits. Total costs include materials, direct and indirect labor, direct overhead costs, and performance variances and other indirect production costs. In table XIII the breweries are ranked on the basis of efficiency (in terms of labor costs per barrel). The first five breweries are those built by Schlitz after World War II. It can be seen that the newer the brewery, the lower are its labor costs per barrel, and that all five breweries have significantly lower labor and total costs per barrel than the older, generally smaller (except Milwaukee) breweries that Schlitz

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1/ Frederic M. Scherer, "The Determinants of Industrial Plant Sizes in Six Nations," The Review of Economics and Statistics, LV(2) (May 1973), pp. 135-144. This is not to say that all smaller plants are economically inefficient. Given the high cost of transporting beer, it may be more efficient, on balance, to have a small plant in a remote area.

TABLE XII

Schlitz Cost Data
(Dollars)

Plant (rated capacity 1973) (1,000 bbls)	1970	1971	1972	1973
1. Milwaukee (6,000)				
a. Labor cost/bbl	4.39	4.59	4.72	4.80
b. Total cost/bbl	21.54	23.11	22.17	22.10
2. Los Angeles (1,800)				
a. Labor cost/bbl	3.33	3.55	3.60	3.93
b. Total cost/bbl	22.15	23.87	21.14	21.81
3. Brooklyn (1,000) 1/				
a. Labor cost/bbl	6.38	7.49	6.80	5.24
b. Total cost/bbl	24.39	29.94	25.19	17.05
4. Kansas City (700) 2/				
a. Labor cost/bbl	2.83	N.A.	3.65	4.42
b. Total cost/bbl	20.99	21.07	21.00	23.09
5. Tampa (1,500)				
a. Labor cost/bbl	2.63	2.81	2.43	3.5(
b. Total cost/bbl	20.71	23.06	17.53	22.7
6. Honolulu (370)				
a. Labor cost/bbl	5.37	7.53	5.33	8.2
b. Total cost/bbl	27.80	38.02	21.89	25.2
7. Winston-Salem (4,700)				
a. Labor cost/bbl	2.25	1.72	1.96	2.1
b. Total cost/bbl	22.22	20.69	21.20	21.1
8. Longview (2,400)				
a. Labor cost/bbl	2.06	2.20	2.30	2.6
b. Total cost/bbl	21.64	22.83	21.28	21.2
9. Memphis (4,400)				
a. Labor cost/bbl		8.10 3/	2.47	2.1
b. Total cost/bbl		52.10 3/	23.93	20.9
Firm (22,870)				
a. Labor cost/bbl	3.45	N.A.	3.36	3.
b. Total cost/bbl	21.93	23.18	21.73	21.

1/ Closed March, 1973.
2/ Closed 1973.
3/ Memphis plant came on stream mid-year 1971. This accounts for t high costs in 1971.

Source: Computed by the FTC staff based in whole or in part on data supplied by the Joseph Schlitz Brewing Company.

TABLE XIII

Ranking of Schlitz's Breweries by Labor Cost per Barrel: 1973

	Plant	Year opened	Labor cost/bbl	Total cost/bbl
1.	Memphis	1970	$2.17	$20.97
2.	Winston-Salem	1969	2.19	21.12
3.	Longview	1966	2.67	21.23
4.	Tampa	1959	3.50	22.73
5.	Los Angeles	1954	3.93	21.81
6.	Kansas City 1/	ACQ	4.42	23.09
7.	Milwaukee	*	4.80	22.10
8.	Brooklyn 2/	ACQ *	5.24	17.05
9.	Honolulu	ACQ	8.27	25.28

ACQ: Acquired

*Opened prior to World War II.

1/ Closed in 1973.

2/ Closed in 1973.

Source: Computed by the FTC staff based in whole or in part on data supplied by the Joseph Schlitz Brewing Company.

acquired. The Brooklyn and Kansas City breweries operated for just part of the year 1973 and so the costs are not representative of "normal" years. This evidence is fully consistent with the analysis of plant-specific economies of scale.

In addition to ranking the breweries on the basis of relative efficiency, we can see how the costs of production have changed over time. For the firm as a whole, 1973 total costs per barrel were 2.5 percent less than 1971 total costs per barrel. This slight decrease appears to be dramatic in view of the rise in the Consumer Price Index and in the cost of materials.

Finally, Schlitz supplied the Commission with estimates of the construction costs per barrel for different size breweries. Figure I shows a reconstruction of the estimated costs. The three curves are based on different assumptions so the actual construction costs per barrel will be in the range depicted. The important point to note is that the construction costs per barrel are estimated to decline continuously at least out to brewery capacities of five million barrels per year.

For a final bit of evidence, one can look to table XIV for the capacities of the new plants and expansions currently under way or planned. All of these are at least as large as Scherer's estimate of 4.5 million barrels, and thus tend to confirm his estimate.

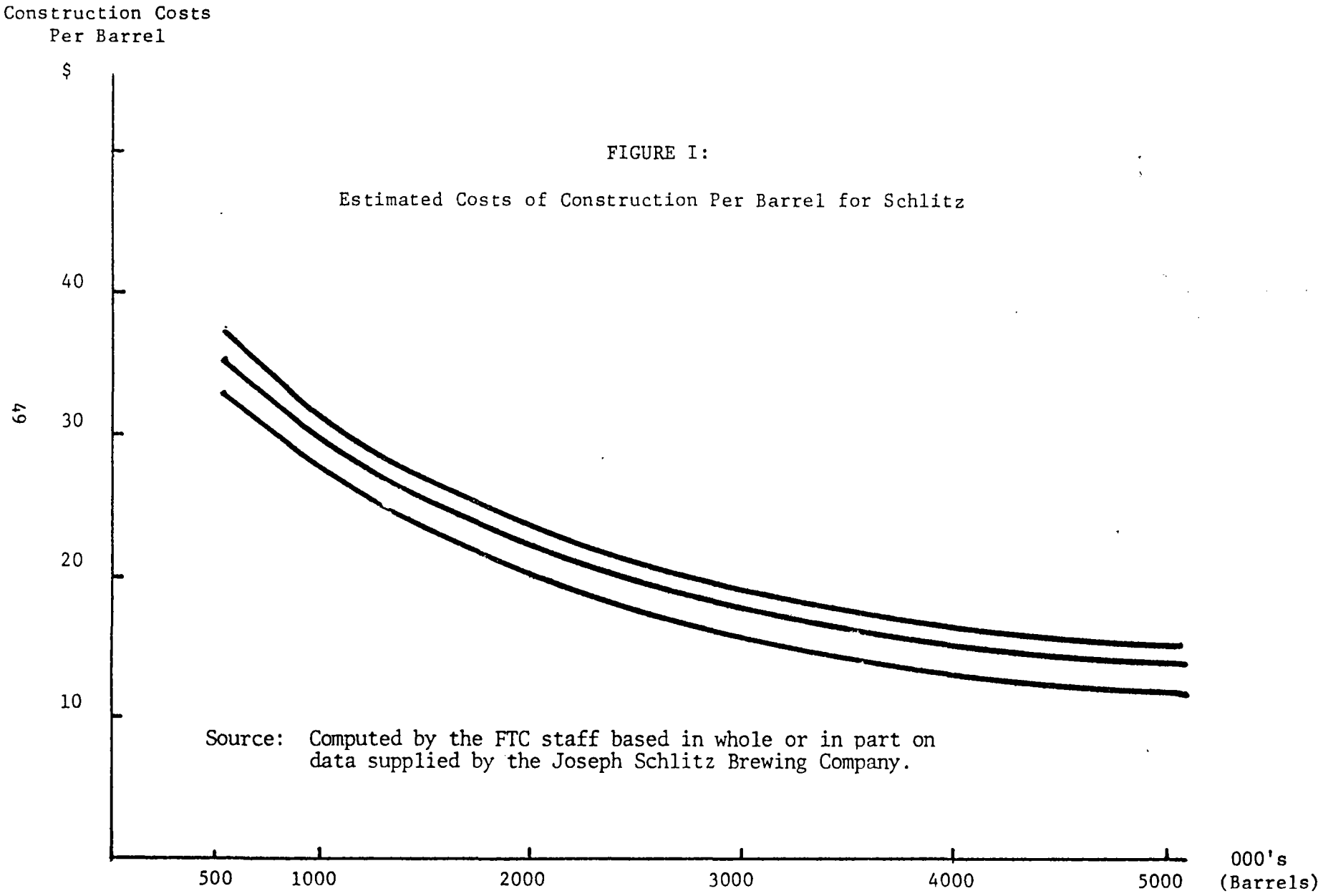

FIGURE I:

Estimated Costs of Construction Per Barrel for Schlitz

Source: Computed by the FTC staff based in whole or in part on data supplied by the Joseph Schlitz Brewing Company.

Conclusions

An important finding is that the new breweries constructed by Schlitz are significantly more efficient than are its older breweries. This supports the contention that the technological changes in the 1960's have been significant and that the minimum size of an efficient plant has increased, although the sample is admittedly not representative. However, all the evidence presented in this section points to the conclusion that there has been a significant increase in the minimum efficient size of plant.

TABLE XIV

Plant Expansions and New Plants (capacity in million bbls/yr.)

Brewer	Location	Capacity	Completion date
A-B	Williamsburg, Va.	Expansion from 2.9 to 7.5	1980
Coors	Golden, Colo.	Expansion from 15 to 25	--
Miller	Albany, Ga.	10	1980
Miller	Fulton, N.Y.	Expansion from 4 to 8	--
Miller	Fort Worth, Texas	Expansion from 6 to 8	1980
Miller	Eden, N.C.	8.8	1978
Pabst	Pabst, Ga.	Expansion from 4.5 to 8	before 1980
Schlitz	Baldwinsville, N.Y.	Expansion from 2 to 6	by 1980

Source: Appendix B

But the increase in the minimum efficient size plant fails to explain fully the increase in concentration and the national brewers' relative success. To round out the picture, we turn to a look at the advantages of multi-plant operation.

2. Multi-Plant Economies of Scale

Much of the success of the national brewers is attributable to the advantages that have been gained by multi-plant economies of scale, an example of which occurs when two identical but separate plants achieve lower per unit production, distribution, and/or marketing costs when operated jointly by one firm than when operated by two separate firms.

The brewing industry was included in the sample of 12 industries studied by Scherer and his associates in an attempt to determine the importance of multi-plant economies of scale. 1/ They found that the only significant advantage to national multi-plant operation in the brewing industry was of a promotional nature, but that it was substantial enough by itself to give firms that pursued a multi-plant strategy a significant advantage over other brewers. 1/ Reductions in production costs attributable to multi-plant operation were found to be insignificant. Although transportation costs for the firm as a whole were reduced, the reductions did not give any of the

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1/ F. M. Scherer, et al., op. cit.

2/ Ibid., pp. 241, 242, and 334, 335.

national firms any advantages over regional or local firms in their particular markets.

What are the advantages from promoting and advertising on a national basis? Several possibilities are suggested. First, the national brewers tend to be larger and there may be discounts to firms that buy space or time in large quantities, although there appears to be little evidence for this proposition. As Ferguson has noted, discounts for volume purchases of time or space may simply reflect the variations in audience size; the relevant question is "whether the network rate structures provide large advertisers with lower cost-per-thousand television homes reached than small advertisers. The cost-per-thousand evidence presented . . . consistently indicates that large [network] advertisers do not have lower costs-per-thousand than small advertisers." 2/

1/ James M. Ferguson, Advertising and Competition: Theory, Measurement, Fact (Cambridge: Ballinger Publishing Company, 1974), p. 78. The evidence presented is contained in David M. Blank, "Television Advertising: The Great Discount Illusion, or Tonypandy Revisited," Journal of Business 41 (January, 1968), pp. 10-38; John L. Peterman, "The Clorox Case and the Television Rate Structures," Journal of Law and Economics 11 (October, 1968), pp. 321-422, and James M. Ferguson, "Anticompetitive Effects of the FTC's Attack on Product Extension Mergers," St. John's Law Review 44 (Spring, 1970), pp. 392-415. Using Peterman's data, William S. Comanor and Thomas A. Wilson find that while the small advertisers generally do not pay more on a network or overall basis, there are large quantity discounts on individual programs. Advertising and Market Power, (Cambridge: Harvard University Press, 1974), pp. 53-61. John Peterman and Michael Carney, "A Comment on Television Network Price Discrimination," Journal of Business (April, 1978, pp. 343-352), show that the latter result of Comanor and Wilson is due to an error in calculation. Comanor and Wilson found

(Continued)

A second possibility suggested by Scherer is that the creation of an image requires a certain minimum level of advertising messages so that it is not only advertising intensity that counts, but also the absolute amount spent on advertising. This is called the "threshold effect," and it says that buyers require a number of messages before they will be willing to purchase a product. This may be, but it appears that the national brewers in general had to overcome the "threshold effect" due to the established images already held by many regional and local brewers. It should be noted that these established images of most regional beers were images of good inexpensive beers rather than premium beer images. And it may well be that most regional firms advertise more than "threshold" amounts.

Thirdly, advertising nationally may be more productive due to mobility. As people move out of a region, the information conveyed to them in the past by local brewers becomes useless. Likewise, people moving into a region must be informed of new, local-based beers that are now available to them. Thus, to keep a mobile population informed is more costly for local or regional brewers as compared to those brewers advertising

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(continued)

individual program discounts to be on the order of 25 percent. Peterman and Carney estimate the discount on total expenditures for both time and programs to be about 2 percent to 4 percent.

and selling nationally since the value of the information does not depreciate as rapidly, nor is there a need to inform those first entering the market from another location. But the importance of this is difficult to assess. 1/

National as compared to regional or local advertisers may also be advantaged if a good is most effectively advertised through media that are not divisible in terms of audience selectivity. Since network television is such a medium, regional brewers will suffer a disadvantage vis-a-vis national brewers if network television has significant advantages over more divisible media such as spot television. Porter has argued that network television has important cost advantages over spot television, in large part because network rates range from only 10 to 70 percent of the sum of individual station rates, with the amount varying by time of day and season. 2/ However,

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1/ An implication of this is that national firms will have a greater advantage in those regions in which the population is most mobile, ceteris paribus. Yoram Peles examined the relative advantages of national over local advertising in the brewing industry. Using a distributed-lag, market share model, he found that advertising increased demand for the brands of the national firms more than it does for regional firms. He cites this as evidence of economies of scale in the advertising of beer. See Peles, "Economies of Scale in Advertising Beer and Cigarettes," Journal of Business, 44 (January 1971), pp. 32-37. Ferguson, op. cit., doubts that Peles actually demonstrates increasing returns to advertising, as the difference could be due to the possibility that "local firms may have higher production costs and therefore have to spend more on advertising to sell beer at profitable prices." (p. 78).

2/ Michael E. Porter, "Interbrand Choice, Media Mix and Market Performance," American Economic Review, 66 (May 1976), pp. 398-406.

most of the variation in network rates referred to by Porter simply accounts for time of day and seasonal differences in the size of audience viewing television. That is, network rates are varied by time of day and season to equalize approximately the cost per unit of audience reached by the different network advertisers. Similar variations also occur in the pricing of spot television which Porter neglects to consider. Secondly, a direct comparison between estimates of the cost per 1,000 homes reached on network and spot television suggests that the differences between the two are much smaller than those indicated by Porter. Our estimates suggest that the cost per 1,000 homes on spot television ranges from 85 to 121 percent of the cost per 1,000 on network television, the exact percentage depending on the number of commercial units purchased per station (the maximum being 10 in any one week) and on the exact terms of the contracts entered by spot buyers. Indeed, making reasonably plausible assumptions respecting the weights assigned to the various spot purchases, the cost per 1,000 on spot television appears, on average, to equal roughly that on network television. So far as the cost of time is concerned,

the advantages of network advertisers seem much smaller than what Porter suggests and in fact may be nonexistent. 1/

Table XV gives network and spot television advertising levels for four national and six regional brewers in 1974 and 1975. With the important exception of Anheuser-Busch, television comprised almost all of the total measured media advertising for these brewers in 1975. While the four national brewers, Anheuser-Busch, Schlitz, Pabst, and Miller spent heavily on network TV, they did not avoid spot television despite its alleged cost disadvantages. In 1974 both Miller and Schlitz spent more on spot television than on network advertising. If network TV has significant advantages over spot TV for national advertisers, it is doubtful that the four national brewers would rely on spot TV as much as they do.

Scherer found that national breweries prefer spot TV advertising in order to tailor "the intensity of their campaigns

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1/ Our estimates for network television are based on a sample of 48 program series broadcast between 7 and 11 p.m. in 1966. The mean cost per minute per 1,000 homes reached by each buyer on each series was derived and compared with various estimates of the cost per 1,000 on spot television. The estimates for spot are based on a sample of 197 stations (two stations being selected, so far as this was possible, from each market containing 3 or more stations). The average price per minute from 7:30 to 11 p.m. in February 1966 and the number of homes reached over the same period of time were obtained for each station and converted into estimates of the cost per 1,000 homes reached. A detailed discussion of our estimates will be provided by the Bureau of Economics to interested readers.

TABLE XV

TV Advertising Expenditures for Ten Major Brewers: 1974-75

		6-Media ad expenditures 1/ (thousand dollars)	Network TV 2/ (th. dol.)	Spot TV 2/ (th. dol.)	TV as a percentage of 6 media ad	TV expenditures per barrel (dollars)
Anheuser-Busch	1975	$27,354	9,468	6,152	57	$0.44
	1974	17,840	7,054	3,595	60	0.31
Schlitz	1975	26,530	17,690	5,263	88	1.00
	1974	20,911	6,678	10,814	84	0.77
Pabst	1975	9,622	5,387	3,495	92	0.57
	1974	8,449	4,347	3,292	90	0.53
Miller	1975	21,252	16,267	4,463	98	1.61
	1974	13,556	5,068	6,902	88	1.32
Schaefer	1975	2,636	0	2,367	90	0.40
	1974	4,290	136	2,089	52	0.46
Olympia	1975	5,775	1,599	3,620	90	0.94
	1974	3,893	82	1,659	45	0.40
Stroh	1975	3,950	553	3,301	98	0.75
	1974	4,383	0	3,113	71	0.71
G. Heileman	1975	2,902	0	2,587	89	0.56
	1974	2,666	0	2,275	85	0.53
Falstaff	1975	915	0	915	100	0.20
	1974	6,214	0	1,856	30	0.32
C. Schmidt	1975	2,294	118	2,148	99	0.68
	1974	3,490	0	3,025	87	0.86
10-firm Weighted Average	1975					0.74
	1974					0.58

1/ The six measured media are newspapers, magazines, spot radio, network TV, spot TV, and outdoor advertising. Source: Advertising Age, Nov. 3, 1975, and Dec. 27, 1976.

2/ Source: Leading National Advertisers.

to specific market conditions." 1/ He concluded that for breweries "the advantages of advertising on a nationwide plane are in most respects not very great." 2/

According to Scherer and his associates, structural change was brought about by the interaction of promotional advantages and economies of scale. National firms initially were "content" with a small share of each market and charged premium prices to cover their transportation costs. Having established a premium image, the national brewers had an incentive to expand their operations. They constructed modern, regionally-decentralized breweries which initially lowered transportation costs and later lowered production costs. This raised the price-cost ratio which in turn induced the national brewers to advertise more intensively, thereby further establishing the premium image of their beer. 3/

At the same time, real per capita income was rising and this led to consumers' "trading up"; i.e., substituting higher-priced beers with premium "images" for the lower-priced beers. This income effect was reinforced by a relative price change

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1/ Scherer, et al., The Economics of Multi-Plant Operation: An International Comparisons Study, op. cit., p. 247.

2/ Ibid.

3/ According to the "Dorfman-Steiner theorem," advertising intensity is positively related to the price-cost ratio and hence we have the argument that the rise in the price-cost ratio served to trigger an increase in advertising efforts by the national firms. See Robert Dorfman and Peter Steiner, "Optimal Advertising and Optimal Quality," American Economic Review, 44 (December 1954), pp. 26-36.

as the premium-popular price differential narrowed. 1/ The brewers producing the premium beers were the ones who had constructed the new, highly-efficient breweries, thereby enabling them to charge a relatively lower price.

In summary, it appears that some firms have benefited from multi-plant operation, though actually measuring these benefits (e.g., those from advertising) is difficult. 2/ Scherer estimates that a firm needs 3-4 plants to take advantage of multi-plant economies of scale and thereby minimize production, distribution, and marketing costs. A minimum efficient size firm, which possesses four minimum efficient size breweries (4.5 million barrels capacity each), would be able to produce 18 million barrels annually, which is equivalent to 11.5 percent of the total barrels sold in 1977. This implies that plant-specific and multi-plant economies of scale combine to "warrant" a 4-firm concentration ratio (in 1977) of 46 percent. That is, 4 minimum efficient size firms could produce 46 percent of the beer sold in 1977.

Two points should be made, however. First, multi-plant economies of scale of a promotional nature do not necessarily

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1/ Later we show that the relative price of premium beer has indeed fallen over time. Also, regression analysis supports the view that consumers have "traded up" as real incomes have risen. The income elasticity of demand for premium beer is greater than the income elasticity for beer in general. Source: Donald Norman, Structural Change and Performance in the U.S. Brewing Industry (unpublished Ph.D. dissertation, U.C.L.A., 1975), pp. 101, 102.

2/ See pages 74-87, below.

represent unequivocal gains to society. This gets us into the question of whether advertising is informational in nature or if its primary function is to "artificially differentiate" fairly homogeneous products. Is the fact that Budweiser or Schlitz sells at a premium price the result of "true" quality differences or the result of consumers' having been generally "duped" into thinking these beers are of premium quality when they are not?

There are really two issues here. First, there is the question as to whether people can actually distinguish the differences between beers. Brewers have done research on this question. Some people distinguish the differences and others cannot. Casual empiricism suggests that the ability of beer drinkers to distinguish the differences between beers is greater under laboratory conditions than in actual beer drinking situations. It also seems plausible that this ability declines drastically as the quantity of beer consumed per sitting increases. Unfortunately, limited resources did not allow the deployment of a large panel of tasters and so precluded a systematic test of these hypotheses. The second issue is more complex. Granting that some people are able to distinguish between beers, how can we account for preferences? That is, what is it that makes one beer "better tasting" than another? It appears that while taste buds facilitate the distinguishing of beer flavors, whether or not one likes a particular flavor

is at least partially psychological. 1/ It may be that we face a situation in which beers are similar to each other in terms of taste, but some brewers have developed beers with premium images rather than premium qualities. Economists possess no special expertise in judging whether perceived taste differences are the result of "real" qualitative differences or successful persuasion. But even if they were purely the result of persuasion, it is not clear that an economist qua economist has anything to say regarding the merits or lack thereof of persuasive activities. In addition, it may well be the case that consumers are purchasing a joint product (i.e., the beer itself and an image which provides utility to the buyer) and that the premium differential represents payment to those firms which have been successful in producing superior images in addition to "good" beer.

Second, while it does appear that multi-plant operation has yielded certain advantages to some brewers, it should be emphasized that multi-plant operation by itself has not been a sufficient or necessary condition for profitable operations. There are some firms, especially Coors, that have been quite profitable despite single-plant operation. There are other firms (e.g., Carling and Falstaff) that have pursued multi-plant operations since the mid-1950's and have done poorly, especially in the last few years. In short, the relationship

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1/ See Ackoff and Emshoff, "Advertising Research at Anheuser-Busch," Sloan Management Review, Spring 1975, pp. 1-15.

between profitability on the one hand and firm size and structure on the other is not always straightforward.

3. Vertical Integration 1/

There are substantial variations in the degree of vertical integration among firms in the industry. At one extreme is Coors, which makes all its cans and substantially all its malt. Coors has acquired a bottle facility which produces substantially all its bottles. Coors also owns two rice mills, natural gas and coal reserves, grain elevators, a trucking business, and it produces and places most of its own advertising.

Most large brewers produce at least some of their own malt. In 1976 Schlitz produced 60 percent of its can requirements at five can plants. A-B expected to supply 35 percent of its can requirements by 1978. Olympia has a can plant at its Lone Star facility. Miller began producing cans in 1975. 2/ Heileman produces 400 million cans per year. 3/ Schaefer will avoid can shipping costs by having National Can build a plant next to its new brewery. 4/ In 1976 Pearl opened a 300-million-can-per-year plant. 5/ On the other hand, Pabst and Rainier purchase their packaging.

1/ The information in this section comes from the 1976 SEC Form 10K reports, unless otherwise noted.

2/ Beverage Industry 1976-77 Annual Manual, p. 120.

3/ Beverage World, Jan., 1977, p. 48.

4/ Beverage Industry 1976-77 Annual Manual, p. 122.

5/ Beverage World, May, 1976.

Brewers generally explain integration into can production in terms of control over supply and cost. 1/ Packaging is the largest single cost item for brewers. But why should vertical integration into can production have become so important only recently? Several hypotheses centering around the effects of price controls and their aftermath, and the development of new cans, are suggested:

(a) Price controls may have caused shortages and black markets.

(b) Can prices rose sharply after controls were lifted, and brewers may have believed they could make their own cans at lower cost.

(c) Fewer companies may make the newer-type cans, with the result that competition may be less intense in this part of the can industry.

(d) Regulated freight rates for aluminum cans may be inappropriate, so that freight costs dictate aluminum can production at or near the brewery.

(e) Beer demand is seasonal and consumer demand for various packages may be unpredictable. Thus, integration helps assure the brewer of having the right quantities of the right packages at the right time.

1/ "Schlitz makes more of its own cans--about 80 percent--than anyone else in the industry except Coors. According to an estimate by Emanuel Goldman, a beer-industry specialist with the Sanford C. Bernstein & Co. brokerage firm, the savings from can manufacturing alone could amount to $30 million in 1978." Fortune, April 24, 1978, p. 49.

None of these hypotheses is mutually inconsistent with any of the others, and none of them has been empirically tested, as the investigation did not develop sufficient information to do so.

4. Mergers

What effect have mergers had on the increase in concentration? Using the methodology first developed by Leonard Weiss to evaluate the effect of mergers on concentration, Elzinga finds that of the 21.3 percentage points increase in 4-firm national concentration between 1959 and 1972, mergers made up just 2.7 percentage points of the increase. 1/ Thus, mergers are not judged to be an important factor behind the restructuring of the brewing industry; rather, they are seen as a mechanism that has enabled resources to exit the industry. In fact, Elzinga finds that the increase in concentration in the brewing industry is rather unique in that most of it was brought about by internal expansion rather than by acquisition.

The fact that mergers have accounted for such a small share of the increase in concentration is directly a result of very strict antitrust enforcement by the Justice Department. But this policy may have, in the end, promoted higher national

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1/ Elzinga, "The Restructuring of the U.S. Brewing Industry," op. cit., pp. 102-105. See also Leonard Weiss, "An Evaluation of Mergers in Six Industries," Review of Economics and Statistics, 172 (1965); and Lawrence G. Goldberg, "The Effect of Conglomerate Mergers on Competition" (unpublished Ph.D. dissertation, University of Chicago, 1972).

concentration in two ways: (1) By foreclosing the merger route to the national brewers, it forced them to expand internally. As we have seen, their large new breweries are more efficient than the older smaller ones. (That is, if mergers had been allowed, the nationals might have acquired old small breweries and might have grown more slowly than they actually grew.) (2) The Department has blocked mergers of smaller brewers. This may have had the effect of weakening the competitive position of the latter group of firms.

During the 15 years before 1973, the Antitrust Division of the Department of Justice pursued almost every merger in the industry that resulted in a company with a significant market share of any market, bringing cases against national, regional, and local brewers alike. The Justice Department's suits against the three largest national brewers, Anheuser, Schlitz and Pabst, had the results generally expected of antitrust enforcement policy. Once the leading national brewers were under judicial orders prohibiting further acquisitions, they began to grow by internal expansion, building new, geographically dispersed breweries which brought more effective competition to distant markets such as Texas and Florida. But the Department's negative position with regard to any combination of smaller brewers prevented them from achieving some economies in production and marketing that

might have preserved their competitive influence and slowed or arrested the industry's trend toward greater concentration. 1/

Anheuser's 1958 acquisition of the American Brewing Company in Miami, Florida, was the first to be challenged. Anheuser and the Government entered into a consent decree providing for the divestiture of the Miami brewery and enjoining Anheuser from acquiring any brewer in Florida or acquiring, during the succeeding five years, any brewing company without court approval. 2/

In 1958 Pabst acquired the Blatz Brewing Company, the leading seller in Wisconsin. Justice brought an action seeking divestiture the following year, and the Supreme Court agreed with Justice's contention that the merger was anticompetitive. 3/ The final judgment ordered that Pabst make a bona fide effort

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1/ It is true that the Department did not challenge dozens of sales of plants or brands during this period. However, these unchallenged acquisitions involved failing firms or had little or no competitive significance. See pages 71-73, below, for a discussion of the possible benefits of mergers of smaller brewers.

2/ U.S. v. Anheuser-Busch, Inc., 1960 Trade Cases, ¶69, 599 (S.D. Fla. 1960). According to the source used in appendix B, neither American Brewing nor a Miami brewery existed in 1976.

3/ U.S. v. Pabst Brewing Co., 384 U.S. 546 (1966).

to sell the Blatz Brewery, and that it sell the Blatz brands to Heileman. 1/

In 1961 Schlitz acquired the Burgermeister Brewing Corporation, which had the third largest market share in California. Three years later Schlitz acquired 39.3 percent of the stock of John Labatt, Ltd., a Canadian brewer that owned a majority share of the General Brewing Company. General produced Lucky Lager, which had the second largest sales in California. A Justice Department suit resulted in an order against Schlitz which required divestiture of Burgermeister and the Labatt stock, enjoined Schlitz for a period of 10 years from acquiring an interest in any brewing company without court approval, and permanently enjoined Schlitz from acquiring an interest in any brewery in California. 2/ The Burgermeister brand is now owned by Pabst. In 1976 General was in sixth place in California, with 5.7 percent of the market. 3/

The Justice Department had also brought merger cases against several regional brewers, including Lucky Lager Brewing Company

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1/ U.S. v. Pabst Brewing Co., 1969 Trade Cases, ¶72,875 (E.D. Wis. 1969). Subsequently, Pabst obtained cancellation of the order to divest the Blatz brewery because it had received no offers to purchase the plant and there was no reasonable expectation that it could be sold as a brewery within a reasonable period of time. 1975 Trade Cases, ¶60,162 (E.D. Wis. 1974). According to the source used in appendix B, Pabst still owns that brewery.

2/ U.S. v. Jos. Schlitz Brewing Co., 253 F. Supp. 129 (N.D. Cal.) aff'd per curiam, 385 U.S. 37 (1966).

3/ See appendixes A and B.

(the predecessor of General Brewing Company), Heileman, and Falstaff. When Lucky Lager acquired Fisher Brewing Company, a local brewery in Utah, the Department obtained a consent order which required Lucky to sell its interest in Fisher or, if a purchaser could not be found, limited Lucky to 39 percent of the Utah market. The order also prevented Lucky from acquiring a Utah brewer and from acquiring any brewery during a five-year period without the court's consent. 1/

After the acquisition by Heileman of Associated Brewing Company and the filing of a suit by the Justice Department, Dr. Frederic M. Scherer testified at length for the defendants to the effect that Associated could not survive without merging. Eventually, Heileman and the Government reached a consent agreement which provided that Heileman would sell brands that accounted for 400,000 barrels of Associated's 1972 volume, and enjoined Heileman for a 10-year period from acquiring any brewery in an 8-State area of the Midwest. 2/

In 1965 Falstaff acquired Narragansett Brewing Company, the largest seller in New England at that time, in an attempt to enter the Northeast market. The Department of Justice

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1/ U.S. v. Lucky Lager Brewing Co., 1958 Trade Cases, ¶74,538 (D. Utah 1958). In 1976 Lucky (now General) had less than two percent of the Utah market, according to the source in appendix A. General retains the Fisher brand but there are now no breweries in Utah, according to the source used in appendix B.

2/ U.S. v. Heileman Brewing Co., Inc., 1973 Trade Cases, ¶74,500 (E.D. Mich. 1973).

challenged the acquisition, but the District Court dismissed the suit, holding that Falstaff was not a potential entrant into the Northeast because Falstaff would not have entered the geographic market unless it could acquire a brewery with a strong distribution system. 1/ The Supreme Court reversed the dismissal and remanded the case for examination of whether Falstaff was perceived as a potential entrant and thus exerted an influence on competitive conditions in the market. 2/ On remand, the District Court ruled that the Government had failed to prove that Falstaff was a potential competitor with any influence on the geographic market. 3/ Discussing the competitive conditions in the New England market, the Court noted on remand that Anheuser's and Schlitz's market shares had risen rapidly, but attributed this to the declining number of firms and found that "[t]hose brewers who ceased to do business in said market were too inefficient to compete . . . ." 4/ The Court also found that Falstaff could not realistically be viewed as a competitive influence in New England because without any sales volume there, it had no basis for anticipating any profits in that market, and therefore it could not possibly obtain

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1/ U.S. v. Falstaff Brewing Corp., 322 F. Supp. 970 (D.R.I. 1971).

2/ U.S. v. Falstaff Brewing Corp., 410 U.S. 526 (1973).

3/ U.S. v. Falstaff Brewing Corp., 1974-2 Trade Cases, ¶75,315 (D.R.I. 1974).

4/ Id. at 98,008.

financing to build a brewery there. 1/ Finally, the Court observed that since the acquisition competition in the New England market had remained intense, with prices remaining constant in the face of rising costs. 2/ Thus, the Court approved Falstaff's market expansion by acquisition.

In retrospect, Falstaff might have been better off had it lost this case. A former Heileman official has stated that "Falstaff paid possibly twice as much for Narragansett as it should have paid." 3/ The company has lost nearly two-thirds of its market share in New England since 1965, and, beginning in 1971, Falstaff went into the red four years in a row.

The Justice Department also instituted a merger suit against a local brewer, Pittsburgh Brewing Company, which sold its beer primarily in western Pennsylvania. Pittsburgh had made a tender offer for the stock of Duquesne Brewing Company, another local brewer in western Pennsylvania. The Justice Department obtained a consent order despite the facts that Pittsburgh declined the tendered shares and sold the shares of Duquesne it already owned. The order prohibited Pittsburgh from acquiring Duquesne and from acquiring

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1/ Id. at 98,009.

2/ Id. at 98,012.

3/ Beverage World, Jan., 1977, p. 31.

any brewery in the relevant market without providing 60 days' notice to the Justice Department. 1/

Justice's anti-merger policy in the brewing industry has achieved the objective of preventing increases in concentration due to acquisitions by the national brewers, but has failed as applied to the regional brewers. The national brewers made no further acquisitions; instead, they expanded their market shares through internal growth. Those companies were large, efficient, and profitable enough to obtain financing from outside sources which they used to construct new facilities throughout the country. The new breweries were more modern and efficient than any plant that could be obtained through acquisition. In addition, they were built wherever population and consumption patterns dictated, thus minimizing shipping costs.

The regional brewers, however, may have been placed in a difficult position by Justice's course of action. Given the demand for their beer, many regional brewers had been operating plants below capacity and their financial position was not favorable because of low sales and various fixed charges for their plants as well as certain labor costs fixed by union contract which, for example, required given numbers of workers per function. The result was that these firms were under substantial financial pressure. One way out of this difficulty would be for such a company to purchase the popular brands of

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1/ U.S. v. Pittsburgh Brewing Co., 1966 Trade Cases, ¶71,751 (W.D. Pa. 1966). The Duquesne brand is now used by C. Schmidt.

other brewers and produce them in its own plant and operate at near capacity. Acquisitions could also ease the plight of a brewer that needed additional capacity. Regional brewers (with the sole exception of Schaefer) 1/ have found it too expensive to obtain the financing necessary to construct new plants. 2/ The regional brewer could increase capacity by acquiring an existing brewery in exchange for stock, thus avoiding long-term debt and high interest expense. Acquisitions could also be used to overcome other disadvantages of being a local or regional brewer, such as advertising inefficiencies, lack of brand recognition in new markets, and higher freight costs to distant markets. 3/

If several strong regional brewers were permitted to merge into a national organization, they could improve their advertising efficiency and at the same time develop a name that is familiar to all consumers. They could reduce production costs by eliminating excess capacity, and cut administrative costs by eliminating redundant management personnel. The

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1/ Coors and Olympia have continuously modernized their plants so that their production is efficient.

2/ While the large new plants are more efficient than the small old ones, a firm acquiring one of the latter is not necessarily at a disadvantage if the price is sufficiently below the cost of a new plant.

3/ Heileman has been quite successful with this strategy.

merged brewers could produce more brands in each brewery, thereby bringing the plants up to operating capacity and producing all brands near each market to reduce freight costs. 1/

We noted above that the economics of nationwide advertising and promotion probably operate to the advantage of the firms selling nationally. The quickest and most financially feasible method of expanding to a national market is by merger or acquisition of one or more strong regionals. Yet the Justice Department's anti-merger policy deterred such endeavors. Mergers alone, of course, cannot preserve every brewer in difficulty, as Falstaff's history has proved. But in some cases giving them a chance might increase, not decrease, competition.

It is interesting to note that economists recognized as experts in the industry have testified against the Government when it has sought to block acquisitions by regional brewers: Ira Horowitz in Falstaff, and Elzinga and Scherer in Heileman. 2/

1/ This is not inconsistent with the goal of developing a name familiar to all consumers. Producing more brands in each brewery would improve efficiency in the short term. Developing a nationally-known name is a strategy for longer term success.

2/ Dr. Scherer felt so strongly that the Justice Department's injunction suit against the Heileman-Associated merger was wrong that when he read about it in the newspaper he volunteered his services as an expert witness to Associated Brewing with no fee. (Trial transcript at 289-290.)

According to Elzinga:

> . . . since the fate of even some medium size firms in this industry is inauspicious, merger assistance will be required if their services in the competitive arena are to be retained. This means that the antimerger instrument, blunted in this industry in its ability to alter the market share of the industry leaders, must now be applied prudently and sparingly against other firms in the industry. 1/

After this advice was published, five significant mergers involving regional brewers took place: Carling-National, Heileman-Grain Belt, Heileman-Rainier, Olympia-Hamm, and Olympia-Lone Star. These are all more important than Pittsburg-Duquesne, and probably at least as significant as Heileman-Associated, so one presumes that the Antitrust Division did investigate them. But so far the Division has challenged none of them, and, especially in view of the fact that some of these mergers are now more than two years old, one can logically infer that it does not intend to challenge them. If so, it seems likely that the Department of Justice has changed its policy toward mergers between regional brewers.

III. Dimensions of Rivalry

A. Advertising

Much of the rivalry between firms in the brewing industry has manifested itself in the form of advertising. The use of advertising by the industry, however, has fluctuated over the

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1/ Elzinga, "The Restructuring of the U.S. Brewing Industry," Industrial Organization Review, op. cit., 113 (1973).

past three decades. In 1946 aggregate industry advertising expenditures were $50.4 million, a moderate sum judging by the corresponding advertising-to-sales ratio of 2.61 percent (table XVI). Thereafter, however, aggregate advertising expenditures escalated, and continued to rise until 1965 when they peaked at $255 million with a corresponding advertising-to-sales ratio of 7.05 percent. 1/ Between 1965 and 1973 aggregate advertising expenditures in current dollars gradually declined as did the industry advertising-to-sales ratio. (Since prices were rising, the decline in real aggregate expenditures was even larger.) Although comparable data are not available since 1973 there is evidence that there was a major escalation of advertising effort by the leading firms in 1975, 1976 and 1977. (See tables XVII and XVIII.)

The escalation process before 1965 was judged by Greer to be the most important cause of the increase in concentration, his reasoning being that the level of advertising expenditures

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1/ This ratio is based on gross sales. If we subtracted excise taxes--which are substantial--from this figure, the ratio would rise.

TABLE XVI

Industry Advertising and Advertising Intensity: 1946-73

Year	Total advertising expenditures (thousands 1/ of dollars)	Advertising per barrel (dollars) 2/	Advertising to sales (percent) 3/
1946	50,420	0.66	2.61
1947	71,061	0.86	3.07
1948	85,437	0.98	3.48
1949	102,232	1.19	4.28
1950	115,545	1.38	4.79
1951	134,669	1.62	5.15
1952	N.A.	N.A.	N.A.
1953	159,966	1.89	5.65
1954	191,605	2.23	6.76
1955	192,891	2.28	6.71
1956	196,775	2.30	6.69
1957	209,503	2.48	6.87
1958	209,793	2.50	6.84
1959	216,151	2.52	6.52
1960	225,397	2.53	6.90
1961	225,090	2.56	6.75
1962	222,718	2.46	6.90
1963	244,691	2.67	6.86
1964	255,030	2.65	7.05
1965	263,251	2.62	6.90
1966	261,993	2.58	6.50
1967	250,004	2.33	5.96
1968	238,704	2.22	5.46
1969	248,503	2.22	5.33
1970	244,238	1.99	4.77
1971	225,883	1.82	4.27
1972	222,889	1.71	4.06
1973 4/	199,870	1.44	3.33

Sources and Explanations:

1/ Brewer's Almanac (various years).

2/ Advertising dollars per barrel. Data are from Brewer's Almanac.

3/ Advertising as a percentage of gross sales. Data are from Brewer's Almanac.

4/ 1973 courtesy of U.S. Brewers Association.

TABLE XVII

Advertising Cost Per Barrel, by Company: 1949-76

Year	Anheuser-Busch	Schlitz	Pabst	Falstaff	Miller	Schaefer	Stroh	Schmidt
1949	$0.26	$0.33	$0.48	$0.21	$0.31	$0.26	$n.a.	$n.a.
1950	0.30	0.34	0.63	0.17	0.32	0.20	0.20	0.22
1951	0.34	0.41	0.72	0.10	0.40	0.25	0.22	0.19
1952	0.28	0.37	0.73	0.34	0.40	0.36	0.31	0.17
1953	0.45	0.71	0.73	0.41	0.62	0.25	0.35	0.21
1954	1.17	1.35	1.18	0.83	1.64	0.61	0.62	0.28
1955	0.98	1.29	0.97	0.71	0.77	0.58	0.56	0.29
1956	1.16	1.45	1.99	1.13	1.64	0.82	0.68	0.41
1957	1.54	1.77	1.60	1.25	1.38	0.86	0.79	0.52
1958	1.47	1.31	1.26	1.16	1.45	1.19	1.03	0.60
1959	1.38	1.27	0.89	1.14	1.32	0.96	0.88	0.85
1960	1.40	1.77	1.08	1.10	1.59	0.74	0.80	0.99
1961	1.47	2.21	0.99	1.11	0.88	0.68	1.03	1.04
1962	1.46	2.07	1.17	1.53	0.98	0.77	1.38	1.24
1963	1.71	2.07	1.31	1.60	1.09	0.70	0.57	0.87
1964	1.59	2.22	1.29	2.00	1.68	1.02	1.28	1.01
1965	1.38	1.80	1.10	2.05	1.59	1.04	1.74	1.07
1966	0.98	1.82	1.04	1.68	1.82	1.25	1.87	0.80
1967	1.09	1.59	0.84	1.25	1.92	0.91	1.57	0.78
1968	0.79	1.51	0.78	1.34	1.83	0.95	1.44	0.96
1969	0.86	1.20	0.51	1.06	1.83	0.87	0.84	0.80
1970	0.84	1.10	0.61	1.48	2.12	1.20	1.19	0.97
1971	0.98	1.03	0.56	1.23	2.59	1.08	1.20	0.85
1972	0.98	1.09	0.51	0.80	2.00	0.89	1.07	0.68
1973	0.69	0.93	0.55	1.14	1.53	0.80	0.96	1.08
1974	0.52	0.92	0.59	1.07	1.50	0.89	1.00	1.01
1975	0.78	1.14	0.61	0.19	1.65	0.45	0.77	0.68
1976	0.98	1.42	0.57	0.48	1.58	0.47	0.87	0.78

(Table continued on next page)

TABLE XVII

Advertising Cost Per Barrel, by Company: 1949-76--(Continued)

Year	Hamm	Ballantine	Lucky	Olympia	Carling	National	Coors
1949	$0.37	$0.24	n.a.				
1950	0.52	0.22	$0.16				
1951	0.61	0.39	0.08				
1952	0.31	0.61	0.08				
1953	0.38	0.52	0.13				
1954	0.85	0.73	0.71				
1955	1.17	0.40	0.67		$0.16	$0.16	$0.03
1956	1.06	0.86	0.91	$1.06	0.93	1.10	0.06
1957	1.16	0.97	1.00	1.18	0.59	1.04	0.10
1958	1.19	0.83	0.88	0.41	0.83	1.45	0.11
1959	1.25	0.67	1.02	1.10	0.87	1.37	0.08
1960	1.40	0.72	0.61	0.58	0.98	0.80	0.08
1961	1.08	0.79	0.33	0.49	0.99	0.81	0.07
1962	1.07	0.98	0.48	0.36	1.07	0.62	0.05
1963	1.52	0.95	0.73	0.58	1.20	0.82	0.07
1964	1.59	1.29	0.53	0.73	1.98	0.70	0.07
1965	1.36	1.49	0.80	0.96	0.88	1.86	0.07
1966	1.35	1.74	1.04	1.14	1.72	1.64	0.18
1967	1.71	1.40	0.94	1.19	2.02	1.65	0.26
1968	1.11	0.83	0.99	1.13	1.33	1.65	0.15
1969	0.91	0.79	0.22	0.96	0.94	1.38	0.16
1970	1.48	1.41	1.28	1.30	1.30	1.50	0.24
1971	1.31	--	n.a.	1.40	1.82	1.67	0.22
1972	1.40	—	n.a.	1.02	1.40	1.48	0.19
1973	1.98	--	n.a.	0.90	1.75	1.33	0.13
1974	1.48	—	n.a.	0.90	0.11	1.34	0.13
1975	—	--	n.a.	1.04	1.03	--	0.10
1976	--	—	n.a.	0.89	1.09	--	0.15

Note: These advertising expenditures are for major media only, including television, radio, newspapers, magazines, and outdoor. The figures for 1971 are for five media only, whereas the figures for other years are for six media. The difference is that advertising in newspapers is omitted, but it appears that this is a very small bias.

Sources: Advertising Age (September 29, 1958)
Advertising Age (January 2, 1967)
Advertising Age (September 20, 1971)
Brewing Industry Survey (1974)
Advertising Age (Nov. 3, 1975)
Advertising Age (Dec. 27, 1976)
Advertising Age (Sept. 26, 1977)

TABLE XVIII

Total Advertising Expenditures of Leading Brewers
(totals in $1,000's, per-barrel figures in dollars)

	1974	1975	1976	1977
A-B: Total	31,807	41,958	49,021	79,171
Per barrel	0.94	1.20	1.69	2.16
Coors: Total	ca 6,000 1/	7,102	9,831	--
Per barrel	0.49	0.59	0.72	--
Heileman: Total	7,700	7,800	10,600	--
Per barrel	1.79	1.72	2.03	--
Miller: Total 2/	ca 27,000	ca 39,000	--	--
Per barrel	ca 3.00	ca 3.00	--	--
Olympia: Total	--	10,524	10,780	14,543
Per barrel	--	1.89	1.69	2.13
Pabst: Total	--	20,281	20,533	26,799
Per barrel	--	1.29	1.21	1.67
Schlitz: Total	29,644	33,527	43,626	55,080
Per barrel	1.34	1.44	1.81	2.49

1/ Business Week, Nov. 8, 1976, p. 58.

2/ Estimate of Wertheim and Co., reported in Business Week, Nov. 8, 1976, p. 58.

Source: SEC Forms 10K, except as noted.

eventually became too onerous for the "less skillful or lucky firms." 1/ The escalation was most likely triggered by the rapid growth of television and by geographical market extensions undertaken by expanding firms. He then suggested that the reversal of the escalation could be explained by his hypothesis that the relationship between advertising and concentration is "parabolic." That is, up to a certain point increasing advertising efforts will lead to an increase in concentration, but that after a certain point concentration will be sufficiently high to enable firms tacitly to collude on the amount of advertising. Collusion may then lead to a reduction in advertising levels so that, from the industry point of view, the leading firms will be at their joint profit-maximizing levels.

Greer's analysis of the effects of advertising is seriously marred by his failure to take into account the significant increase in the minimum efficient size plant. He dismisses this as being a cause behind the increase in concentration, relying on the estimate made by Horowitz and Horowitz that a

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1/ Douglas F. Greer, "Product Differentiation and Concentration in the Brewing Industry," Journal of Industrial Economics, 19 (July 1971), pp. 201-219. The increase in concentration coincided with falling profit margins, which Greer attributes to the escalation of advertising expenditures, mainly because he finds that the evidence does not support the view that the "cost squeeze" was caused by increased production costs. He does not believe the evidence indicates advertising scale economies or a tendency of the larger firms to have higher advertising-sales ratios. Of course, less skillful or lucky firms are at a disadvantage by definition--even if advertising expenditures are less than onerous.

minimum efficient size plant is one which produces just 100,000 barrels per year. 1/

Additionally, economists are divided on the real ability of firms to collude on advertising. Stigler argues that collusion to restrict advertising is more likely to be successful than collusion on prices since advertising is visible and, hence, it is less costly to detect cheating on any tacit or explicit agreement. 2/ Other economists argue that it is more difficult to collude on advertising than on prices. For example, Simon argues that since firms are always changing their

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1/ Cf. Ira Horowitz and Ann Horowitz, op. cit., p. 138. Their estimates were based on an analysis of beer production data by State for the period 1948-61. They found that "the average gain or loss in state production resulting from the arrival or departure of the 'last' firm to assume production in the state, or the 'first' firm to cease production, was close to 100,000 barrels in each of the previous 14 years. If it is presumed that the 'last' firm is the 'marginal' firm, the results suggest that the minimum efficient size of a firm in the brewing industry is about 100,000 barrels of beer a year." This explanation is from their subsequent paper, "Concentration, Competition, and Mergers in Brewing," in J. Fred Weston and Sam Peltzman, eds., Public Policy Towards Mergers (Pacific Palisades: Goodyear Publishing Company, Inc., 1969).

Their estimate looks very small when compared to the minimum efficient size firm in 1975. In their defense, it should be noted that the dramatic rise in the optimal size of a brewery really started in the 1960's with the advent of certain technological innovations which were previously reviewed. However, it is difficult to justify Greer's use of their estimate since by the time of his paper their estimate was clearly dated.

2/ George J. Stigler, "A Theory of Oligopoly," Journal of Political Economy LXXII (1) (February 1964).

advertising programs, it is difficult to monitor actual advertising efforts and thus difficult to detect when cheating occurs. 1/ Scherer also believes that it is generally difficult for firms in an industry to hold advertising expenditures at their joint profit-maximizing level. Because it takes time to react to a change in a competitor's advertising program, firms which fear the worst (i.e., that other firms will try to cheat on the agreement and that the cheating firms will gain until the advertising can be counteracted) may initiate their own new campaign with the result that an advertising "race" is begun. 2/

We do not need to introduce a new theory (i.e., one based on collusion) to explain trends in beer advertising. The same theoretical considerations which explain the start of the escalation process also shed light on why it subsided (and may be on the rise again). The need for larger markets as a result of increasing scale economies coincided with the development of television, which led to an increase in a firm's

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1/ Julian L. Simon, Issues in the Economics of Advertising (Urbana: University of Illinois Press, 1970), p. 107.

2/ F. M. Scherer, Industrial Market Structure and Economic Performance (Chicago: Rand McNally & Company, 1970), pp. 334-337. According to H. Michael Mann, "On balance, the theory and some case-study evidence suggests that effective oligopolistic collusion on advertising is unlikely." See H. Michael Mann, "Advertising, Concentration, and Profitability: The State of Knowledge and Directions for Public Policy," in Goldschmid, Mann, and Weston, eds., Industrial Concentration: The New Learning (Boston: Little, Brown, 1974), p. 145, n. 28.

desired stock of "brandname capital" because it reduced the cost of achieving a given level of brandname capital. Thus, firms increased their advertising investments until a desired new level of brandname capital stock was attained. Once created, the level of advertising decreased since all that was necessary was a level sufficient to offset the depreciation of the stock of brandname capital, which is affected by such variables as consumer mobility, forgetting, changes in tastes and advertising by rivals, and changes in market conditions such as new brands or new methods of marketing.

Thus, by the mid-1960's firms, having achieved their higher level of brandname capital, decided accordingly to reduce their future levels of advertising. This explanation is consistent with Anheuser-Busch's decision to cut back on advertising. Studies of the effects of advertising on sales which the firm commissioned gave results supporting this view. 1/

The process of rivalry between the national brewers and the major regional brewers is put into focus by data on firm advertising costs (in major media) per barrel which appear in table XVII. From 1949 to 1950, 6 of the 8 firms for which we have data increased their level of advertising expenditures per barrel. From 1950 to 1951, 8 of the 11 firms for which

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1/ Russell L. Ackoff and James R. Emshoff, "Advertising Research at Anheuser-Busch, Inc. (1968-74)," Sloan Management Review, XXI, No. 3 (Spring 1975) (Part II), p. 4.

data exist increased their per barrel advertising expenditures. This parallel escalation of advertising efforts generally persisted until the mid-1960's when a parallel de-escalation of advertising began. The de-escalation continued through 1974. Since then A-B, Schlitz, Coors, and Heileman have sharply increased their advertising expenditures per barrel.

Of interest is a comparison of the level of advertising intensity of the three brewers, Anheuser-Busch, Schlitz and Pabst, with the growth in their relative shares of national barrelage. In 1951, their shares were, respectively, 6.5 percent, 6.8 percent, and 4.7 percent. 1/ In 1975 they were 23.8 percent, 15.5 percent, and 10.6 percent. Clearly, Anheuser-Busch has grown the most and yet its advertising cost per barrel has been almost consistently below that of Schlitz. The data in table XVII are not consistent with the proposition that success is correlated with high advertising expenditures per barrel.

Recently, a new process of rivalry has begun among major national brewers, this time at the instigation of Miller Brewing. In the past 10 years Miller has generally maintained the highest levels of advertising per barrel in the industry, but its share of national barrelage never exceeded 5 percent until 1974. In the early 1970's Philip Morris replaced Miller's management and successfully revised its High Life advertising

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1/ See table VIII.

campaign. In 1975 Miller finally found a successful method of promoting a low calorie beer, Lite, spending heavily, around $6.00 per barrel, to introduce it nationwide. 1/ Lite's success was not attributable simply to heavy advertising, however.

Low calorie beers, such as Gablinger's, had been promoted in the past with a notable lack of success. The problem was that dieters are generally not people who drink a lot of beer. Also, the big beer drinkers tend to resent the implication that they might be getting fat. Miller evidently discovered that many big beer drinkers are young or middle-aged men who are sports fans and who have or have had dreams of athletic prowess. In advertising Lite, Miller relied on retired athletes renowned not just for strength and ferocity, but also for speed and agility. The message was that one can drink a lot of Lite and still be fast, not that you should drink Lite because you are getting too fat. One could say that Lite found a new market segment, but it is perhaps more accurate to say that Miller found a better way to tap an existing market segment.

By 1975 Schlitz, and to a lesser extent Anheuser-Busch, were beginning to increase their own advertising expenditures and making plans to enter the low calorie beer market, probably in response not only to Miller's aggressiveness, but also to a general slackening of growth in demand (in the face of increasing industry capacity). In 1976 and 1977 both A-B and Schlitz

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1/ "How Miller Won a Market Slot for Lite Beer," Business Week, October 13, 1975, p. 116.

significantly increased their advertising expenditures per barrel (see table XVIII). Heavy advertising is not unusual for introduction of new products, and it remains to be seen whether a higher level of advertising expenditure will become an enduring part of the brewing industry. (A substantial part of the increase in advertising expenses is due to inflation. From 1973 to 1977 the implicit gross national product deflator rose 33.6 percent.)

Another point of interest in tables XVII and XVIII is the very low advertising costs per barrel figures for another major brewer, Coors, a firm which has enjoyed phenomenal success in the brewing industry. When we compare these figures with the relatively high levels spent by other brewers that have fallen upon hard times, we are left with the conclusion that there is no magical formula for transforming advertising efforts into sales growth. Nor is intensive advertising or extensive use of television a guarantee of success, though it does seem to have helped some firms, most notably Miller.

We find, given the lack of a clear and uniform correlation between advertising efforts and success, that it is difficult to isolate the effects of advertising. That is, success is a function of much more than selecting the right level of advertising or choosing the proper advertising medium. Other factors surely include prices (which we will turn to shortly), real product differences, having made good business decisions, and just plain luck. Note that we are not denying that

advertising, holding all else equal, can have a positive effect on sales. Rather, we are emphasizing that "all else" is not in actuality being held equal and, hence, it is difficult to quantify the effects of advertising by itself. Presumably, the conclusions could be advanced by empirical research utilizing multivariate analysis and there have been numerous attempts to do just this. Unfortunately, most of the studies on the effects of advertising have weaknesses which vitiate their significance. 1/ As an example, most studies have posited a one-way relationship running from advertising intensity to sales. But as Schmalensee observes, the level of advertising efforts is often a function of sales and, given this, studies based on the assumption of a one-way relationship are subject to bias. 2/ Added to all this is the problem that not all advertising messages are equally potent. Some firms have spent a lot on "bad" advertising and as a consequence have benefited little from their efforts.

1/ Cf. James M. Ferguson, op. cit.; and Richard Schmalensee, On the Economics of Advertising (Amsterdam: North Holland, 1972).

2/ Richard Schmalensee, Ibid. Comanor and Wilson, op. cit., allow for such "feedback effects" by using a two-stage model. Their estimate of the effect of total industry advertising upon total malt liquor consumption is small and statistically insignificant (pp. 79-89). They find, based on a sample of 41 consumer products industries, that high advertising is associated with high profits (p. 130). However, while the malt liquor industry ranked fifth in advertising-sales ratio, its profit rate ranked 24th among the 41 industries (pp. 134, 135).

TABLE XIX

Beer Industry Price Indexes: 1953-77
(1967 = 100)

	Retail Consumer Price Index for beer 1/	CPI for beer divided by CPI for all items	CPI for beer divided by CPI for alcoholic beverages
1953	86.1	1.07	1.008
1954	89.3	1.11	1.020
1955	88.6	1.10	1.015
1956	90.0	1.11	1.018
1957	91.7	1.09	1.011
1958	91.6	1.06	1.011
1959	92.3	1.06	1.008
1960	93.6	1.06	1.008
1961	93.8	1.05	1.005
1962	94.3	1.04	1.008
1963	95.1	1.04	1.006
1964	95.9	1.03	1.006
1965	96.8	1.02	1.005
1966	98.3	1.01	1.003
1967	100.0	1.00	1.000
1968	102.8	0.99	0.993
1969	105.4	0.96	0.983
1970	108.9	0.94	0.970
1971	112.9	0.93	0.966
1972	113.9	0.91	0.952
1973	115.6	0.87	0.944
1974	126.8	0.86	0.962
1975	140.3	0.87	0.983
1976	143.7	0.84	0.979
1977	145.9	0.80	0.967

1/ Packaged beer.

Sources: Handbook of Labor Statistics (1972), Department of Labor, Bureau of Labor Statistics; Brewers Almanac, U.S. Brewers Association; Brewing Industry Survey, Research Corporation of America.

B. Prices

1. Industry Price of Beer

The price of beer, like most other prices, has risen since World War II. This is indicated by the Consumer Price Index for packaged beer (table XIX). However, beer prices have risen at a slower rate than the general price level, as indicated in column 2 of table XIX which shows the ratio of the Consumer Price Index for packaged beer to the Consumer Price Index for all items. In addition, column 3 of table XIX shows that beer prices have increased at a slightly slower rate than the price index of all alcoholic beverages since 1956. Thus, the real and the relative price of beer have decreased over time.

To gain more insight into the behavior of beer prices, the composite industry price per barrel for each year from 1946-70 (excluding 1952 and 1962 due to lack of data) has been calculated using the formula:

$$(1) \qquad P_{bt} = R_t/Q_{bt}$$

Where P_{bt} is the price per barrel at time t; R_t is gross receipts for the brewing industry (including excise taxes); and Q_{bt} is the number of barrels sold in t. We have included taxes since we are interested in the prices paid by consumers. This price series appears in table XX, along with a price series excluding excise taxes.

It should be kept in mind that the price per barrel figures are composites of a great many brewers and brands selling at a wide range of prices. In addition, the figure

TABLE XX

Beer Prices and Packaged Beer as a Percentage of Total Beer Sales: 1946-76

Year	Price per barrel (excl. excise taxes) (dollars)	Price per barrel (incl. excise taxes) (dollars)	Packaged beer (percent of total)
1946	$17.66	$23.83	66.6
1947	21.32	28.06	66.4
1948	22.02	28.19	68.4
1949	20.98	27.82	69.9
1950	22.23	28.88	70.8
1951	23.30	31.39	72.7
1952	N.A.	N.A.	74.3
1953	24.56	33.48	75.4
1954	24.16	33.05	76.9
1955	24.78	34.02	77.3
1956	25.56	34.37	78.4
1957	27.01	36.17	79.2
1958	27.36	36.52	79.5
1959	29.57	38.71	79.9
1960	29.41	36.74	80.6
1961	27.38	37.95	80.7
1962	N.A.	N.A.	81.0
1963	27.00	39.00	81.4
1964	27.12	37.61	81.5
1965	27.73	38.04	82.0
1966	29.25	39.73	82.5
1967	29.61	39.11	83.5
1968	31.12	40.65	83.9
1969	32.04	41.69	84.7
1970	32.78	41.79	85.7
1971	N.A.	42.73	86.0
1972	N.A.	N.A.	86.7
1973	N.A.	N.A.	86.9
1974	36.18	N.A.	87.5
1975	N.A.	N.A.	87.6
1976	44.50	N.A.	87.9

Sources: Brewers Almanac (various years), U.S. Brewers Association.

TABLE XXI

Consumer Price Indexes for Beer Consumed at Home and Away from Home: 1964-77

Year	Beer consumed at home (1)	Beer consumed away from home (2)	Column (1) divided by Column (2)
1964	95.9	92.4	1.088
1965	96.8	93.9	1.031
1966	98.3	96.9	1.014
1967	100.0	100.0	1.000
1968	102.8	105.5	0.974
1969	105.4	111.8	0.943
1970	108.9	119.6	0.911
1971	112.9	126.4	0.893
1972	113.9	130.9	0.870
1973	115.6	135.2	0.853
1974	126.8	145.8	0.870
1975	140.3	157.2	0.892
1976	143.7	165.5	0.868
1977	145.9	173.5	0.841

Source: U.S. Department of Labor, Bureau of Labor Statistics

is a composite of packaged and draught beer prices. In table XXI, the Consumer Price Indexes for beer consumed at home and for beer consumed away from home are presented along with the ratio of the two indexes. The ratio shows that the prices of beer consumed at home (largely packaged beer) have risen at a slower rate than the prices of beer consumed away from home (largely draught beer). Given that the proportion of packaged to draught beer has steadily increased since World War II, the composite price will reflect the change in consumption habits. While the composite price itself does not give much specific information, it is nonetheless useful as an indicator of the overall average price actually paid for beer.

A Federal Trade Commission staff report looked at recent price and profit trends in four food manufacturing industries, one of which was brewing. It was found that beer prices have continued to increase through April 1975, but that the rise in beer prices is related "most clearly to increases in brewing costs, and not to enhanced profitability." 1/

2. The Change in the Relative Price of Premium Beer

We can calculate a price per barrel series for individual firms in the identical manner that we calculated the price per barrel for the entire industry. Comparability among firms will be affected by the degree to which each firm is diversified

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1/ Alison Masson and Russell C. Parker, Price and Profit Trends in Four Food Manufacturing Industries, Staff Report to the Federal Trade Commission (July 1975).

since receipts from non-beer sales will bias upward the estimate of a given brewer's price per barrel. The more diversified a firm is, the higher will be the estimated price per barrel, other things equal. Fortunately, this problem does not appear to be too great in the brewing industry since most firms are not diversified to any great extent.

Since we are concerned with the performance of the national firms, we shall focus our study on the two largest brewers in the industry, Anheuser-Busch and Schlitz. Although both firms are now diversified, neither, according to their annual reports, appears to be generating much in the way of non-beer revenues. 1/ Revenues per barrel (inclusive and exclusive of excise taxes) over time for these firms appear in table XXII. Comparing these prices to the industry composite price in table XX, we find that they were generally higher than the industry price per barrel. This should come as no surprise since most (about 80 to 85 percent) of the beer sold by Anheuser-Busch and Schlitz is sold at premium prices.

What we are particularly interested in is the change in the relative price of premium beer over time. Is there any evidence that Anheuser-Busch and Schlitz acquired market power

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1/ By 1976, A-B's non-beer sales were nearly 10 percent of its beer net sales. Table XXII gives an estimate of the resulting bias for 1973-76. The non-beer revenues are increasing and this means that the bias in the measurements is greater the more recent the year.

TABLE XXII

Total Revenue Per Barrel of Beer for Anheuser-Busch and Schlitz: 1946-76
(in dollars)

	A-B revenue/bbl (excl. excise taxes)		A-B revenue/bbl (incl. excise taxes)	Schlitz revenue/bbl (excl. excise taxes)	Schlitz revenue/bbl (incl. excise taxes)
1946	24.86				
1947	28.93		40.12		
1948	30.39		42.32		
1949	29.89		41.90		
1950	31.00		43.29		
1951	32.74		44.77		
1952	34.50		45.01		
1953	35.32		45.73		
1954	37.04		47.45		
1955	35.91		46.64		
1956	36.61		47.51	26.86	
1957	37.15		47.99	27.15	
1958	36.83		47.51	27.20	
1959	36.70		47.66	27.04	
1960	36.42		47.29	27.30	
1961	36.41		47.26	26.92	
1962	36.21		47.22	26.85	
1963	36.56		47.60	28.91	37.74
1964	36.28		47.39	28.90	37.71
1965	35.63		46.74	28.91	37.65
1966	35.73		46.52	29.06	37.77
1967	35.72		47.02	28.59	37.93
1968	35.49		46.35	29.33	37.88
1969	35.62		46.59	30.55	39.18
1970	35.71		46.67	30.56	39.29
1971	37.12		48.27	31.25	40.05
1972	36.86		48.00	32.33	41.22
1973	37.13	ca 33.79 1/	48.27	32.94	41.83
1974	41.44	ca 38.12 1/	52.55	35.94	44.83
1975	46.74	42.25 1/	57.87	39.65	48.35
1976	49.61	44.32 1/	60.34	41.39	50.27

1/ A-B price per barrel of beer sales, excluding excise taxes, from SEC Form 10K and Annua Report.

Source: Moody's Industrial Manuals; 1976 SEC Form 10K.

that enabled them to raise the relative price of their beer? Have higher prices been responsible for the increase in the relative profitability of the national firms? To test these hypotheses, relative price series have been constructed and they appear in table XXIII. 1/ The first two series show the relative price of Anheuser-Busch's composite price per barrel to the industry (excluding Anheuser-Busch) composite price per barrel. It is readily apparent that the relative price of Anheuser-Busch beer has declined steadily over time. The last series gives a comparison of the industry price per barrel (adjusted by excluding Anheuser-Busch's and Schlitz's receipts and barrel sales) with the weighted average price per barrel for Anheuser-Busch and Schlitz. Again, it is obvious that the relative price of the national beers has fallen over time. Since they sell mostly premium beers, we can infer that the premium-popular price differential appears to have declined over time. Thus, we have evidence that Scherer was correct in his belief that the relative price of premium beers has fallen over time.

We have been unable to obtain consistent data on industry average price per barrel for the years after 1970. However,

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1/ The estimates of Schlitz's prices are limited in the number of years they go back because Schlitz was not listed in Moody's prior to 1956. Prior to 1963, the amount of excise taxes paid by Schlitz was not reported. Also, some bias is introduced since Busch Bavarian and Old Milwaukee are included. Thus, if the revenues of their non-premium brands changed over time relative to the revenues of the total company, there is some distortion in the results.

TABLE XXIII

Relative Prices: Industry/Anheuser-Busch; Industry/Nationals

Year	$\frac{P_{AB}}{P_I - AB}$ (Incl. taxes)	$\frac{P_{AB}}{P_I - AB}$ (Excl. taxes)	$\frac{P_N}{P_I - N}$ (Excl. taxes)
1946		1.43	
1947	1.59	1.52	
1948	1.54	1.41	
1949	1.54	1.46	
1950	1.54	1.37	
1951	1.47	1.45	
1952	N.A.	N.A.	
1953	1.41	1.49	
1954	1.49	1.54	
1955	1.41	1.50	
1956	1.43	1.48	1.27
1957	1.37	1.42	1.23
1958	1.33	1.39	1.23
1959	1.25	1.27	1.12
1960	1.33	1.28	1.13
1961	1.28	1.39	1.25
1962	N.A.	N.A.	N.A.
1963	1.27	1.35	1.23
1964	1.30	1.28	1.28
1965	1.27	1.34	1.24
1966	1.18	1.26	1.15
1967	1.25	1.25	1.16
1968	1.18	1.17	1.08
1969	1.14	1.14	1.06
1970	1.14	1.11	1.03
1971	1.16	--	--

N.A. - Not Available.

Key: $P_I - AB$: Industry (excluding Anheuser-Busch) revenue per barrel.

P_{AB} : Anheuser Busch revenue per barrel

P_N : Weighted average revenue per barrel for A-B and Schlitz.

$P_I - N$: Industry (excluding A-B and Schlitz) revenue per barrel.

Source: Tables XX and XXII.

the U.S. Brewers Association provided an estimate of $44.50 for 1976, excluding excise taxes. Table XXII indicates an average price of $44.32 for A-B and $41.39 for Schlitz. The lower average price for Schlitz is probably due to the relatively large sales of its popular price brand, Old Milwaukee. It is not entirely clear what inferences can be drawn from the numbers, except that they certainly appear to contradict the hypothesis that in 1976 A-B and Schlitz were able to earn higher profits by charging higher prices than the rest of the industry.

3. Price Promotions

It has been alleged that extensive price promotions (very short-term price cuts) were responsible for the increases in market share of the national brewers.

Apparently, the extent of price promotion activity in general has decreased in the past few years. This can be attributed to two factors. First, a number of States have enacted price posting laws which diminish the ability of brewers to engage in price competition. These laws, typically enacted at the behest of small brewers who have trouble competing with the national brewers, restrict the number and length of temporary price cuts (price promotions) that a brewer can engage in over the course of a year. As of April 1978, about one-third of the States had some kind of price posting law

which restricted the ability of brewers to engage in price competition. 1/

Although no attempt was made to determine the actual effect of these laws on pricing behavior, some observers suggest that brewers prefer to use temporary price cuts on the order of a few weeks, so that laws requiring price cuts to remain in effect for periods as long as six months or one year should substantially inhibit price competition. 2/ If this is the case, we should expect an increase in non-price competition in such States. It is not clear that the small brewers are any more successful at coping with non-price competition than with price competition. Most industry observers believe that the industry is headed for a major shakeout in the next few years. The price posting laws should be examined in the context of the future structure of the industry; i.e., at the point at which there will be few small brewers left to protect. At this point it would seem that the prevention of temporary price cuts would serve no useful social purpose in protecting smaller

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1/ See appendix C for a listing of the State regulations.

2/ For example: "A-B has instituted price promotions in most of the states where it can cut prices temporarily without being forced by posting laws to maintain those lower prices for 90-180 days. Locations include Texas, Ohio, Wisconsin, Minnesota, Florida, Louisiana, New Mexico, Utah, and Montana. Company price promotions in Illinois, Iowa, and Missouri were ended at the same time.

"Ideally, the promotions don't last more than 2 weeks to a month. They work on the theory of 'pulsing' a market with price cuts to give the consumer a feeling of a temporary bargain." Beverage World, Jan., 1977, p. 18.

firms and, in a more concentrated industry, could substantially reduce price competition. Non-price competition will remain, and it appears that advertising and the variety of package sizes and types are increasing. Many economists prefer price to non-price competition. One reason is a belief that when price competition is suppressed, the consumer often ends up with a higher priced package than he really wants. 1/ Another reason is the belief that price competition is more effective in increasing output and reducing profits than is non-price competition. 2/ However, these are beliefs, and it has not been proven that price competition is, in fact, generally more "efficient" in meeting consumers' needs.

The recent reduction in price promotions may also be related to the fact that the prices of inputs used in brewing and packaging have risen dramatically in recent years. The price of metal cans rose 21 percent in the first half of 1974, and another 13 percent in the later half. Malt, which represents about 8 percent of total direct variable costs, rose 25 percent in price in the first half of 1974 and an additional 27 percent in the last half. 3/ As a result, beer prices in general were

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1/ The effect of Government regulation of airline fares is a conspicuous example of this sort of result. See George Douglas and James Miller, Economic Regulation of Domestic Air Transport, (Washington: Brookings Institution, 1974).

2/ See George Stigler, "Price and Non-Price Competition," Journal of Political Economy, LXXII, No. 1 (Feb. 1968).

3/ These figures are from Alison Masson and Russell C. Parker, op. cit., p. 47.

forced up and price cuts probably would have been costly to firms. Brewers appeared to have trouble just passing on the increases in the costs of inputs, the latter having increased more in 1974 and early 1975 than did the price of beer in the same period. 1/

Nevertheless, there were reports of widespread discounting in 1977, especially by A-B, which was trying to recover market share lost in the 1976 strike. 2/

The variation in the extent of price promotion activity suggests that it is used as a tool, in conjunction with advertising, for increasing sales in those areas where a firm feels it can or must expand. Of course, it can also be argued that price promotions are a defensive tool in that they may be used to counter decreases in sales and/or increased competition from other brewers. Thus, causality between price promotions and sales may run in either direction.

IV. Performance

This section opens with a brief discussion of profit rates of the industry as a whole. The profitability of individual firms, both national and regional, is then analyzed.

1/ These figures are from Alison Masson and Russell C. Parker, op. cit., p. 47.

2/ Wall Street Journal, June 28, 1977, p. 48; and New York Times, Aug. 7, 1977.

A. Brewing Industry Profits

Earlier we saw that for the brewing industry as a whole after-tax profits (as a percentage of stockholders' equity) were consistently below the average for all manufacturing corporations over the period 1950-74. 1/ Thus, despite the increase in concentration, the industry as a whole has generated below average profits.

Profit rates in the brewing industry increased fairly steadily after 1956, as did the level of national concentration. We must be careful in interpreting these trends, however, since brewing industry profit rates have been below the average for all manufacturing since 1950. It could be argued--as we have above--that the industry was in disequilibrium and as the industry moved toward a new equilibrium it was only natural to expect that its profit rate would rise. The rise in the national concentration ratio then may reflect an adjustment process by which those firms which were building modern large breweries and establishing a network of regionally decentralized breweries were displacing those firms which clung to traditional modes of production and operation. The rise in the industry

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1/ See table III, supra, p. 6. 1971 was the sole exception to this. Industry profit data for 1975 and 1976 are not available. However, we computed weighted average net income as a percentage of stockholders' equity for eight leading brewers (A-B, Schlitz, Pabst, Coors, Olympia, Schaefer, Falstaff, and Heileman). The weighted average was 11.4 percent in 1975 and 12.6 percent in 1976. The average for all manufacturing was 11.6 percent in 1975 and 14.0 percent in 1976 (FTC Quarterly Financial Report).

rate of return was caused by the increased profitability of those firms in the vanguard of this restructuring process; that is, profit changes may reflect the extent to which firms were taking advantage of plant-specific and multi-plant economies of scale, as well as new marketing techniques.

It could also be argued that the rise in the industry profit rate was the result of the industry's becoming less competitive, one indication of this being the rise in national concentration. It must be remembered, however, that the dramatic rise in national concentration overstates what was happening on the regional level where concentration had always been high and where a displacement process was under way. In addition, those firms experiencing the increased relative profitability from their operations were also lowering their relative price, which is consistent with the statement that the source of their increased profitability was a decrease in their relative costs.

B. Firm Profits

Within an industry, firm profit rates will deviate from the industry profit rate for a number of reasons. First, since we normally compare accounting profit rates on equity rather than true economic profit rates, differences in debt-equity ratios, advertising intensity, etc., will lead to measurement errors. One of the explanations of variations in firm profit rates, however, is that these deviations reflect a firm's relative "market power," a term that usually denotes

a firm's ability to sell its product at a price above marginal cost.

How does a firm obtain market power? One answer is that the firm attempts to differentiate its product via advertising; to the extent the firm is successful in developing its brand-name capital stock, it will be able to sell its product at a higher price than can competitors who are less successful in persuading the public that their product is better. Of course, brandname capital is built up by advertising and if advertising were capitalized rather than expensed, the reported profit rates might be corrected downward. 1/ For example, in 1973 Schlitz's reported rate of return on equity after taxes was 18.80 percent. Using the method developed by Weiss to capitalize advertising expenditures, the adjusted rate of return falls to 16.21 percent. 2/ This shows that Schlitz's rate of return was biased upward, but that even if we capitalize advertising expenditures, Schlitz still was left with a rate of return significantly above the average for firms in the brewing industry and for all manufacturing. This suggests Schlitz's brandname capital was undervalued or that there were

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1/ "In approximate terms, the rate of return will be over or understated depending on whether the accounting rate of return exceeds or falls short of the rate of growth in advertising." Leonard W. Weiss, "Advertising, Profits, and Corporate Taxes," Review of Economics and Statistics, 51 (4) (November, 1969), pp. 423.

2/ Ibid., pp. 421-430.

other reasons for its profitability. 1/ However, Schlitz's rate of return has dropped significantly since 1973.

Not all market power is necessarily produced in the manner suggested above. For example, a firm may find that it has a degree of market power by virtue of the fact that entry by others into its market area is more costly than was its own entry and continued production. Given that beer is mostly water, it is a relatively large-volume, low-value product and, hence, is rather costly to ship. This was especially true before the development of the interstate highway system; therefore it should not be surprising to find that geography has had some role in conferring market power on firms in the brewing industry whose competitors had to ship beer great distances in order to compete with them.

There is another reason firm profit rates deviate from the industry profit rate and this is simply that not all firms have identical costs of production. Firms can vary in efficiency, among other things because of differences in ages and sizes of plants, and skill of management, and this certainly seems to be true of firms in the brewing industry. Superiority can generate above-normal returns.

Moreover, above-normal profits can persist for the same reason that there can be a persistence of firms of varying

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1/ One possibility is that the successful brewers possess superior management teams, something not easily purchased on the market since a team effort evolves over time.

efficiencies in an industry. It takes time for other firms to detect which experiments and strategies are successful and what the reason behind success is. In addition, it takes a considerable time for a brewer to plan and actually construct a new brewery. Schlitz officials estimated that it can take five years to bring a new brewery on stream once the decision is made to build one. 1/ As a result, the firm which acts first may enjoy a period of above-normal profitability while others strive to "catch up."

We now turn to some specific examples that will point up the need for detailed analysis if we are to gain understanding of what has occurred in the brewing industry. Table XXIV presents after-tax rates of return on stockholders' equity for six firms. The first three firms are national brewers. Anheuser-Busch has been the most profitable national brewer with its weighted average rate of return of 13.23 percent for the period 1953-75. 2/ This compares to a weighted average rate of return of 11.01 percent for all manufacturing for the same period and an 8.12 percent weighted average return on equity for the brewing industry as a whole for the period 1953-70. The most profitable years for Anheuser-Busch have been those

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1/ Federal Trade Commission Investigative Hearings (Schlitz), March 22, 1974.

2/ The term "weighted average rate of return" as used here refers to the sum of the dollar net earnings divided by the sum of the shareholders' equities over the years in question.

TABLE XXIV

Comparative After-Tax Rates of Return on Stockholders' Equity for Selected Firms: 1953-77

Year	Anheuser-Busch	Schlitz	Pabst	Falstaff	Lone Star	Olympia
1953	12.51	N.A.	8.74	15.57	21.08	18.38
1954	11.29	N.A.	2.86	14.95	28.15	22.31
1955	6.97	N.A.	3.30	19.24	26.61	19.92
1956	8.18	N.A.	-1.12	16.24	25.13	19.98
1957	7.93	N.A.	-4.39	12.64	22.04	19.33
1958	8.44	N.A.	-3.88	12.46	19.66	19.04
1959	9.59	N.A.	1.82	14.47	16.95	19.52
1960	10.60	6.31	2.95	14.45	17.02	17.73
1961	9.85	4.94	6.74	13.19	15.24	18.3
1962	10.43	6.77	8.05	12.93	17.16	16.59
1963	9.12	8.77	9.57	12.61	15.60	15.38
1964	10.74	9.07	10.89	13.10	13.91	19.97
1965	13.04	9.80	12.39	9.50	18.61	20.54
1966	15.25	10.01	13.64	7.45	18.08	19.29
1967	14.17	10.72	14.49	-1.17	18.88	19.01
1968	15.64	8.94	14.45	-1.66	17.93	15.97
1969	14.42	10.72	14.17	3.13	15.57	13.82
1970	17.45	13.96	13.28	2.33	13.60	9.52
1971	17.30	15.37	13.13	2.57	16.12	8.10
1972	15.65	14.86	13.09	-12.73	15.72	8.01
1973	13.09	18.80	10.54	-13.96	13.07	8.18
1974	11.90	15.54	8.19	-10.20	15.85	3.19
1975	14.27	9.46	8.81	-22.50	10.15	6.43
1976	8.96	13.99	12.54	18.59	---	9.18
1977	13.51	5.54	8.05	---	---	4.83
Weighted Average 1953-75 1/	13.23	11.91	9.58	6.25	17.25	14.19
Weighted Average 1964-74	14.52	13.18	12.35	0.69	15.95	12.61
Weighted Average 1975-77	12.26	9.67	9.78	---	---	6.86

1/ Except Schlitz, which is 1960-75.

Source: Firm profit data are derived from Moody's Industrial Manuals. Data for 1976 are from Fortune 500, and Second 500 (Fortune), May and June, 1977. Data for 1977 are from SEC Forms 10K. Olympia's 1977 return was reduced by a litigation loss equal to 4.02 percent of stockholders' equity.

following 1964. Its weighted average rate of return for the period 1964-74 was 14.52 percent. Before 1964 Anheuser-Busch earned rates of return comparable to those for all manufacturing, though it was more profitable than the brewing industry as a whole. The same general pattern holds for Schlitz and Pabst, though prior to the mid-1960's they earned lower rates of return than Anheuser-Busch. All three firms earned higher rates of return than those recorded for all manufacturing for the period 1964-74. However, Anheuser-Busch's rate of return has declined since 1970, and Pabst's rate of return fell from 1967 to 1974. Schlitz experienced rising rates of return from 1968 to 1973, but it has been less profitable in the last three years.

What do the profits of the national brewers indicate? To some extent they may reflect uncapitalized advertising expenditures, but as we saw with the example of Schlitz, there is more to their profitability than the fact that returns to brand-name capital are not correctly measured. The above-normal profits were attributable either to other elements of market power or to the national firms' relative productive and distributive superiority. If the high profits that were reported in 1964-74 reflected market power, then the implication is that the national firms increased their relative prices. If all brewers had identical marginal costs, then the only way in which these brewers could have generated higher profits would have been for them to increase their prices. But the higher profits may have reflected more efficient operations. Here, the price of their

beer could remain constant or even fall while they generated higher profits due to lower costs of production.

Given the information we have on economies of scale and the age of various breweries, it is likely that the larger firms do have lower costs than some smaller brewers. Thus, the increase in the relative profitability of the larger brewers could be attributable to their lower costs in producing beer.

Lower production cost is not always the cause behind high profitability as the cases of Lone Star, a Texas brewer, and Olympia, located in the State of Washington, point up. Compared to the national brewers, both these firms are quite small. In 1973, for example, Lone Star sold 1.06 million barrels of beer while Anheuser-Busch sold 29.9 million barrels. Olympia sold 3.6 million barrels in 1973 and prior to 1968 it had never sold more than 3 million barrels. Yet both Lone Star and Olympia generated dramatically high and persistent rates of return from 1953 to 1970. How could they outperform the large national brewers when neither firm was large enough fully to exploit plant-specific economies of scale or was taking advantage of multi-plant economies of scale? One possible answer is that these firms possessed a degree of market power which permitted them to raise their prices above marginal cost.

The source of their market power was probably geographical protection. 1/ Prior to 1966, Lone Star, Pearl, and Falstaff were the dominant purveyors of beer in Texas, and all three firms had Texas breweries. Anheuser-Busch and Schlitz, however, did not have any breweries in Texas. To compete with the Texas breweries Anheuser-Busch had to ship beer from St. Louis, its closest but oldest brewery and Schlitz's closest brewery was its old and small (annual capacity 500,000 barrels) Kansas City brewery. Given the relatively high cost of production in these breweries and the relatively high costs of shipping beer, the Texas brewers were afforded a degree of market protection from the national brewers since it was unlikely that it would have been profitable to engage in regional price competition on this relatively high cost beer. In 1966, however, Anheuser-Busch and Schlitz opened new breweries in Texas and Lone Star's market protection evaporated. Since 1967, Lone Star's rate of return has steadily declined. Thus, entry and increased competition caused an erosion in profits created in large part by the nature of the market.

The case of Olympia is analogous. Located in the sparsely settled Pacific Northwest, Olympia, too, seems to have been afforded a degree of market protection from the national brewers. However, the erosion in Olympia's profits coincides

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1/ Olympia's and Lone Star's advertising expenditures per barrel in major media have been less than those of the national brewers so it is unlikely that this was the source of their market power.

with Olympia's attempts to expand the area it serves rather than large-scale entry by national brewers. 1/ In the last six years Olympia has entered new States, especially in the Midwest, and this appears to have had an adverse effect on its profits. Recently, Olympia acquired Hamm, located in Minnesota, and Lone Star, in Texas, and this may be a response to a desire to reduce transportation costs.

Finally, we have the case of Falstaff. From 1953 through 1964, Falstaff reported above-normal returns and it, too, outperformed Anheuser-Busch. Since then it has had a disastrous record and in 1975 sold a 52 percent controlling interest to the owner of General Brewing Company of San Francisco. 2/ What is interesting about Falstaff is that it pursued a multi-plant strategy early on and was close to being a national brewer. However, Falstaff established multi-regional status by acquiring older, relatively small breweries rather than constructing new, large-scale breweries. During the 1950's the aggregate demand for beer was rather stable, and the national brewers, though expanding at that time, were not growing as rapidly as they would in the 1960's. It is in the 1960's when we observe the large expansion of the nationals' capacity and this coincides

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1/ Olympia's profits fell after 1967 but its California market share rose until 1970. No national brewer attained as much as 10 percent of the Washington market until 1974. See appendix A.

2/ Wall Street Journal, June 9, 1977.

with their increased growth. 1/ To expand rapidly, the national firms became more competitive with respect to price and this is one reason Falstaff's fortunes fizzled as did the fortunes of other brewers who had an increasingly difficult time competing with the national brewers. Another problem that Falstaff had was that its image approach failed, thus again indicating the difficulty some brewers have had in building and exploiting an image.

1. Coors--The Exception to the Rule

No discussion of the brewing industry would be complete without a reference to Coors, for the case of Coors defies the generalizations that have been made about the brewing industry. Coors produces all its beer in one brewery and in 1976 that amounted to 13.7 million barrels, making it the largest brewery in the Nation.

In 1976 Coors sold beer in 12 States and was the leading seller in 9 of the 11 States for which we have data. In Texas Coors was a close second, having just entered the southeast part of the State. Coors was a new entrant in Montana in 1976. In Oklahoma it had two-thirds of the market in 1976. 2/ Because it operates out of a single brewery, it must ship its beer great distances--on average, a barrel is shipped 1,000 miles.

1/ In 1973, 53 percent of Schlitz's rated capacity had been added since 1966, whereas for Anheuser-Busch the figure was 41 percent.

2/ The data that follow are derived from Coors' Prospectus (June 10, 1975).

In addition, this beer is shipped chilled, thereby raising its transportation costs even higher. On top of all this, its production process is probably more costly than that of the national brewers since it uses a natural fermentation process lasting 70 days (as opposed to 20 days at Schlitz) and a special variety of barley which it has developed.

Where Coors does save money is on advertising. Coors' advertising expenditures per barrel in major media are much lower than those of any other brewer (see table XVII). This may help to explain why Coors has still been able to generate the high rates of return shown in table XXV, but it seems at odds with the popular belief that increasing sales and the establishment of premium prices require huge amounts of advertising--especially if one is to compete with the nationals.

Coors, with its large market shares in western States, is vulnerable there to the onslaughts of the nationals. At least

TABLE XXV

Coors' Rate of Return on Equity After Taxes

Year	Rate of return (percent)
1970	15.27
1971	16.46
1972	17.17
1973	14.60
1974	11.25
1975	14.10
1976	15.44
1977	12.22

Source: Coors' Prospectus (June 10, 1975); Fortune, May, 1976 and 1977, May 8, 1978.

in part because of a boycott which grew out of a labor dispute, Coors lost market share and volume in the Mountain and Pacific States in 1977. But Coors has a safety valve, its special "mystique" that travels far beyond its marketing territory. (Coors is available in some stores in the Washington, D.C., area for well over a dollar a six-pack more than other premium beers. Some people apparently buy it.)

Thus, should Coors need additional volume, it merely expands into another nearby State, where it can usually pick up 10 percent of the market within a year. Coors has recently moved into Montana, Washington, south Texas, and Nebraska. The entry into south Texas was spectacularly successful, giving Coors almost one-fourth of the large Texas market. Coors named Iowa distributors in late 1977. In 1978 it will expand into Missouri and the remainder of Washington, where it now sells only in the Spokane area. 1/ Coors' president recently stated, "We do want to go national if it makes sense financially. Sometime in the '80s, when we reach the 25-27 million barrel plateau in Golden, Colorado, we'll have to have another plant ready to go elsewhere." 2/

2. Miller--A New Phenomenon Stirs Up the Industry

The story of Miller has often been told, and will only be briefly outlined here. While Miller has been nationally distributed for many years, its share of national barrelage ranged

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1/ Mason City, Iowa, Globe-Gazette, Nov. 19, 1977.

2/ Beverage World, Nov., 1977, p. 134.

from 2.5 to 3.5 percent until 1965, while the other nationals were steadily increasing their shares. 1/ Furthermore, as can be seen from table XXVI and appendix A, Miller's market share varied extremely little (compared with other brewers) both among States and over time within individual States.

In September 1966, W. R. Grace, a conglomerate, acquired 53 percent of Miller. From 1966 to 1969, Miller's sales climbed substantially and its share of national barrelage rose to almost 4.5 percent. 2/ In June 1969, Grace sold its interest in Miller to Philip Morris for $130 million, making a reported net gain of $54 million. 3/ In July 1970, Philip Morris acquired the remaining 47 percent of Miller for $97 million in cash and notes. During the first few years after the acquisition, Miller's barrelage stagnated and its national sales share dropped somewhat. But starting in 1973 Miller's sales grew rapidly, at a rate exceeding 40 percent per year in 1975 and 1976. In 1976 Miller moved into third place ahead of Pabst. In 1977 Miller's sales rose 31.6 percent, to 24.2 million barrels, while Anheuser-Busch sold 36.6 million barrels, exceeding its pre-1976 sales, but not quite recovering its share

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1/ Table VIII.

2/ Table VIII.

3/ Moody's Industrial Manual, 1972.

of national barrelage. 1/ Much of this has been at the expense of Schlitz, which reported a 60 percent fall in net income as sales dropped to 22.1 million barrels. 2/ According to Philip Morris' 1976 SEC Form 10K, Miller intends to have enough capacity by 1981 (about 40 million barrels per year) to be able to challenge A-B for the Number One spot.

It is true that Philip Morris is a very profitable enterprise, averaging 17-18 percent return on equity in the 1970's, and that it had substantial marketing expertise in consumer products. It is also true that Miller's competitors derive all or almost all their sales from beer. But it does not follow that acquisition by a profitable consumer products conglomerate is a guarantee of success in the beer industry. For example, Carling National was part of Carling-O'Keefe, a Canadian brewer which is in turn controlled by Rothmans of Pall Mall Canada, Ltd., primarily a tobacco company. "Subsidized by a very profitable Canadian brewing operation, Carling vaulted from 53rd place in the U.S. beer market to fourth in 1960. But, after deducting interest on the money its parent was providing, Carling was not making a profit in those years of growth. Now Carling languishes in 11th place

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1/ Advertising Age, Jan. 23, 1978; and Wall Street Journal, Feb. 8, 1978, p. 26.

2/ Wall Street Journal, Feb. 3, 1978, p. 14.

after losing $9 million last year." 1/ Inspection of Carling-O'Keefe's Form 10K reveals that its U.S. beer operations have lost money quite consistently in the last five years. In 1975 Rothmans took a $71.5 million writeoff on its share of Carling-O'Keefe. In December 1977, Carling-O'Keefe sold Carling National, taking an $11.5 million loss. 2/

Heublein, Inc., bought Hamm in 1965 for $62 million in preferred stock. During the years that Heublein owned Hamm, Heublein's return on shareholders' equity was substantially higher than the average for all manufacturing. Yet Heublein ended up selling Hamm in late 1973 for $6 million.

Intensive advertising is often said to be the reason for Miller's recent success. But, as we have seen, the connection between measured media advertising expense per barrel and sales or market share is not exact. Advertising cost per barrel for A-B, Schlitz, and Pabst peaked in 1963 or 1964 and generally declined through 1974, while their shares of national barrelage rose fairly continuously. Miller's advertising cost per barrel increased after 1965, and by the early 1970's it was spending more than twice as much per barrel as the other nationals. Yet its share of national sales grew very little in this period. Miller's post-1972 rapid growth actually coincides with a drop in its advertising cost per barrel. 3/ This is

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1/ Business Week, November 8, 1976, p. 61.

2/ Wall Street Journal, January 26, 1978, p. 14.

3/ Table XVII.

not to suggest that advertising has had little to do with Miller's success. Rather, it is to suggest that all advertising dollars do not produce equal results, and that successful marketing is more than just spending a lot of money on advertising.

Miller's success has often been ascribed to its application of modern marketing strategies in an industry which has often been described as being rather backward in this area. 1/ Philip Morris discovered that Miller, long promoted as the "Champagne of Bottle Beer," was being purchased mainly by women and perhaps "conspicuous consumers," and thus had many customers who drank relatively little beer. This probably explains its small and relatively constant market share through time and among the various States. Miller was simply not attracting the big beer drinkers, who everyone knew were young men. Once this was realized, Miller had an opportunity to go after the big beer drinkers, and it had some advantages in doing so. For one, it already had national distribution. Secondly, it was able to do some fresh thinking about how to attract the big beer drinker. Most beer advertising stressed the quality of the beer, the water 2/ or other ingredients, the brewing

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1/ See, for example, Charles G. Burck, "While the Big Brewers Quaff, the Little Ones Thirst," Fortune, November 1972; and "Miller's Fast Growth Upsets the Beer Industry," Business Week, November 8, 1976, p. 61.

2/ Too much reliance on the virtue of the special water can limit a brewer's geographic market. It would seem that as long as Coors promotes Rocky Mountain Spring Water it would be unlikely to open a brewery in the East.

process or the tradition of brewing excellence. The new Miller ads began to feature young people in outdoor action, work and play scenes: high-steel construction work, killing a blowout in an oil well, riding dune buggies, etc.

Miller's sales began to take off with the introduction of Lite in 1975. The nature of the marketing effort, as described above, seems to have been at least as much responsible for the success of Lite as was the size of the advertising budget. Although nearly every major competitor has now introduced a low-calorie beer, Lite still commands 60 percent 1/ of that segment and accounts for about one-third of Miller's sales. More recently, Miller has begun U.S. production and heavy promotion of Lowenbrau, and is selling it at a much higher price than Tuborg, the famous Danish beer now made in the U.S. by Carling National. It is too early to tell whether Lowenbrau will be successful. On the basis of very limited data, it seems likely that Tuborg outsold Lowenbrau in 1977 and that Lowenbrau sales were dwarfed by those of Michelob. 2/

As can be seen from table XXVI, Miller's greatest gains have been in the South and New England, where it has captured over 20 percent of the market. In New England, this growth has come primarily at the expense of Schlitz and the regionals. In the South, Miller has taken as much or more of its market

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1/ Oppenheimer and Company estimate, quoted in New York Times, August 7, 1977.

2/ See Beer Statistics News, Dec. 1977.

TABLE XXVI

Miller Market Share by State, Selected Years
(percent)

:e	1977	1976	1973	Previous high	Previous low
)ama	31.9	21.1	7.1	8.9	6.4
.ona	8.8	7.9	3.5	3.4	3.2
ınsas	29.4	23.7	4.3	4.5	2.5
fornia	8.0	6.8	3.7	4.2	2.8
)rado	9.0	7.3	2.8	5.5	2.7
ida	17.6	16.3	6.1	7.9	5.5
gia	28.2	19.8	5.7	5.8	4.4
o	4.2	3.5	1.1	1.4	0.9
nois	N.A.	N.A.	9.5	6.3 1/	4.7
ana	19.5	14.9	4.2	4.6	2.8
	7.4	5.1	6.8	4.7	3.8
as	9.4	7.2	2.9	2.5	1.8
ucky	N.A.	N.A.	N.A.	2.5	0.9
siana	34.3	24.7	5.7	3.8	1.7
e	18.8	13.3	3.8	4.2	1.2
land	19.9	20.1	8.2	4.6	1.6
achusetts	25.9	18.9	6.1	5.5	2.6
igan	21.0	15.9	2.8	3.1	1.7
issippi	31.8	20.2	3.2	4.9	2.4
ouri	14.2	11.7	6.7	6.5	3.6
ana	8.1	7.6	2.1	2.3	0.9
aska	13.7	9.5	2.9	3.7	2.6
Hampshire	24.6	18.2	5.0	5.3	1.9
Mexico	4.9	4.3	2.5	4.4	2.0
h Dakota	14.7	8.5	1.6	2.9	1.1
homa	14.6	12.1	2.1	2.7	1.6
on	15.7	6.2	1.8 2/	N.A.	N.A.
e Island	26.6	21.0	5.3	3.5	1.7
h Carolina	24.8	21.7	5.5	6.5	3.5
h Dakota	24.8	17.3	2.4	2.6	1.8
essee	26.8	18.6	3.7	3.2	2.6
s	10.5	8.6	3.1	3.6	2.7
	3.6	4.6	3.6	5.9	1.6
ont	16.0	11.1	5.3	6.7	1.4
ington	7.5	6.3	2.6	2.3	2.1
onsin	6.3	5.2	5.5	8.8	3.8
ing	8.3	5.7	1.6	4.2	1.5

- Not Available.

After 1970 Miller's share rose to about 10 percent due to the acquisi-
of Meister Brau.

Actually 1974. Data are not available for Oregon before 1974.

:e: Appendix A.

share from A-B, Pabst, and Schlitz as it has from the regionals. This may simply reflect the fact that the nationals had higher market shares in the South in 1973 than they did in New England. It is interesting that Miller has been relatively unsuccessful closest to home--in Wisconsin and Iowa.

3. Heileman

While much attention has been focused on the growth of the 5 largest brewers and the difficulties faced by the smaller firms, the rapid growth and profitability of Heileman have gone relatively unnoticed. As can be seen from table XXVII, Heileman's net sales doubled from 1972 to 1976, and it has been consistently more profitable than the average for large brewers. In 1977 Heileman posted a 24.6 percent increase in sales over 1976, while net income rose 28.4 percent. Forbes 1/ predicted that Heileman would be the sixth largest brewer in 1977. Forbes attributed Heileman's success to smart marketing and sharp acquisitions. Heileman has the largest network of distributors in the industry, and the distributors have a variety of labels to push. In the last 10 years Heileman has made 5 major acquisitions which have enabled it to double capacity cheaply. "Brand-new capacity costs $40 a barrel to build; Heileman bought Rainier for $4.25 a barrel--in effect, getting its name and distribution free." 2/

1/ "Sing No Sad Songs for Heileman," Forbes, Oct. 1977, p. 51.

2/ Ibid.

TABLE XXVII

Year	Heileman net sales ($ millions)	Heileman return on equity	Large brewers' 1/ return on equity
1977	$265.2	22.8%	N.A.
1976	211.4	21.7	12.6%
1975	171.2	13.3	11.4
1974	145.2	12.3	10.8
1973	137.1	16.4	12.5
1972	107.9	17.8	12.3

1/ Weighted average of A-B, Schlitz, Pabst, Coors, Olympia, Schaefer, Falstaff, and Heileman.

Source: Fortune 500, 1973-78; Second 500 (Fortune); SEC Form 10K.

V. A Summary and the Future of the Brewing Industry

A. Summary

Let us summarize what we have learned about the brewing industry. Since World War II, there has been a significant structural change in the brewing industry, as reflected by the fact that the national concentration ratio has more than doubled and from 300 to 350 firms have exited the industry. The cause of this structural transformation can be traced to changes in demand and supply conditions.

With respect to changes in demand, we saw that following World War II the aggregate demand for beer stopped growing and even declined a number of years in the 1950's and early 1960's. In addition to this, there was a shift from darker, strongly flavored beers towards lighter beers, and consumption of packaged beer increasingly replaced consumption of draught beer in taverns. These demand changes alone were enough to encourage the exit of marginal firms from the industry. In addition, the lack of growth of the aggregate demand for beer seems to have made most brewers pessimistic about the future of the industry. As this pessimism crept into their cost-benefit analyses, few were left with the desire to adapt to the changing conditions.

On the supply side, we have observed two influences contributing to the increase in concentration. First, starting in the late 1940's and continuing to the present, a number of brewers started to realize multi-plant economies of scale

either by acquiring existing plants of other brewers or, as in the case of the national brewers, by constructing new breweries. Economies from multi-plant operation were in the form of savings in transportation costs and advantages from advertising on a national basis. The realization of these multi-plant economies led to an increase in the optimal firm size.

In the 1960's, a number of technological innovations were introduced which increased the optimal plant size. Those brewers who were constructing breweries rather than acquiring them were in a better position to incorporate these technological innovations which reduced production costs significantly. These advantages, plus those from multi-plant operation, led to the ascendancy of the national brewers. Firms that have relied solely upon multi-plant economies of scale or plant-specific economies of scale have generally seen their relative position in the brewing industry deteriorate. One exception to this is Coors, but one could argue that if Coors were to develop a multi-plant network it could do even better than it has.

Judging by the evidence that has been presented, performance has not deteriorated; in fact, it appears to have been quite good. This assessment is based on the evidence of industry and firm profits and prices. Industry profit rates generally increased from 1956 to 1971, but this reflected the gradual adjustment of the industry to changing demand and supply conditions. Given the extent of the transformation

which has taken place, it would hardly seem that the adjustment process was too slow, especially when we acknowledge the costs of adjustment in the real world. The rise in industry profit rates (which were below the average for all manufacturing in the period 1950-70), and the reduction in the difference between all manufacturing and brewing industry profit rates suggest that the industry in the early 1970's was approaching a new equilibrium. There is no evidence that increasing national concentration has led to above-normal industry profit rates as oligopoly theory 1/ suggests would occur. Our confidence that the industry has performed well is increased by evidence that shows the price of beer has increased less rapidly during most of the post-war period than the consumer price index for all items and the index for alcoholic beverages.

The national brewers have also performed well. They have generally earned above-normal profits from 1965 up to about 1974, but the source of these profits appears to have been superior efficiency on their part. 2/ We were led to this

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1/ See, among others, George Stigler, "A Theory of Oligopoly," Journal of Political Economy, Vol. LXXII, No. 1 (February 1964).

2/ The persistence of the above-average profit rates since 1965 is attributable in good part to the fact that the national brewers had a "head start" over other brewers in the adoption of technological innovations and in the development of a premium image. Implicit here is the notion that the sources of the national brewers' profits have not been fully capitalized on the balance sheet.

conclusion by evidence showing that the relative price of their beer (relative to the composite industry price of beer) has fallen. In addition, the significant increase in the relative profitability of Anheuser-Busch and Schlitz corresponds to the period in which they brought on stream a high proportion of their existing capacity. As we noted, in 1973, 53 percent of Schlitz's rated capacity had been added since 1966 while for Anheuser-Busch the figure was 41 percent.

We have seen that the industry as a whole was thrust into a state of disequilibrium and that some firms--in particular the national brewers--managed to adapt to changing conditions quite well. Today, it seems obvious that the strategies they pursued in the 1950's and 1960's would succeed and the question that arises is why other brewers failed to imitate their strategy of developing a premium image and building a national network of modern regionally-decentralized breweries.

A number of answers to this question have been suggested. Some people have advanced a sociological explanation based on the fact that many breweries were (and still are) controlled by families who thought of brewing as "more than a business venture"; i.e., it was a way of life. This may be, but many of the successful brewers are controlled by families. For example, Anheuser-Busch, Schlitz, Coors, and Olympia are still controlled and run by families of the original founders.

Another answer is of an institutional nature. It is said that the existence of outdated union work rules has hindered

the adoption of technological improvements that would have permitted brewers to take advantage of plant-specific economies of scale. 1/ For example, some rules specify that a specific number of employees must be assigned to a particular task. It makes little sense to adopt new methods of production if many of the inherent advantages in so doing are nullified by restrictive work rules. The national brewers have avoided problems like this in their new breweries since the work rules established for them are designed for the new production and packaging processes.

One explanation for the lack of imitation can be found in the effects that industry demand conditions had on decision-making. Not everyone back in the mid-1950's foresaw the day when industry demand would start growing again, and few of those who did had the willingness to take a chance based on the belief that industry demand would grow once the crop of war babies began to mature in the 1960's. The president of Olympia Brewing Company testified that most firms simply did not foresee the future trends and, hence, did not take steps to expand and modernize their production processes. He attributed the success of the national firms to their superior foresight and their willingness to act on their convictions. 2/

1/ See Falstaff's Annual Report (1969).

2/ Federal Trade Commission Investigative Hearings (Olympia), August 8, 1974, pp. 163-165.

That the national brewers were pursuing a profitable strategy was not obvious until the late 1960's. In the 1950's, when the nationals were in the initial stages of expansion, competitors were predicting disaster for the national brewers due to the poor trend in sales and the large amount of debt they were incurring in order to expand. 1/ For example, in 1955 Anheuser-Busch had 9 million barrels of capacity, but sold just 5.6 million barrels. In 1958, Pabst was close to going bankrupt. Thus, there was a considerable lag between the time the national brewers began expansion and the time it became obvious that they were doing something right. This works against quick imitation. Now that it is obvious the nationals have been doing something right, we do see indications that other firms are imitating their strategies. Miller has started an expansion program which will increase its capacity to nearly that of Anheuser-Busch in a few years. Olympia has acquired Hamm and Lone Star in an effort to move eastward and serve a larger market. Coors went public in order to raise capital. So there is evidence of imitation--now that the results are in.

One might be tempted to argue that the firms that expanded and modernized their operations were able to do so because they were "giants" and had access to superior financial resources. But back in the late 1940's when this expansion first started

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1/ "Budweiser Pulls Ahead," Forbes, March 1968, pp. 28-35.

the national firms were not "giants" in comparison to other brewers; in fact, there were other brewers--e.g., Ballantine--who were approximately the same size as Schlitz and Anheuser-Busch at that time. Today the national brewers have relatively superior financial resources, but these are the result of having made the right decisions, not the cause behind their success.

B. The Future of the Brewing Industry

The readjustment process that we have studied is still going on and concentration will probably continue to increase as additional firms exit the industry. By mid-1976, there were fewer than 50 active brewing companies in the United States. 1/ In addition, there are at least 25 to 30 brewers whose longrun chances of survival are probably quite low. Elzinga found that over the period 1958-72, the average plant capacity of discontinued breweries was 345,000 barrels per year. 2/ Midway through 1976 there were still 21 brewers with capacities less than this. Many of these have a high percentage of excess capacity and have been suffering steady declines in their annual sales.

It might be thought that this will have an important impact on industry structure and hence competition. However,

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1/ See appendix B.

2/ Elzinga, "The Restructuring of the U.S. Brewing Industry," op. cit., pp. 108-111.

the demise of all these brewers would have an almost imperceptible effect on the measured 4-, 8-, or 20-firm national concentration ratio. During 1976 the 21 brewers with capacities less than 350,000 barrels has total capacity of just 1.6 percent of the total industry capacity. 1/ Thus, the maximum amount that 4-firm national concentration would rise as a result of the exit of these small firms is less than 2 percentage points, even though their demise would represent the loss of 43 percent of the number of brewers. As we have emphasized, the industry is characterized by regional markets so that changes in national concentration do not necessarily imply anything about changes in competition in regional markets. However, very little information is available about the competitive impact of these small firms. A majority of them are located in States which do not divulge market share data. In the States for which we have data, the only firm in this group which is listed is Dixie, with slightly over 3 percent of the Louisiana market.

The growth of total capacity in the past few years has thrown the industry back out of the equilibrium it appeared to have reached in the early 1970's. The result has been lower profits for most firms, and the disappearance of the weaker ones will probably happen sooner than most people expect. The huge expansions of capacity to come on line in the next few

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1/ Calculated from data in appendix B.

years promise to bring even more pressure on the profits of most firms. Various persons have estimated that the top 5 firms will increase their share of national barrelage from about 70 percent now to almost 90 percent in the 1980's. 1/

It is at this point that some wonder if the implications of oligopoly theory will become relevant. That is, given the high concentration that is expected, the possibilities of coordinated behavior among the firms may become much higher. There are a number of reasons why this writer thinks the industry will continue to behave competitively, despite the higher level of concentration.

First, people are talking about the Big Five, not the Big Three, and one of these firms, Miller, has expressed the determination to be Number One. This in itself does not augur well for an era of coordination and cooperation.

Second, despite all the effort directed toward product differentiation, it is not apparent that consumers of beer display a great deal of brand loyalty. The growth of Miller itself and the record of large changes in market shares in many States are evidence of this.

Third, there are a number of strong firms in the industry other than the top five. Olympia, having acquired Hamm and Lone Star, appears to be moving toward national distribution.

1/ See Business Week, Nov. 8, 1976, p. 59.

Heileman is expanding westward with the acquisition of Grain Belt and Rainier and has been able to compete profitably with A-B, Schlitz, Pabst, and Miller right in their own backyards. Several regional brewers have expanded their operations to the point where they can begin to exploit some of the plant-specific economies of scale that the larger firms have been taking advantage of. These include companies like Stroh and Genesee. These firms have survived the restructuring process so far, and they are strong regional competitors who are unlikely to exit the industry. (Schaefer's 5-million barrels-per-year plant was completed in 1972. However, Schaefer's sales declined in 1976 and 1977.) And a number of the smaller companies will probably be able to survive for one or more of the following reasons: local loyalty, exceptional knowledge and responsiveness to local tastes and conditions, low transport costs and low advertising costs associated with serving a small market, excise tax breaks 1/, possible advantages in negotiating with labor in order to keep a small business alive, or finding a

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1/ U.S. Public Law 94-529, signed Oct. 17, 1976, grants a $2 per barrel federal excise tax reduction on the first 60,000 barrels to brewers who produce less than 2 million barrels per year.

special niche in the market. A few examples might include Latrobe, Pickett of Dubuque, Iowa, Spoetzl (Shiner) of Texas 1/ and, at least at last report, the Nation's smallest brewer, Steam Beer of San Francisco.

Fourth, the continued growth of the large companies will increasingly require that they grow at the expense of each other, rather than at the expense of the smaller firms as they did in the past. In fact, this process is already well under way as a result of Miller's rapid expansion. As was noted above, Miller's greatest gains (among those States for which we have data) have been in New England and the South. While the gain in New England was mainly at the expense of the smaller companies, the New England market share of Schlitz has slipped by about five percentage points since 1973. In the South, A-B, Schlitz, and Pabst had higher shares in 1973 and have all suffered serious setbacks in one or more of those States. Some examples are shown below.

1/ Texas gives any brewer producing less than 60,000 barrels per year a 25 percent break on the $5/per-barrel State excise tax. Shiner's rated capacity is 60,000 barrels (appendix B). Pickett has been granted a break on the Iowa excise tax.

State	Brewer	Market Shares (percent) 1977	1973
Alabama:	A-B	24.4	27.9
	Schlitz	26.9	34.6
Arkansas	A-B	31.3	38.2
	Schlitz	28.3	42.4
Florida:	A-B	49.7	54.7
Georgia:	A-B	26.8	28.9
	Schlitz	23.7	29.5
	Pabst	12.9	21.0
Maryland:	Pabst	20.2	26.7
Mississippi:	Schlitz	35.0	51.8
South Carolina:	Pabst	12.4	25.6
Louisiana:	A-B	16.5	20.0
	Schlitz	32.1	39.9
Tennessee:	A-B	28.7	32.1
	Schlitz	14.1	20.0
	Pabst	13.1	20.8

A-B increased its sales in California greatly in 1977, largely at the expense of Coors. Schlitz and Pabst appear to be increasing their penetration of markets in the western half of the country, where Coors has long been dominant. Coors has responded by entering new States, and can be expected to continue its geographical expansion. Other recent events indicate the effects of this competitive pressure within the top five firms. These include the replacement of the president of Schlitz in the wake of falling sales and profits, and an attempted takeover of Pabst by a much smaller firm.

Fifth, it is generally agreed that increased concentration will not necessarily lead to higher profits (through tacit or explicit collusion) if entry barriers are not high, because in the absence of high barriers to entry, high prices will

attract more competitors. It could be argued that a modern, most efficient scale brewery takes several years to build and may cost hundreds of millions of dollars. This is true, but it does not imply that entry into brewing will be difficult in the 1980's. The reason this is so is that building such a new plant is not the only way to enter the industry should prices and profits rise. If the demand and capacity projections noted above are at all near correct, the landscape should be littered (if it is not already) with shutdown breweries and idle employees. Breweries have long lives and can be purchased for much less than the cost of new plants.

Apparently, the price can be as low as 10 percent of the cost of new capacity. 1/ Thus, as long as the operating cost of an old brewery is not excessively higher than that of a new one, entry is feasible merely by acquiring a shutdown plant at a low price. 2/ Heileman appears to be the leading expert in this type of operation, but there are other examples. Pickett acquired an old brewery in Dubuque and is reportedly enjoying increasing sales. The Peter Hand brewery in Chicago has been

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1/ "Sing No Sad Songs for Heileman," Forbes, Oct. 1, 1977, p. 51.

2/ One might ask why the plant was shut down if the operating cost was not excessively high. The reason most likely would be declining sales. The acquiring firm would use the plant to produce brands with greater consumer acceptance. Alternatively, the acquiring firm may modernize or cannibalize the plant.

reopened. This was the brewery from which Miller acquired the Meister Brau Lite Label, which was to figure so importantly in Miller's growth.

Finally, the production process has become very capital-intensive since World War II, implying that fixed costs have increased relative to variable costs of production. This characteristic of the production process may work against coordinated behavior since any loss of sales by one firm is more likely to cause it to deviate from agreed-upon prices in order to maintain production at full capacity. The opportunity cost of excess capacity is higher the more important fixed costs are relative to variable costs.

APPENDIX A

Brewers' Market Shares in Various States

All 1974-77 data in this appendix are from Beer Statistics News, by permission. 1974 figures are actually December 1973, through November 1974. Data for earlier years were supplied by Carling and Lone Star. Certain States do not divulge the information on which these data are based; thus, those States are not represented in this appendix.

Alabama

Brewer	1977	1976	1975	1974	1973	1972	1971	1970	1969	1968	1967	1966	1965	1964	1963	1962
Schlitz	26.9	35.1	34.5	35.8	34.6	32.6	27.7	24.6	21.8	20.1	17.8	17.1	16.4	16.4	16.7	13.5
A-B	24.4	22.4	28.9	29.6	27.9	27.2	27.3	26.6	23.7	26.4	25.0	23.8	22.3	20.7	21.1	24.2
Pabst	7.6	11.1	9.9	9.5	10.8	11.4	13.0	13.2	12.4	11.8	11.5	10.1	9.1	8.2	7.2	7.1
Heileman	—	—	—	—	2.3	2.9	3.1	4.1	5.2	5.4	0.3	0.3	0.3	—	—	—
Miller	31.9	21.4	14.2	8.8	7.1	6.4	7.1	8.2	8.9	8.5	8.2	7.5	7.0	6.6	7.1	7.8
Falstaff	—	—	—	—	6.5	8.8	10.5	12.4	16.2	18.0	21.1	21.9	23.7	24.5	24.2	23.2
Pearl	2.4	3.2	2.6	—	4.0	4.1	4.3	4.3	4.1	2.9	2.6	2.5	2.3	2.4	2.3	2.0
National	—	—	—	—	3.9	4.1	3.9	2.9	2.0	1.3	1.0	0.9	0.8	0.9	0.2	—
Jackson	—	—	—	—	0.5	0.7	0.8	1.1	1.3	1.6	1.9	2.4	3.1	3.2	3.4	3.6
Champale	—	—	—	—	0.5	0.4	0.4	0.5	0.4	0.4	0.4	0.5	0.6	0.7	0.6	0.7
Carling	—	—	—	—	0.2	0.4	0.5	0.7	1.1	1.2	1.7	2.2	2.3	3.4	3.9	3.9
Burger	—	—	—	—	0.1	0.5	0.8	0.9	1.3	1.4	1.7	2.0	2.3	2.3	2.5	2.8
C. Schmidt	—	—	—	—	0.1	0.1	0.1	0.1	0.2	—	—	—	—	—	—	—
Stegmaier	—	—	—	—	—	—	—	0.2	1.0	0.4	—	—	—	—	—	—
Van Munching	—	—	—	—	—	—	—	0.1	0.1	0.1	—	—	—	—	—	—
All Others	6.8	6.8	9.9	16.3	—	—	—	—	—	—	—	—	—	—	—	—
Concentration:																
Top 4	90.8	90.0	87.5	83.7	80.4	80.0	78.5	76.8	74.1	76.3	75.4	72.9	71.5	69.8	69.2	68.7
Top 8	—	—	—	—	97.1	97.5	96.9	96.3	94.3	94.7	89.9	87.8	86.2	85.4	86.1	86.1

1962-73 Packaged only.

Arizona

Brewer	1977	1976	1975	1974	1973	1972	1971	1970
Coors	40.9	44.2	41.9	43.1	42.7	40.9	40.3	37.9
A-B	25.2	20.3	26.3	29.2	26.3	27.5	26.9	30.1
Schlitz	10.5	12.0	9.7	7.6	8.3	8.0	8.2	10.6
Hamm 1/	7.6	6.9	6.8	8.4	4.9	6.3	5.8	2.3
Falstaff	--	--	--	--	3.8	3.4	3.7	4.5
Miller	8.8	7.9	5.6	4.4	3.5	3.4	3.2	3.2
Olympia	--	--	--	--	3.5	3.0	2.9	2.9
National 2/	2.3	1.9	1.8	2.0	2.8	3.4	2.7	3.0
General	--	--	--	--	1.3	1.6	2.4	2.2
Pabst	2.4	3.2	4.1	1.6	1.1	0.9	1.2	0.9
Heileman	--	--	--	--	0.9	0.7	--	--
Walter	--	--	--	--	0.2	0.9	--	--
Grain Belt	--	--	--	--	0.2	0.1	3.4	--
Pearl	--	--	--	--	0.1	0.1	--	--
Carling	--	--	--	--	--	0.02	0.1	--
All Others	2.3	3.6	3.9	3.5	--	--	--	--
Concentration:								
Top 4	85.4	84.4	84.7	88.3	82.2	82.7	81.2	83.1
Top 8	--	--	--	--	95.8	95.9	93.7	94.5

Packaged only 1970-73.

1/ Includes Olympia 1974-77.

2/ Includes Carling 1974-77.

Arkansas

Brewer	1977	1976	1975	1974	1973	1972	1971	1970	1969	1968	1967	1966	1965	1964	1963	1962
Schlitz	28.3	35.4	38.3	39.4	42.4	43.6	40.8	38.6	34.2	29.1	23.1	23.0	22.0	22.1	22.7	18.2
A-B	31.3	29.8	37.6	41.7	38.2	37.8	39.3	37.9	37.9	41.4	40.9	38.3	35.7	35.1	35.2	39.1
Miller	29.4	23.5	13.9	7.5	4.3	2.5	2.8	3.2	3.7	3.9	4.5	4.4	4.0	3.6	3.5	3.7
Pabst	4.2	4.3	3.6	3.2	3.5	3.5	4.3	3.9	4.6	4.4	4.8	4.9	5.1	4.9	4.9	4.9
Falstaff	--	—	—	—	3.3	5.2	5.1	6.8	8.3	9.3	13.6	15.2	17.7	19.0	20.8	23.3
Pearl	—	—	—	—	2.0	1.8	1.8	2.2	2.6	2.7	2.7	2.5	2.6	2.7	2.3	1.8
Lone Star	—	—	—	—	0.8	0.9	0.9	1.1	1.6	2.1	2.7	3.2	2.3	1.2	1.0	0.8
National	—	—	—	—	0.5	0.3	0.3	0.4	0.4	0.5	0.5	0.2	0.4	1.4	—	—
Heileman	--	—	—	—	0.5	0.2	0.2	0.7	1.1	0.8	--	—	—	—	—	--
Jackson	—	—	—	—	0.4	0.3	0.5	0.7	1.0	1.1	1.5	1.7	2.1	1.6	1.6	1.8
Hamm	--	—	—	—	0.4	—	0.2	0.2	—	—	—	—	—	—	—	--
Champale	—	—	—	—	0.2	0.2	0.2	0.3	0.2	0.3	0.2	0.1	0.1	0.1	0.1	0.1
Walter	—	—	—	—	0.1	0.1	0.1	0.2	0.3	0.4	0.4	0.7	0.6	0.6	0.6	0.2
Hans Holter	—	—	—	—	0.1	—	—	—	—	—	0.1	—	—	—	—	—
Carling	--	—	—	—	2.9	3.1	—	—	—	—	—	—	0.3	0.1	—	--
All Others	6.8	7.0	6.7	8.2	—	—	—	--	--	—	--	--	—	—	—	—
Concentration:																
Top 4	93.2	93.0	93.3	91.8	88.4	90.1	89.5	87.2	85.0	84.2	82.4	81.4	80.5	81.1	83.6	85.5
Top 8	--	—	—	—	97.4	98.4	95.5	94.4	93.3	94.0	93.8	93.2	91.5	90.2	92.0	93.6

Packaged only 1962-73.

California

Brewer	1977	1976	1975	1974	1973	1972	1971	1970	1969	1968	1967	1966	1965	1964
Coors	30.2	35.8	35.9	40.3	40.5	37.8	34.9	30.1	27.5	23.2	20.0	17.5	16.6	16.3
A-B	31.1	21.8	24.3	20.7	18.3	15.7	13.6	13.9	11.6	13.7	12.8	12.7	12.9	11.0
Olympia	10.5	11.2	12.0	16.0	11.2	12.2	12.9	15.7	17.5	16.7	15.9	15.0	14.0	12.1
Hamm 1/	—	—	—	—	6.6	9.5	6.9	7.7	8.3	9.1	10.3	11.1	10.4	12.1
Schlitz	8.4	9.8	8.5	6.7	6.5	6.6	6.1	6.4	10.1	10.8	11.8	12.6	11.8	11.3
General	3.9	5.7	5.7	—	5.0	6.0	4.1	4.5	5.6	6.9	8.7	10.1	10.2	11.3
Miller	8.0	6.8	5.3	5.1	3.7	3.8	4.2	4.1	4.1	3.7	3.4	2.8	3.3	4.2
Pabst	2.8	4.0	4.0	2.2	1.9	2.7	3.4	3.6	4.3	4.6	5.2	5.6	6.3	6.0
Falstaff	—	—	—	—	1.7	1.6	0.9	1.1	1.5	2.0	2.4	3.0	3.3	—
National 2/	—	—	—	—	1.1	1.1	1.2	1.2	1.2	1.2	—	1.0	0.7	—
Carling	—	—	—	1.6	0.7	0.2	0.1	0.2	0.2	0.1	—	—	—	—
Pearl	—	—	—	—	0.5	0.6	0.7	0.8	—	—	—	—	0.9	—
Heileman	—	—	—	—	0.5	0.4	—	—	—	—	—	—	—	—
Blitz	—	—	—	—	0.4	0.4	—	—	—	—	—	—	—	—
Rainier	—	—	—	—	0.3	0.3	—	—	—	—	—	—	—	—
All Others	5.2	4.9	4.4	7.5	—	—	—	—	—	—	—	—	—	—
Concentration:														
Top 4	80.2	78.6	80.7	83.7	76.6	75.2	68.3	67.4	66.7	64.4	60.5	57.8	55.3	51.8
Top 8	—	—	—	—	93.7	94.3	86.1	86.0	89.0	88.7	88.1	87.6	85.5	81.9

1/ Included in Olympia 1974-77.

2/ Included in Carling 1974-77.

Colorado

Brewer	1977	1976	1975	1974	1973	1972	1971	1970	1969	1968	1967 1/	1966 1/	1965 1/	1964 1/
Coors	44.5	48.4	47.0	47.1	45.6	44.8	44.6	43.0	45.8	46.5	50.0	48.5	50.0	50.6
A-B	26.4	21.3	23.8	23.8	23.2	23.3	23.9	21.4	17.3	16.9	14.2	13.5	12.2	10.5
Schlitz	8.3	9.9	10.3	9.8	10.9	11.6	12.4	13.9	12.9	11.5	9.4	9.0	7.5	7.9
Olympia	5.3	6.9	7.2	8.5	7.0	5.9	--	--	--	--	--	--	--	--
Falstaff	--	--	--	--	3.1	3.6	4.6	4.7	5.2	4.9	4.0	4.3	4.2	4.8
Miller	9.0	7.3	5.2	3.7	2.8	2.7	3.5	4.1	4.6	4.6	4.6	5.5	4.8	4.4
Hamm 2/	--	--	--	--	2.3	2.3	3.6	4.1	4.4	4.5	5.3	5.2	5.4	5.5
Walter	--	--	--	--	1.3	1.7	2.2	2.9	3.2	3.0	--	3.4	3.7	4.0
Pabst	2.4	2.2	1.6	1.0	0.9	0.9	0.8	1.0	1.0	0.9	--	--	--	--
National	--	--	--	--	0.6	0.6	0.9	1.0	1.0	1.0	--	0.9	0.9	--
Huber	--	--	--	--	0.5	0.9	1.0	1.2	1.3	1.3	--	--	--	--
Carling	--	--	--	--	0.6	0.5	1.0	1.3	1.5	1.2	0.8	1.0	1.1	1.2
Heileman	--	--	--	--	0.5	0.1	0.2	0.3	0.3	0.3	--	--	--	--
Pearl	--	--	--	--	0.2	0.2	0.3	0.3	0.4	0.4	--	0.7	1.0	1.1
Grain Belt	--	--	--	--	0.1	0.1	0.2	0.3	0.3	0.3	--	--	--	--
All Others	4.1	4.0	4.9	6.2	--	--	--	--	--	--	--	--	--	--
Concentration:														
Top 4	88.2	86.9	88.3	89.2	86.7	85.6	85.5	83.0	81.2	79.8	78.9	76.5	75.1	74.5
Top 8	--	--	--	--	96.2	95.9	95.8	95.4	94.9	93.2	N/A	90.4	88.9	88.9

Packaged; Carling Market Reports, 1968-73.

1/ State data (not available for Carling).

2/ Included in Olympia 1974-77.

Florida

Brewer	1977	1976	1975	1974	1973	1972	1971	1970	1969	1968	1967	1966	1965	1964	1963	1962
A-B	49.7	41.8	55.1	58.5	54.7	54.4	52.8	51.9	47.3	48.4	43.4	40.2	35.6	32.4	30.2	31.2
Schlitz	18.2	23.5	19.5	19.9	22.0	20.9	19.1	17.5	16.3	14.9	15.6	15.0	16.2	16.3	16.4	16.2
Miller	17.6	16.3	10.3	6.3	6.1	5.5	6.2	5.7	6.4	6.8	6.9	6.9	6.9	6.8	7.2	7.9
Pabst	5.8	8.0	6.2	5.5	4.7	4.3	4.5	4.4	4.5	4.5	4.2	4.0	4.0	4.3	4.3	3.6
Falstaff	0.6	1.3	2.8	3.8	4.0	5.3	6.7	8.7	11.0	11.5	13.4	15.0	15.4	15.3	15.8	15.8
National	--	--	--	--	2.7	3.1	3.6	4.1	5.1	5.4	5.9	6.4	5.7	5.8	5.9	5.6
Carling	—	—	—	—	1.4	2.2	2.4	2.9	4.0	3.2	3.6	4.1	4.9	5.3	4.8	4.4
Eastern	—	--	--	--	0.6	1.1	1.4	1.4	1.4	1.0	--	--	--	--	—	—
Pearl	0.6	1.3	0.2	—	0.6	0.6	0.6	0.9	0.9	0.7	0.7	0.8	0.8	0.8	1.0	1.0
Champale	—	--	--	--	0.6	0.5	0.4	0.5	0.4	0.5	—	--	--	—	—	--
Genesee	—	—	—	—	0.6	0.3	0.4	0.3	0.5	0.5	0.7	0.9	1.2	1.6	1.4	0.7
Van Munching	—	--	—	—	0.5	0.3	0.3	0.3	0.3	0.2	--	--	—	—	--	--
Schaefer	—	—	—	—	0.3	0.2	0.2	0.3	0.5	0.4	0.6	0.4	0.5	0.6	0.6	0.5
Heileman	—	--	--	--	0.2	0.2	0.2	0.2	0.3	0.6	—	--	--	—	—	—
Queen City	—	—	—	—	--	0.1	—	—	0.2	0.5	—	—	—	—	—	--
All Others	7.4	7.7	5.9	6.0	—	--	--	--	--	--	--	--	--	--	--	—
Concentration:																
Top 4	91.4	89.6	91.1	90.2	87.5	86.1	84.8	83.8	81.0	81.6	79.3	77.1	74.1	70.8	69.6	71.1
Top 8	—	—	—	—	96.2	96.8	96.7	96.6	96.0	95.7	93.7	92.5	89.9	87.8	86.0	85.7

Packaged only 1962-73.

Georgia

Brewer	1977	1976	1975	1974	1973	1972	1971	1970	1969	1968	1967	1966	1965	1964
Schlitz	23.7	30.1	29.9	29.9	29.5	26.7	23.2	20.9	19.3	15.0	15.4	15.5	16.0	16.8
A-B	26.8	24.2	29.5	30.9	28.9	28.0	27.7	27.7	26.2	27.0	26.0	25.0	25.1	24.9
Pabst	12.9	16.1	17.3	18.4	21.0	24.6	25.8	25.1	22.9	24.4	21.8	19.7	17.1	14.6
Miller	28.2	19.8	14.4	8.8	5.7	4.4	4.6	5.1	5.2	5.3	5.5	5.3	5.8	5.7
Falstaff	—	—	—	—	3.9	5.4	7.1	8.0	10.2	10.6	11.1	11.7	11.8	12.0
Pearl	2.1	—	—	—	2.4	3.0	3.1	3.8	3.5	3.1	2.7	2.8	2.4	2.3
National 1/	—	—	—	—	1.8	2.2	2.7	3.2	3.6	3.7	3.3	3.2	3.0	3.2
Carling	2.5	2.8	3.0	3.2	2.0	2.7	3.4	4.3	6.8	8.5	10.5	13.8	15.7	17.6
Heileman	—	—	—	—	1.5	1.8	0.8	0.3	0.4	0.5	—	—	—	—
Hamm	—	—	—	—	1.1	—	—	—	—	—	—	—	—	—
Champale	—	—	—	—	0.7	0.6	0.4	0.4	0.5	0.4	—	—	—	—
Hans Holter	—	—	—	—	0.1	0.1	—	—	—	—	—	—	—	—
Pittsburgh	—	—	—	—	—	0.2	0.6	0.3	0.3	0.6	—	—	—	—
All Others	3.7	7.0	5.8	8.8	—	—	—	—	—	—	—	—	—	—
Concentration:														
Top 4	91.6	90.2	91.1	88.0	85.1	84.7	83.8	81.7	78.6	77.0	74.3	74.0	73.9	73.9
Top 8	—	—	—	—	95.2	96.8	97.6	98.1	97.7	97.6	96.3	97.0	96.9	97.1

Domestic packaged 1964-73.

1/ Included in Carling 1974-77.

Idaho

Brewer	1977	1976	1975	1974	1973	1972	1971	1970	1969	1968	1967	1966	1965	1964	1963	1962
Coors	28.0	34.0	35.8	39.8	41.8	38.1	34.1	29.6	26.4	24.4	21.6	22.1	21.5	20.2	19.2	16.7
Olympia	18.5	18.7	18.7	22.9	16.1	18.9	20.4	24.7	26.6	27.2	27.9	29.6	31.7	31.6	29.1	29.0
A-B	28.7	20.7	21.1	15.4	10.5	7.1	5.2	4.7	3.7	3.8	4.6	3.9	3.8	3.5	3.2	3.4
General	3.5	4.4	5.1	7.7	9.1	11.8	15.0	15.9	18.4	20.6	22.2	20.7	19.7	19.6	21.7	23.7
Hamm 1/	—	—	—	—	8.0	10.4	10.4	9.1	7.8	7.1	7.3	6.2	5.4	4.9	4.0	3.4
Blitz	—	—	—	—	4.1	4.1	4.4	4.3	4.2	3.4	2.7	2.9	2.3	1.9	1.0	0.7
Rainier	—	—	—	—	3.8	3.6	4.1	4.8	6.1	7.9	7.6	8.0	8.0	7.1	6.4	6.2
Schlitz	7.2	6.7	3.7	2.1	1.5	1.1	1.0	1.1	1.3	1.0	1.1	1.1	0.6	0.5	0.6	0.6
Miller	4.2	3.5	2.4	1.2	1.1	1.2	1.4	1.3	1.2	1.0	0.8	0.9	1.0	1.1	0.9	1.1
Falstaff	—	—	—	—	0.6	0.2	—	—	—	—	—	—	—	—	—	—
National 2/	—	—	—	—	0.3	0.3	0.3	0.4	0.3	0.1	0.2	0.2	0.1	0.1	—	—
Pabst	2.5	3.6	2.4	0.4	0.1	0.2	0.2	0.3	0.1	0.1	0.1	0.1	0.2	0.3	0.5	1.1
Heileman	—	—	—	—	0.1	0.2	0.4	0.6	0.5	0.5	—	—	—	—	—	—
Carling	2.3	2.4	2.6	2.5	2.3	2.2	2.4	2.5	2.3	1.8	1.9	2.3	3.0	4.6	6.6	6.4
Bohemian	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	5.2
All Others	5.1	6.0	8.1	7.9	—	—	—	—	—	—	—	—	—	—	—	—
Concentration:																
Top 4	82.4	80.1	80.7	85.8	77.5	79.2	79.9	79.3	79.2	80.1	79.3	80.4	80.7	78.5	76.6	75.8
Top 8	—	—	—	—	95.7	96.2	96.0	95.6	95.5	96.2	95.8	95.7	95.2	93.4	91.2	94.0

Total barrals 1962-68; packaged only 1969-73.

1/ Included in Olympia 1974-77.
2/ Included in Carling 1974-77.

Illinois

Brewer	1973	1972	1971	1970	1969	1968	1967	1966
Schlitz	24.0	23.6	23.2	25.3	22.4	20.5	20.2	20.0
A-B	23.2	24.6	24.7	27.1	24.7	29.3	27.2	26.9
Heileman 1/	11.3	10.8	11.8	7.1	6.6	5.6	5.9	5.3
Pabst	10.6	9.5	8.0	7.4	8.1	8.9	9.1	8.4
Miller 2/	9.5	10.3	10.9	4.7	6.0	6.1	6.0	6.3
Hamm	5.9	6.4	6.4	8.5	9.6	9.3	9.6	9.5
Falstaff	4.9	5.3	5.6	5.6	7.2	6.8	7.9	8.7
Stroh	3.7	2.8	2.2	--	--	--	--	--
Carling	3.4	3.4	3.4	3.5	4.0	3.5	3.5	3.9
Meister Brau	--	--	--	8.8	10.6	9.4	9.8	10.0
Huber	0.8	1.0	1.3	--	--	--	--	--
Peter Hand	0.5	--	--	--	--	--	--	--
Champale	0.4	0.3	0.3	--	--	--	--	--
Concentration								
Top 4	69.1	69.3	70.6	69.7	67.3	68.5	66.8	66.4
Top 8	93.1	93.9	94.0	94.5	95.2	95.9	95.7	95.1

1/ Includes Associated Brands.

2/ Includes Meister Brau starting in 1971.

1971-73: Carling Market Report.
1966-70: A. Baker.

Indiana

Brewer	1977	1976	1975	1974	1973	1972	1971	1970	1969	1968	1967	1966	1965	1964	1963	1962
Pabst	22.1	23.6	25.3	26.0	27.5	28.3	26.3	23.6	20.3	21.4	28.4	23.9	21.5	18.5	17.0	13.5
Stroh	22.2	22.8	22.1	19.8	20.1	18.9	15.6	13.3	11.7	10.1	9.8	9.5	9.4	8.8	8.3	8.8
A-B	14.3	12.8	17.0	18.7	14.0	9.7	9.6	8.9	8.3	8.5	7.9	6.7	6.1	5.4	5.2	5.4
Heileman 1/	6.7	7.2	7.6	7.9	9.4	11.9	14.4	16.8	20.4	22.8	4.9	5.8	6.5	6.8	6.8	7.8
Falstaff	—	—	—	—	6.2	7.8	9.0	9.0	9.7	9.9	9.5	11.1	11.1	10.4	9.9	9.7
Falls City	—	—	—	—	6.0	6.7	7.2	8.1	8.9	9.1	9.3	8.9	9.3	9.2	9.1	9.2
Schlitz	3.6	4.6	4.6	5.7	5.6	5.4	5.4	5.6	5.1	4.2	4.0	3.9	3.9	4.3	4.7	2.9
Miller	19.5	14.8	8.2	4.4	4.2	4.0	3.9	4.1	4.6	4.4	4.6	4.3	3.8	3.3	2.8	3.3
Carling	—	—	—	—	1.8	1.9	2.4	3.0	3.8	3.9	4.3	4.8	5.3	6.3	6.9	7.3
Hamm	—	—	—	—	1.4	1.7	2.1	2.5	3.0	0.9	0.8	0.9	0.9	0.9	1.0	1.0
Old Crown	—	—	—	—	0.8	1.0	1.3	1.4	1.4	1.3	—	—	—	—	—	—
Burger	—	—	—	—	0.8	0.4	0.4	0.5	0.6	0.6	—	—	—	—	—	—
Hudepohl	—	—	—	—	0.5	0.4	0.5	0.6	0.7	0.7	0.8	0.9	1.0	1.2	1.2	1.2
National	—	—	—	—	0.3	0.3	0.4	0.4	0.4	0.4	—	—	—	—	—	—
Associated	—	—	—	—	—	—	—	—	—	—	11.4	15.0	16.4	19.2	20.9	22.9
All Others	11.6	14.2	15.1	17.5	—	—	—	—	—	—	—	—	—	—	—	—
Concentration:																
Top 4	78.1	74.0	72.6	72.4	71.0	68.8	65.9	62.7	62.1	64.2	59.1	59.5	58.4	57.3	56.9	55.3
Top 8	—	—	—	—	93.0	92.7	91.4	89.4	89.0	90.4	85.8	85.7	85.6	84.6	84.1	84.6

Carling Market Report. Packaged only 1962-73.

1/ Includes Associated 1968-77.

Iowa

Brewers	1977	1976	1975	1974	1973	1972	1971	1970	1969	1968	1967	1966	1965	1964	1963	1962
Schlitz	22.6	25.5	25.3	25.5	30.9	30.1	29.8	29.0	24.2	22.7	20.0	18.9	17.6	17.3	16.7	14.0
A-B	21.1	19.0	23.1	22.7	21.3	22.4	21.7	22.1	19.8	21.0	18.2	16.7	14.9	13.6	13.3	13.7
Pabst	27.7	25.2	18.5	12.6	10.2	8.5	6.7	5.4	5.5	5.8	7.4	7.3	7.5	7.4	7.2	6.7
Hamm 1/	8.5	11.0	13.4	16.4	9.5	11.3	12.6	13.9	16.2	16.6	20.1	20.4	20.8	20.8	21.5	22.3
Falstaff	—	--	—	--	7.1	7.0	7.0	6.7	7.7	7.6	7.9	8.5	9.1	9.5	9.8	9.5
Miller	7.4	5.1	4.6	6.2	6.8	4.7	4.2	4.3	4.3	3.8	4.3	4.3	4.2	4.1	4.0	4.2
Heileman 2/	6.3	6.6	5.8	5.7	6.5	7.3	7.3	7.9	9.2	9.1	—	—	—	—	—	—
Grain Belt 3/	--	—	—	—	5.0	6.4	8.4	9.2	10.6	10.1	9.1	6.8	—	—	—	--
Olympia	--	(See Hamm)		—	1.0	—	--	—	--	—	—	—	—	—	—	—
Dubuque	—	—	—	—	0.7	0.6	0.5	0.6	0.8	0.9	1.2	1.4	1.6	1.9	2.1	2.3
Huber	--	--	—	--	0.5	1.0	1.0	1.0	1.1	1.2	0.8	0.8	0.7	0.6	0.5	0.4
Cold Spring	—	—	--	—	0.1	0.1	0.1	—	0.1	0.1	—	—	—	--	—	--
Carling	—	--	—	—	0.1	0.1	0.2	0.2	0.2	0.3	--	--	—	—	—	--
All Others	6.4	7.6	9.3	10.9	—	—	—	—	--	—	1.9	2.2	9.5	9.7	9.6	9.8
Concentration																
Top 4	79.9	80.7	80.3	77.2	71.9	72.3	72.5	74.2	70.8	70.4	67.4	64.5	62.4	61.2	61.3	59.5
Top 8	—	—	—	—	97.3	97.7	97.7	98.5	97.5	96.7	88.9	85.1	83.6	82.4	82.1	79.2

1/ Now Olympia.
2/ Includes Blatz, 1969-77.
3/ Acquired by Heileman in 1975.

Kansas

Brewer	1977	1976	1975	1974	1973	1972	1971	1970	1969	1968	1967	1966	1965	1964	1963	1962
Coors	54.8	57.9	58.2	53.1	53.3	48.2	42.7	38.9	37.5	35.4	33.9	32.1	30.2	28.8	29.3	29.8
A-B	18.4	14.2	16.5	22.0	19.0	20.8	23.0	22.9	20.5	21.5	21.6	20.2	19.4	18.5	17.5	18.2
Schlitz	5.6	6.9	7.7	8.9	11.6	14.2	15.3	17.7	18.2	17.7	18.9	19.9	20.2	21.3	23.8	19.5
Falstaff	—	—	—	—	6.1	6.6	7.6	7.9	9.6	10.0	9.6	10.4	11.0	10.8	12.1	11.4
Miller	9.4	7.2	7.1	3.2	2.9	2.4	2.4	2.4	2.3	2.2	2.4	2.5	2.4	2.1	1.9	1.8
Hamm 1/	4.1	5.9	—	—	2.3	2.8	3.4	3.7	4.6	5.0	5.9	5.8	6.0	5.7	6.2	6.8
Carling	—	—	—	—	1.8	1.5	1.7	2.2	2.5	2.3	1.8	1.9	1.8	1.8	1.6	1.3
Pabst	1.9	2.2	2.4	1.6	1.5	1.8	1.8	1.7	1.7	2.1	2.1	2.3	2.7	2.7	2.7	2.7
Heileman	—	—	—	—	0.5	0.4	0.2	0.3	0.2	0.5	0.4	0.4	0.5	0.4	0.2	0.1
Pearl	—	—	—	—	0.3	0.3	0.3	0.3	0.3	0.4	0.6	1.0	1.5	1.5	1.7	2.4
National	—	—	—	—	0.3	0.3	0.5	0.5	0.5	0.1	0.2	0.1	—	0.1	—	—
Grain Belt	—	—	—	—	0.2	0.4	0.5	0.7	1.0	1.4	1.0	0.9	1.3	1.2	0.5	0.5
All Others	5.8	5.7	8.0	11.2	—	—	—	—	—	—	—	—	—	—	—	—
Concentration:																
Top 4	88.2	86.2	89.5	89.6e/	90.0	89.8	88.6	87.4	85.8	84.6	84.0	82.6	80.8	79.4	82.7	78.9
Top 8	—	—	—	—	98.5	98.3	97.9	97.4	96.9	96.2	96.2	95.1	93.7	91.7	95.2	92.6

e: estimated.

1962-73 Packaged only.

1/ Now Olympia.

Kentucky

Brewer	1971	1970	1969	1968	1967	1966	1965	1974	1963	1962
Pabst	24.3	20.2	14.5	15.7	12.5	8.8	7.1	5.8	4.6	2.6
Falls City	17.4	19.8	22.9	23.6	24.6	24.3	24.4	23.2	23.6	23.6
Sterling	15.6	16.4	18.4	17.7	18.9	19.5	18.2	18.6	17.8	17.4
A-B	8.0	8.0	6.6	6.5	4.8	4.4	4.3	4.1	3.9	4.4
Wiedemann	7.1	8.2	10.2	11.5	12.5	11.7	12.0	11.7	11.3	10.6
Stroh	6.5	3.7	2.6	1.3	0.8	0.5	0.3	--	--	--
Schlitz	5.5	5.7	4.7	4.2	3.3	3.3	3.2	3.3	3.8	3.2
Hudepohl	3.8	4.6	5.4	5.7	6.1	6.6	6.8	7.3	7.7	8.0
Berger	3.5	3.7	4.0	3.9	4.0	4.1	4.1	4.0	3.9	4.1
Falstaff	2.3	2.5	3.3	2.9	3.4	4.0	4.4	4.6	4.7	3.7
Schoenberg	1.7	1.9	1.9	1.7	1.7	1.7	1.7	2.0	1.3	0.9
Miller	1.7	2.2	2.3	2.5	2.1	2.0	1.5	1.3	0.9	1.0
Oertel	--	--	--	--	2.4	5.8	6.6	8.0	6.8	7.6
Frank Feho	--	--	--	--	--	--	--	--	8.1	6.0
Bavarian	--	--	--	--	--	--	2.4	3.4	3.6	4.0
Concentration										
Top 4 1/	65.1	64.6	65.9	68.5	68.6	64.2	61.7	61.5	60.6	59.5
Top 8 1/	88.3	86.5	86.6	88.9	86.8	85.1	83.9	83.3	80.6	81.5

1/ May not equal sums of firm shares because of rounding.

Louisiana

Brewer	1977	1976	1975	1974	1973	1972	1971	1970	1969	1968	1967	1966	1965	1964	1963	1962
Schlitz	32.1	34.5	35.3	38.5	39.9	39.0	37.8	33.6	29.6	23.0	17.9	15.4	13.9	12.3	10.5	8.1
A-B	16.5	15.2	17.5	19.0	20.0	19.7	20.9	21.0	19.9	22.3	21.3	19.5	18.6	18.9	19.9	20.4
Falstaff	6.8	8.2	9.8	--	13.0	13.1	14.2	14.0	15.9	18.8	21.9	24.0	27.2	31.0	33.6	34.1
Dixie	3.3	4.1	5.7	—	8.4	9.0	9.6	10.4	10.6	10.3	9.5	9.4	8.6	7.1	5.7	5.3
Jackson	—	—	—	--	7.8	9.7	9.3	10.6	11.5	12.7	15.5	17.6	19.1	18.7	18.8	17.7
Miller	34.3	24.8	22.2	12.2	5.7	2.7	3.1	3.6	3.7	3.7	3.8	3.3	2.4	1.9	1.8	1.7
Pearl	—	—	—	--	2.1	1.9	2.5	2.9	3.8	4.1	4.5	4.0	3.4	3.7	3.0	2.6
Pabst	2.3	2.6	1.8	1.5	1.1	1.1	1.2	1.3	1.8	2.0	2.2	2.3	2.2	1.9	1.4	1.1
Carling	—	—	—	—	NA	NA	0.4	1.0	1.2	0.8	0.5	0.3	0.3	—	—	0.1
Lone Star	—	—	—	—	0.1	0.1	0.2	0.4	0.5	0.7	0.9	1.2	0.7	—	—	--
National	—	—	—	—	NA	NA	0.1	0.1	0.2	0.2	1.4	1.9	2.5	3.2	3.5	4.6
Associated	—	—	—	—	NA	NA	0.1	0.4	0.6	0.8	—	0.1	0.1	0.1	0.1	0.2
All Others	4.9	10.6	7.7	28.9	—	--	—	--	--	--	—	--	—	—	—	—
Concentration:																
Top 4	89.7	82.7	84.8	80.1e/	81.3	81.5	82.5	79.2	76.9	76.8	76.5	76.5	78.8	80.9	82.8	80.3
Top 8	—	—	—	—	98.0	96.2	98.6	97.4	96.8	96.9	96.5	95.5	95.7	96.8	96.8	94.5

e: estimated.

Source: 1972-73: Lone Star.
1962-71: Carling.

Maine

Brewer	1977	1976	1975	1974	1973	1972	1971	1970	1969	1968	1967	1966	1965	1964	1963
A-B	36.2	30.4	32.8	30.9	29.0	28.7	29.8	28.8	26.7	26.9	23.1	20.1	18.2	15.3	13.6
Schlitz	21.5	27.4	28.0	27.8	27.7	24.2	18.4	15.2	13.3	11.7	11.2	11.0	11.1	11.6	12.1
Falstaff 1/	8.6	10.8	10.5	14.7	15.2	16.4	17.7	19.9	22.2	24.4	24.2	26.6	27.6	23.5	26.4
Carling 2/	4.4	4.7	7.7	7.8	7.0	7.8	9.1	10.4	11.0	9.5	8.3	9.3	9.3	10.7	12.5
Pabst	4.7	6.0	5.4	4.7	4.4	4.9	5.3	5.2	5.4	5.5	5.2	4.3	3.9	3.4	2.1
Rheingold	--	--	—	—	4.0	4.1	5.6	6.1	7.2	7.2	8.7	9.6	2.3	0.6	—
Miller	18.8	13.3	6.4	4.1	3.8	4.1	4.2	2.9	2.2	2.5	2.3	2.2	1.8	3.8	1.2
Schaefer	1.8	2.4	3.2	4.4	2.8	2.9	2.8	3.1	2.7	1.9	2.0	1.3	1.3	1.2	1.2
Associated	—	--	—	—	2.6	2.7	2.7	3.1	2.8	2.9	—	—	—	—	—
C. Schmidt	—	—	--	—	2.6	2.7	2.7	3.1	2.8	2.9	4.0	4.2	4.2	4.5	4.9
National	—	--	—	—	0.8	1.0	1.3	1.7	1.9	2.1	4.3	1.9	2.1	2.3	0.5
Pearl	—	--	--	—	0.2	0.2	0.2	0.2	0.3	0.3	0.2	0.3	0.8	0.1	0.2
West End	—	—	—	—	0.1	0.2	—	—	—	—	—	—	—	—	- -
Ballantine 1/	--	--	—	—	--	--	—	—	—	—	2.8	3.2	3.6	4.5	5.1
All Others	4.0	5.0	5.9	5.6	—	—	—	—	—	—	—	—	—	—	—
Concentration:															
Top 4	85.1	81.9	79.0	81.2	78.9	77.1	75.0	74.3	73.2	72.5	67.2	67.3	66.2	61.1	64.6
Top 8	—	—	—	--	93.9	93.1	92.9	91.8	91.4	91.0	89.0	88.7	80.2	77.3	77.9

1/ Ballantine is included in Falstaff 1968-77.

2/ Includes National 1974-77.

Maryland

Brewer	1977	1976	1975	1974	1973	1972	1971	1970	1969	1968	1967	1966	1965	1964	1963	1962
Pabst	20.2	23.2	24.7	24.8	26.1	27.1	24.6	22.1	18.3	17.1	13.6	10.7	8.8	6.8	5.6	4.8
A-B	23.3	17.9	20.7	20.7	17.9	18.3	17.1	16.1	14.3	13.9	12.4	10.7	9.4	7.9	7.4	7.2
Schlitz	13.7	15.7	14.8	15.1	13.5	11.8	11.1	9.3	8.6	6.9	6.7	6.2	5.8	5.6	5.8	5.2
National1/	10.6	13.6	13.5	16.7	12.6	13.4	15.7	18.5	22.4	25.0	30.5	33.6	36.1	36.5	37.6	37.9
Miller	19.9	19.7	15.8	10.1	8.2	4.6	3.9	4.2	3.9	3.5	3.4	3.1	2.6	2.1	1.7	1.6
Carling 1/	--	—	—	—	6.1	7.6	9.2	11.4	13.2	13.2	13.7	14.5	12.1	15.6	15.0	13.6
American	--	--	—	—	2.8	2.4	2.8	3.0	3.4	3.5	4.8	5.2	5.8	5.9	6.2	6.0
Ballantine2/	--	--	—	—	2.5	2.5	2.4	1.7	1.8	2.4	2.9	3.1	3.9	5.0	5.5	6.1
Latrobe	—	—	—	—	2.1	2.0	1.9	1.7	1.7	1.9	1.2	1.3	1.5	1.8	1.9	2.0
Schmidt	--	—	—	—	1.7	1.5	1.6	2.0	1.9	1.5	2.0	1.9	1.8	1.7	—	--
Schaefer	--	--	—	--	1.2	1.7	2.3	3.1	3.0	2.7	2.9	2.8	3.1	3.9	2.8	—
Rheingold	—	--	—	—	0.7	0.7	0.7	0.6	0.7	0.6	0.6	0.9	—	—	—	--
Eastern	—	--	—	--	--	0.6	0.8	0.7	0.6	0.5	—	--	--	--	—	—
Duquesne	--	--	—	—	0.5	0.7	0.6	0.6	0.7	0.7	0.7	0.8	1.0	1.1	—	1.2
Queen City	--	—	—	--	0.5	2.1	2.2	2.4	2.6	3.2	2.2	2.3	2.4	2.4	2.4	2.4
All Others	12.3	9.8	10.6	12.7	—	—	—	—	—	—	—	—	—	—	—	--
Concentration:																
Top 4	77.1	76.4	76.0	77.3	70.1	70.6	68.5	68.1	68.2	69.2	70.2	69.5	66.4	66.8	66.2	64.8
Top 8	—	—	—	—	89.7	87.7	86.8	86.6	87.1	86.3	88.0	87.1	85.0	87.2	85.9	83.2

Includes draft and packaged.

1/ National includes Carling 1974-77.

2/ Excludes Falstaff.

Massachusetts

Brewer	1977	1976	1975	1974	1973	1972	1971	1970	1969	1968	1967	1966	1965	1964	1963	1962
Schlitz	23.3	30.1	31.9	33.7	32.4	25.8	18.7	14.4	13.1	10.2	8.3	7.1	6.2	5.8	5.9	5.4
A-B	24.3	18.7	23.7	24.4	23.9	26.7	28.7	28.6	24.2	24.7	20.3	16.8	14.0	11.5	10.4	10.4
Falstaff	7.8	9.7	9.0	10.4	10.9	12.7	15.1	16.9	18.7	19.8	21.8	23.1	23.6	25.2	27.7	27.4
Schaefer	3.1	4.1	6.3	7.3	6.4	7.4	8.2	9.3	9.5	8.8	9.0	9.0	8.9	8.3	8.1	7.6
Miller	25.9	19.2	12.1	7.7	6.1	5.2	5.4	5.1	5.0	5.5	5.0	4.6	3.8	3.0	2.6	2.6
Rheingold	—	—	—	—	5.5	6.3	7.5	8.9	10.4	11.5	15.5	17.8	20.7	20.5	20.9	20.4
Carling	3.4	4.6	5.3	5.0	4.2	4.2	4.5	5.0	6.3	5.8	5.7	6.2	6.6	7.7	9.2	9.9
Pabst	3.3	4.0	4.1	3.8	3.1	3.6	3.7	3.9	4.2	4.6	4.3	4.5	4.5	4.0	2.4	2.1
Associated	--	—	—	--	2.8	3.3	3.5	3.6	4.1	4.6	4.3	3.5	4.0	5.0	5.1	5.1
Genesee	—	—	—	—	1.0	1.2	1.0	0.5	0.3	0.2	0.3	0.3	0.3	0.3	0.3	0.4
Van Munching	--	—	—	—	0.8	0.6	0.5	0.4	0.3	0.3	—	—	—	—	—	—
Eastern	—	—	—	—	0.5	0.5	0.4	0.4	0.3	0.4	0.4	0.4	0.5	0.4	0.3	0.2
National	—	—	—	—	0.4	0.4	0.4	0.4	0.5	0.4	0.4	0.4	0.4	0.3	—	—
C. Schmidt	—	—	—	—	0.4	0.6	0.7	0.8	0.9	0.9	—	—	—	—	—	--
All Others	9.0	9.7	7.5	7.7	--	--	--	--	--	—	—	—	--	—	—	—
Concentration:																
Top 4	81.3	77.7	76.7	76.2	73.6	72.6	70.7	69.2	66.4	66.2	66.6	66.7	67.2	65.5	68.2	68.1
Top 8	—	—	—	—	92.5	91.9	91.8	92.1	91.4	90.9	89.9	89.9	88.3	88.0	89.9	88.8

1968-73: Total barrels.

Michigan

Brewer	1977	1976	1975	1974	1973	1972	1971	1970	1969	1968	1967	1966	1965	1964	1963	1962
Pabst	23.6	27.8	27.5	29.0	29.1	29.9	28.0	25.4	21.3	24.4	33.9	31.6	29.7	27.0	24.9	19.2
A-B	19.4	17.9	24.1	24.9	23.2	17.3	16.3	15.1	12.3	10.9	8.4	7.2	5.6	4.2	3.3	3.4
Stroh	11.8	12.8	12.7	12.7	15.4	16.5	15.7	15.1	16.8	15.8	16.7	18.5	20.7	20.9	20.8	22.1
Schlitz	7.9	9.3	9.2	8.9	7.7	7.2	5.9	6.3	5.4	4.7	4.0	4.0	3.8	3.8	3.9	3.7
Carling 1/	5.8	6.7	7.9	9.8	7.3	8.5	9.3	11.2	13.4	12.7	11.7	12.4	13.0	13.7	13.2	12.9
Heileman 2/	4.4	4.7	4.1	4.6	5.5	7.0	8.6	10.8	13.6	15.6	—	—	—	—	—	—
National 1/	—	—	—	—	4.0	4.2	4.2	4.7	4.7	4.2	4.0	3.9	3.8	3.6	3.0	2.6
Miller	21.0	15.4	7.4	4.2	2.8	2.7	2.7	3.0	3.1	2.9	2.7	2.6	2.3	1.9	1.7	1.9
Hamm	—	—	—	—	1.9	2.7	3.8	4.8	6.2	6.4	6.0	3.2	1.1	0.3	0.3	0.2
Falstaff	—	—	—	—	1.0	2.1	3.1	1.6	0.9	0.9	1.0	1.2	1.7	1.6	1.6	2.3
Associated 2/	—	—	—	—	—	—	—	—	—	—	8.1	11.3	13.5	16.2	18.6	21.5
Champale	—	—	—	—	0.3	0.3	0.3	0.3	0.3	0.3	—	—	—	—	—	—
All Others	6.1	5.4	7.0	6.0	—	—	—	—	—	—	—	—	—	—	—	—
Concentration:																
Top 4	75.8	73.9	73.5	76.4	75.4	72.2	69.3	66.8	65.1	68.5	70.7	73.8	76.9	77.8	77.5	75.7
Top 8	—	—	—	—	95.0	93.3	91.8	93.4	93.7	94.9	92.8	92.1	92.4	91.3	89.4	87.7

1/ Carling includes National 1974-77.

2/ Starting in 1968, Associated is added to Heileman due to acquisition that occurred in 1972.

Packaged only 1962-73.

Minnesota

Brewer	1971	1970	1969	1968	1967	1966	1965	1964	1963	1962
Grain Belt	31.9	32.4	32.2	31.4	31.2	29.3	27.9	26.9	26.5	26.3
J. Schmidt	20.3	20.2	19.3	17.9	17.3	16.9	15.3	15.2	14.3	13.8
T. Hamm	14.8	15.5	17.3	20.9	22.3	25.0	27.4	28.1	29.2	30.8
Schlitz	10.0	8.1	6.0	4.5	3.8	3.4	3.3	3.3	2.9	2.0
A-B	5.9	5.7	5.1	5.0	4.3	3.4	3.1	2.5	2.6	2.1
Heileman	3.5	3.1	3.5	3.9	4.0	3.7	3.3	1.4	1.0	0.7
Pabst	3.1	1.7	2.2	2.2	2.0	1.8	1.7	1.5	1.4	1.4
Cold Spring	2.0	2.2	2.3	2.0	2.0	1.6	1.8	1.9	2.0	1.6
Huber	1.8	1.8	1.7	1.4	1.5	1.4	1.3	1.3	1.2	1.1
Miller	1.6	1.5	1.6	1.7	1.6	1.6	1.5	1.3	1.2	1.3
August Schell	1.6	1.7	1.8	1.7	1.7	1.8	1.8	1.7	1.7	1.6
Kingsburg	0.3	1.2	1.8	2.1	2.2	2.3	2.5	2.7	2.9	2.9
Gluck	—	—	—	—	—	—	—	3.6	3.8	3.9
Concentration:										
Top 4	77.0	76.2	74.8	75.2	75.1	74.9	73.9	73.8	73.8	74.8
Top 8	91.5	89.0	87.9	87.9	87.1	85.8	84.6	84.2	84.2	83.4

Mississippi

Brewer	1977	1976	1975	1974	1973	1972	1971	1970	1969	1968	1967	1966	1965	1964	1963	1962
Schlitz	35.0	46.3	49.1	52.0	51.8	50.6	48.1	44.2	39.1	30.1	22.9	20.5	20.9	19.7	18.1	14.4
A-B	23.5	23.0	28.8	29.6	27.1	26.8	28.9	30.1	29.8	34.3	33.3	29.9	25.1	23.7	23.2	24.6
Falstaff	—	—	—	—	4.7	5.3	6.4	7.2	10.3	13.4	17.5	21.4	24.8	28.1	29.2	32.0
Pabst	3.3	4.1	3.7	3.3	4.1	4.3	4.3	4.3	4.8	4.7	4.9	4.5	3.9	3.1	2.7	2.5
Miller	31.8	20.2	10.2	5.0	3.2	2.4	2.9	3.3	3.9	3.9	4.9	4.9	4.1	3.9	4.3	4.5
Pearl	—	—	—	—	3.0	3.2	3.3	3.7	3.9	4.4	4.2	4.1	4.0	4.5	3.5	2.0
Jackson	—	—	—	—	1.8	2.4	3.1	4.2	5.2	6.5	9.0	11.4	13.2	13.3	14.3	13.9
National	—	—	—	—	1.4	1.8	0.7	0.6	0.7	0.6	0.7	0.7	0.7	0.6	0.1	—
Heileman	—	—	—	—	1.2	1.3	—	—	—	—	—	—	—	—	—	—
Champale	—	—	—	—	1.1	1.0	1.0	0.9	0.9	0.8	0.9	0.8	0.7	0.7	0.7	0.8
All Others	6.4	6.5	8.1	10.1	—	—	—	—	—	—	—	—	—	—	—	—
Concentration:																
Top 4	93.6	93.6	92.1e/	90.6e/	87.7	87.0	87.7	85.8	84.4	84.3	82.7	83.2	84.0	84.8	84.8	84.9
Top 8	—	—	—	—	97.1	96.8	98.0	97.9	98.3	98.5	97.8	97.5	96.7	97.0	97.1	94.7

e: estimated.

Packaged only 1962-73.

Missouri

Brewer	1977	1976	1975	1974	1973	1972	1971	1970	1969	1968	1967	1966	1965	1964	1963	1962
A-B	35.3	28.3	37.7	37.1	33.7	35.6	33.4	32.5	31.0	33.3	30.9	28.9	28.4	26.6	26.0	26.6
Schlitz	10.7	14.2	14.5	15.7	17.5	16.5	16.1	15.8	16.1	13.5	12.9	11.8	9.3	10.0	9.5	8.3
Falstaff	7.2	11.5	12.1	15.1	16.5	16.9	18.3	20.0	22.3	23.6	27.7	29.8	31.6	33.1	34.4	36.9
Carling 1/	6.5	7.7	7.9	8.6	9.1	8.7	8.4	9.1	10.0	9.0	8.8	9.1	9.9	10.4	10.4	9.9
Miller	14.2	11.7	9.6	6.1	6.7	5.5	6.5	6.0	5.9	5.9	6.4	5.5	5.5	4.6	4.1	3.6
Hamm 2/	9.1	9.9	--	--	5.3	6.3	7.0	7.4	5.9	6.0	5.6	4.9	4.3	3.7	3.4	2.7
Pabst	10.1	10.9	8.4	6.5	4.9	3.9	3.5	2.5	2.2	2.1	2.1	1.8	1.8	1.8	1.7	1.4
Heileman 3/	--	--	--	--	3.2	3.5	3.6	3.5	3.4	3.8	0.8	0.8	1.0	1.0	0.8	0.7
Huber	--	--	--	--	1.1	1.1	1.1	0.8	0.6	0.5	--	--	--	--	--	--
Pearl	--	--	--	--	1.1	1.0	1.1	1.1	1.3	1.2	1.3	1.4	1.3	1.4	1.7	2.0
National 1/	--	--	--	--	0.3	0.4	0.3	0.3	0.3	0.2	0.2	0.1	0.2	0.1	--	--
Grain Belt 3/	--	--	--	--	0.1	0.3	0.5	0.5	0.4	0.4	0.4	0.2	0.3	0.4	0.2	0.1
All Others	7.0	5.8	9.7	10.9	--	--	--	--	--	--	--	--	--	--	--	--
Concentration:																
Top 4	70.3	65.7	73.9	76.5	76.8	77.7	76.2	77.4	79.4	79.4	80.3	79.6	79.2	80.1	80.3	81.7
Top 8	--	--	--	--	96.9	96.9	96.8	96.8	96.8	97.2	95.7	93.2	92.1	91.6	91.2	91.4

1/ Carling includes National 1974-77.

2/ Now Olympia.

3/ Heileman includes Associated after 1967 and Grain Belt after 1973.

Packaged only.

Montana

Brewer	1977	1976	1975	1974	1973	1972	1971	1970	1969	1968	1967	1966	1965	1964	1963	1962
Olympia 1/	33.0	33.4	35.1	38.2	28.0	25.2	23.0	22.8	21.2	20.0	18.9	17.9	14.7	12.4	10.7	7.8
Lucky	—	—	—	—	19.1	18.5	18.9	16.3	18.1	19.4	17.3	11.8	9.4	9.4	10.9	12.3
Rainier	--	--	--	--	11.9	11.7	10.4	9.6	10.5	10.8	9.8	10.4	9.6	8.8	7.3	7.3
A-B	12.5	12.8	15.4	14.5	11.7	10.5	9.4	9.4	8.4	8.5	8.9	7.2	6.3	6.1	5.9	6.6
Hamm	--	--	—	--	9.2	11.8	14.9	16.5	16.7	17.4	18.7	20.3	18.1	15.1	10.0	3.5
Schlitz	4.2	6.4	6.1	6.3	6.4	6.8	6.2	6.2	5.2	4.5	4.8	4.3	4.7	4.9	5.5	5.2
Blitz-Weinhard	--	—	—	--	4.9	5.4	5.9	7.3	9.6	11.5	15.4	--	--	--	--	--
Heileman	—	—	—	—	2.7	3.7	4.5	5.4	5.3	5.3	—	—	—	—	—	--
Miller	8.1	7.6	5.4	2.7	2.1	2.3	1.9	1.8	1.3	1.2	1.7	1.4	1.3	0.9	1.1	1.4
Carling	—	—	—	—	1.9	1.9	2.0	2.2	1.7	—	—	—	—	—	—	--
Pabst	4.5	4.2	2.8	1.4	1.1	1.4	1.4	1.0	0.5	0.4	0.5	0.5	0.7	0.4	0.2	0.2
Falstaff	—	—	—	—	0.4	—	—	—	—	—	—	—	—	—	—	--
Coors	14.3	5.1	0.0	—	--	--	--	--	--	--	—	--	—	--	--	--
Great Falls 2/	—	—	—	—	—	—	—	—	—	—	—	17.4	23.4	25.2	26.0	28.3
Associated	--	—	—	—	--	—	--	--	--	—	4.0	4.4	3.5	3.8	4.1	4.5
All Others	23.5	30.4	35.3	37.0	—	—	—	—	--	—	—	—	—	—	—	—
Concentration:																
Top 4	—	--	—	--	70.7	65.9	67.2	65.2	66.5	68.3	70.3	67.4	65.8	62.1	57.6	55.7
Top 8	—	—	—	--	93.9	93.6	93.2	93.5	95.0	97.4	97.8	93.7	89.7	85.7	80.4	75.5

Packaged Only 1968-73, 1962 - mid-66 including draught.

1/ Includes Hamm 1974-77.

2/ Great Falls acquired by Blitz-Weinhard 2/66.

Nebraska

Brewer	1977	1976	1975	1974	1973	1972	1971	1970	1969	1968	1967	1966	1965	1964	1963	1962
A-B	25.0	24.9	31.2	31.5	28.2	28.5	28.3	26.8	22.4	23.2	20.4	18.2	16.4	14.4	14.4	14.7
Schlitz	11.2	15.2	16.3	19.2	22.4	25.1	26.2	26.6	26.2	22.7	23.3	19.1	17.7	17.5	16.8	13.9
Falstaff	15.0	18.4	18.5	17.4	16.5	17.4	15.6	13.2	14.2	14.9	16.0	17.9	18.4	18.6	18.5	15.7
Olympia 1/	7.5	10.4	12.3	16.2	10.1	—	—	—	—	—	—	—	—	—	—	—
Hamm 1/	—	—	—	—	8.2	11.9	12.8	13.9	15.0	15.8	14.7	14.4	13.6	12.8	13.2	13.5
Pabst	18.4	18.7	12.7	8.8	6.5	6.9	4.9	4.1	3.7	3.8	4.2	2.5	2.0	2.3	2.4	2.8
Miller	13.7	9.5	5.2	2.8	2.9	2.9	2.8	3.2	3.3	3.4	3.7	3.5	3.2	2.9	2.6	2.7
Grain Belt 2/	—	—	—	—	2.8	5.2	6.6	8.5	10.4	10.4	12.5	18.2	20.9	23.2	25.7	30.7
Heileman 2/	1.4	1.9	1.8	1.5	1.6	1.0	0.9	1.1	1.8	2.0	1.3	1.0	0.9	0.9	0.8	0.5
Pearl	—	—	—	—	0.2	0.2	0.1	0.1	0.3	0.2	0.2	0.5	0.7	1.1	1.3	1.5
Carling	—	—	—	—	0.1	0.1	0.2	0.3	0.5	0.8	1.1	1.6	1.8	1.9	1.6	0.7
National	—	—	—	—	0.1	0.2	0.2	0.4	0.3	1.1	0.9	1.2	1.7	1.4	—	—
Coors	6.9	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
All Others	0.9	1.0	2.0	2.6	—	—	—	—	—	—	—	—	—	—	—	—
Concentration:																
Top 4	72.1	77.2	78.7	84.3	77.2	82.9	82.0	80.5	77.8	76.6	74.4	73.4	73.4	73.7	75.4	75.0
Top 8	—	—	—	—	97.6	98.7	98.1	97.4	97.0	96.2	96.1	95.4	94.0	93.6	95.2	95.5

Packaged only 1962-73.

1/ Olympia includes Hamm 1974-77.

2/ Heileman includes Grain Belt 1974-77.

New Hampshire

Brewer	1977	1976	1975	1974	1973	1972	1971	1970	1969	1968	1967	1966	1965	1964	1963	1962
A-B	28.5	24.7	28.4	28.7	28.2	29.8	31.7	36.5	31.9	34.1	28.5	24.5	18.5	14.2	12.0	12.0
Schlitz	22.6	26.8	26.8	27.9	25.3	21.9	17.6	13.6	11.9	10.7	10.3	9.4	7.7	7.5	7.1	6.4
Falstaff 1/	4.5	5.9	7.0	9.8	10.9	11.7	10.9	10.2	11.9	11.8	13.5	15.8	17.0	17.5	18.4	17.5
Schaefer	3.7	4.9	5.9	7.5	7.6	8.3	8.1	10.3	10.3	8.9	8.7	7.3	7.0	6.5	6.1	6.0
Carling 2/	3.3	4.2	5.7	7.3	7.2	7.6	7.3	6.6	7.8	6.2	5.7	6.5	6.6	7.6	9.2	10.1
Pabst	4.4	5.2	6.0	6.7	6.9	7.2	7.3	5.8	6.5	7.6	7.9	7.7	7.6	6.8	3.2	3.5
Rheingold 3/	--	—	—	--	5.1	5.7	6.1	6.7	8.7	9.5	11.2	15.0	7.0	8.0	—	—
Miller	24.6	18.1	11.0	5.7	5.0	4.2	5.3	4.6	4.1	4.0	3.6	3.7	2.8	2.7	1.9	2.3
Associated	--	--	—	--	1.3	1.5	—	--	--	--	—	—	—	—	—	--
National 2/	—	--	--	—	0.5	0.8	0.4	0.4	0.8	0.6	0.8	0.9	1.2	1.8	—	--
Genesee	--	--	—	--	0.4	0.3	0.3	0.2	0.3	0.2	0.2	0.3	0.9	1.0	0.9	0.9
P. Ballantine	-	—	—	—	—	—	1.9	2.1	2.5	2.9	3.8	4.7	5.6	6.6	7.5	9.6
Jacob Ruppert	-	—	—	--	--	—	0.5	0.5	0.5	0.4	2.0	4.2	13.5	14.1	14.8	16.2
Liebmann	—	—	—	—	—	—	—	—	—	—	—	—	—	8.0	8.1	7.8
All Others	8.4	10.2	9.3	6.4	--	--	--	--	--	--	--	—	--	--	—	—
Concentration:																
Top 4	80.2	75.5	73.2	73.9	72.0	71.7	68.3	70.6	66.0	66.1	63.5	64.7	56.7	53.8	54.4	55.8
Top 8	—	—	—	—	96.2	96.4	94.3	94.3	93.1	92.8	89.4	90.9	84.9	83.7	83.2	85.6

1/ 1962-65 Falstaff is actually Narragansett; for 1972-77 Falstaff includes Ballantine.

2/ Carling includes National 1974-77.

3/ Includes Ruppert for 1972-73.

New Mexico

Brewer	1977	1976	1975	1974	1973	1972	1971	1970	1969	1968	1967	1966	1965	1964	1963	1962
Coors	34.8	37.2	43.2	44.6	46.0	40.0	39.9	39.7	38.1	36.8	36.6	35.9	37.8	38.5	42.8	45.0
A-B	21.3	17.7	22.2	24.9	25.9	25.8	21.3	20.6	18.6	19.0	21.0	18.2	16.3	15.2	12.5	11.5
Schlitz	26.4	22.4	19.1	18.0	15.3	19.2	19.6	18.0	16.6	15.5	16.1	11.5	9.9	10.8	11.5	10.0
Hamm 1/	5.0	7.0	—	—	2.5	3.8	5.0	6.3	7.3	7.7	6.0	8.9	9.4	8.9	7.6	7.9
Falstaff	—	—	—	—	2.6	2.7	4.3	4.4	6.3	8.2	8.1	8.7	9.0	10.2	9.2	9.2
National	—	—	—	—	—	—	2.7	3.1	2.9	2.6	—	—	—	—	—	—
Pearl	—	—	—	—	0.5	0.6	1.0	0.9	2.1	1.8	—	1.3	1.2	1.0	1.2	0.4
Lone Star	—	—	—	—	0.7	0.7	0.9	0.9	0.8	1.4	—	2.3	2.0	1.2	1.0	0.9
Carling	—	—	—	—	0.6	0.5	0.7	0.6	0.3	0.2	—	—	—	—	—	—
Miller	4.9	4.0	3.5	2.2	2.5	2.0	2.3	3.6	4.4	3.5	3.4	3.2	2.6	2.9	2.7	3.1
Pabst	1.3	1.7	1.9	1.6	1.3	1.4	1.1	1.2	1.5	1.0	0.3	0.2	0.2	0.2	0.3	0.3
A-1	—	—	—	—	—	—	—	—	—	—	—	1.8	2.3	3.4	3.6	3.5
Canadian Ace	—	—	—	—	—	—	—	—	—	—	1.6	1.8	2.2	2.0	2.0	2.0
All Others	6.2	10.1	10.1	8.7	—	—	—	—	—	—	—	—	—	—	—	—
Concentration:																
Top 4	87.5	84.3	88.0e/	89.7e/	89.8	88.8	85.8	89.6	80.6	79.5	81.8	74.5	73.4	74.7	76.0	75.7
Top 8	—	—	—	—	96.8	95.6	96.2	96.9	96.3	95.1	93.1	90.5	89.5	91.9	91.9	92.2

e: estimated.

1/ Now Olympia.

North Dakota

Brewer	1977	1976	1975	1974	1973	1972	1971	1970	1969	1968	1967	1966	1965	1964	1963	1962
Schlitz	30.7	37.8	40.8	43.4	47.4	45.9	43.5	42.0	33.8	30.5	28.2	26.2	24.7	23.3	21.3	17.1
A-B	13.2	12.5	15.8	16.1	14.9	16.4	16.4	17.9	19.0	20.3	18.7	18.1	15.7	14.1	13.9	15.8
Heileman 1/	9.9	11.7	11.0	13.1	12.7	12.9	0.4	0.5	0.8	1.2	1.2	--	0.1	0.3	0.6	0.4
Pabst	24.0	19.9	13.4	9.5	6.6	4.6	3.5	2.9	2.8	2.3	2.2	1.9	1.4	1.3	1.2	1.1
Olympia 2/	6.6	7.1	10.1	11.2	5.7	5.4	6.3	—	—	—	—	—	—	—	—	—
Grain Belt 1/	—	—	—	—	5.3	6.5	8.5	10.2	13.4	15.1	17.9	18.5	18.5	18.0	20.1	20.8
Hamm 2/	—	—	—	—	4.3	5.2	5.5	6.7	8.7	10.0	12.4	15.5	17.7	17.7	19.8	22.6
Miller	14.7	9.4	5.2	2.0	1.6	1.1	1.4	1.8	2.1	2.1	2.2	2.4	2.0	2.3	2.6	2.9
Carling	—	—	—	—	1.3	1.6	2.0	2.8	4.0	3.2	3.3	3.3	3.5	3.9	4.2	3.4
Cold Spring	—	—	—	—	0.1	0.2	0.3	0.3	0.5	0.3	0.2	0.3	0.3	0.3	0.1	0.3
Associated 1/	--	--	--	--	--	--	11.9	14.5	14.2	14.3	13.1	13.6	12.8	13.7	12.8	13.4
All Others	0.9	1.5	3.6	4.8	—	—	—	—	—	—	—	--	—	—	—	--
Concentration:																
Top 4	82.6	81.9	81.0	83.8	81.6	81.7	80.3	84.6	80.4	80.2	77.9	78.3	76.6	73.1	75.1	76.3
Top 8	—	—	—	—	98.5	98.5	97.6	98.8	98.0	97.8	98.0	99.5	96.3	94.3	95.9	97.1

1/ Heileman includes Associated 1972-77 and Grain Belt 1974-77.

2/ Olympia includes Hamm 1974-77.

Packaged only 1962-73.

Oklahoma

Brewer	1977	1976	1975	1974	1973	1972	1971	1970	1969	1968	1967	1966	1965	1964
Coors	59.6	66.2	68.2	69.2	66.5	64.0	60.8	56.5	51.5	46.5	44.4	38.4	32.9	26.5
A-B	12.6	7.3	9.3	10.4	9.9	10.2	10.7	10.3	10.0	10.5	11.6	10.9	11.6	12.6
Schlitz	4.7	5.8	5.5	5.8	6.4	7.1	7.3	7.7	7.7	7.1	7.8	7.8	8.9	8.9
Carling	—	—	—	—	9.0	10.0	10.8	12.8	14.6	15.0	12.5	14.9	15.3	17.1
Falstaff	—	—	—	—	3.1	3.2	4.0	4.8	6.5	8.1	8.9	11.0	13.0	14.9
Miller	14.6	12.1	7.2	3.0	2.1	1.6	1.8	1.9	2.1	2.3	2.6	2.7	2.4	2.6
Pabst	1.5	1.8	1.6	0.9	1.1	0.9	0.6	0.8	0.9	1.3	1.3	1.4	1.4	2.3
Pearl	—	—	—	—	0.6	0.7	0.8	1.1	1.2	1.3	—	1.5	1.7	1.9
Lone Star	—	—	—	—	0.5	1.0	0.9	1.6	1.9	2.8	—	5.5	5.0	4.0
Jackson	—	—	—	—	0.3	0.5	0.9	1.4	2.1	3.0	—	—	6.7	—
National	—	—	—	—	0.2	0.3	0.3	0.3	0.5	0.8	—	—	0.3	—
Canadian Ace	—	—	—	—	—	—	—	—	—	—	—	5.3	—	7.0
All Others	7.1	6.7	8.1	10.7	—	—	—	—	—	—	—	—	—	—
Concentration:														
Top 4	91.5	91.4	91.7e/	93.0e/	91.8	91.3	89.6	87.3	83.8	80.1	77.4	75.2	72.8	71.1
Top 8	—	—	—	—	98.7	98.7	97.2	97.0	96.2	95.3	95.9e/	96.5	95.8	93.6

e: estimated.

1968-73: Packaged only.

Oregon

Brewer	1977	1976	1975	1974
A-B	16.5	14.6	15.0	10.0
Schlitz	8.6	8.5	5.0	2.4
Miller	15.7	6.2	2.6	1.8
Pabst	0.6	0.8	0.3	0.1
Olympia	23.6	26.0	27.3	29.5
Carling	8.1	10.6	12.9	15.0
Blitz	21.2	24.6	28.9	32.9
All Others	5.7	8.6	8.0	8.3
Concentration:				
Top 4	77.0	75.8	84.1	87.4

Rhode Island

Brewer	1977	1976	1975	1974	1973	1972	1971	1970	1969	1968	1967	1966	1965	1964	1963	1962
A-B	26.4	21.4	27.1	27.1	28.9	30.6	30.0	27.2	24.2	22.2	17.4	12.9	10.4	8.1	7.7	7.7
Falstaff 1/	20.7	23.8	25.9	31.4	26.8	29.9	33.8	38.1	44.1	47.8	53.0	58.9	62.6	65.3	66.7	67.2
Schlitz	12.2	17.6	16.1	17.9	19.9	16.5	11.9	11.5	10.3	8.3	6.6	5.7	4.6	4.6	4.4	4.1
Carling 2/	2.6	3.7	4.6	4.5	6.0	6.0	6.5	6.5	5.9	5.6	5.4	5.3	4.6	4.5	4.8	4.7
Miller	26.6	21.0	12.6	7.1	5.3	3.5	3.2	2.4	3.0	2.8	2.6	2.7	2.3	1.9	1.8	1.7
Schaefer	2.5	3.0	3.9	5.3	4.0	4.0	4.3	4.0	3.2	2.9	2.6	2.3	2.3	1.8	1.5	1.2
Associated	—	—	—	—	2.6	2.6	2.7	2.6	2.8	3.2	1.9	0.3	0.2	0.3	0.4	0.4
Rheingold 3/	—	—	—	—	2.5	2.5	3.2	3.5	3.6	4.2	6.7	8.4	10.1	10.2	9.2	8.6
Pabst	2.5	3.1	3.6	1.8	1.3	1.5	1.7	1.7	1.4	1.2	1.2	1.0	1.0	0.8	0.7	0.7
Van Munching	—	—	—	—	0.7	0.4	0.3	0.2	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1
C. Schmidt	—	—	—	—	0.5	0.5	0.7	0.7	0.3	0.3	—	—	—	—	—	—
Eastern	—	—	—	—	0.5	0.5	0.5	0.4	0.2	0.3	0.3	0.3	0.3	0.4	0.5	0.3
National	—	—	—	—	0.4	0.3	0.2	0.3	0.4	0.3	0.3	0.3	0.5	0.5	—	—
All Others	6.6	6.4	6.3	4.9	—	—	—	—	—	—	—	—	—	—	—	--
Concentration:																
Top 4	85.9	83.8	81.7	83.5	81.6	83.0	82.2	83.3	84.5	83.9	83.7	85.9	87.7	88.2	88.4	88.2
Top 8	—	—	—	—	96.0	95.6	95.6	95.8	97.1	97.0	96.2	97.2	97.9	97.2	96.8	95.9

1/ Includes Narragansett and Ballantine.

2/ Includes National 1974-77.

3/ Includes Ruppert.

South Carolina

Brewer	1977	1976	1975	1974	1973	1972	1971	1970	1969	1968	1967	1966	1965	1964	1963	1962
Schlitz	33.3	34.9	37.2	36.8	35.1	31.0	29.4	27.4	24.8	22.9	22.1	20.0	18.6	17.1	12.9	14.0
Pabst	12.4	16.7	17.8	21.6	25.6	29.2	29.6	29.0	29.6	27.0	25.2	23.3	20.7	18.5	17.3	15.0
A-B	23.1	20.3	24.6	25.8	22.8	21.3	18.2	18.2	16.3	17.1	16.2	17.8	19.8	18.7	21.0	24.4
Miller	24.8	21.5	15.9	9.5	5.5	3.6	3.5	3.6	3.7	3.8	3.9	4.1	4.3	4.8	5.1	6.5
Falstaff	--	--	--	--	3.0	5.2	7.8	9.7	12.6	13.5	15.2	14.6	17.2	19.5	20.2	17.5
Pearl	1.0	2.1	--	--	2.8	3.2	3.4	2.8	3.0	3.0	2.6	2.9	3.0	3.6	3.7	3.0
National 1/	2.8	1.9	1.5	2.2	2.0	2.1	2.7	2.7	2.9	3.1	2.7	2.7	3.3	4.1	2.2	1.7
Rheingold	--	--	--	--	0.9	1.3	1.5	1.8	1.0	0.1	--	--	--	--	--	--
Carling	--	--	--	--	0.8	1.4	2.3	2.8	3.9	7.0	8.1	9.0	8.3	9.1	11.5	10.8
Champale	--	--	--	--	0.8	0.7	0.6	0.5	0.4	0.5	0.5	0.4	0.3	0.4	0.6	0.6
Burger	--	--	--	--	--	0.2	0.3	0.5	1.1	1.6	1.8	2.0	2.6	3.0	3.6	4.0
All Others	2.6	2.5	2.9	4.1	--	--	--	--	--	--	--	--	--	--	--	--
Concentration:																
Top 4	93.6	93.4	95.5	93.7	89.0	85.1	85.0	84.3	83.3	80.5	78.7	75.7	76.3	73.8	71.2	70.9
Top 8	--	--	--	--	97.7	96.9	96.9	96.2	96.8	97.4	96.0	94.4	95.2	95.4	95.1	95.2

1/ Includes Carling 1974-77.

Packaged only 1962-73.

South Dakota

Brewer	1977	1976	1975	1974	1973	1972	1971	1970	1969	1968
Schlitz	16.8	20.3	22.7	24.6	28.3	29.0	31.4	30.1	25.7	24.0
A-B	18.3	16.3	19.8	19.4	15.2	15.6	16.2	16.6	15.8	11.8
Pabst	23.6	24.6	19.8	16.0	12.9	9.6	10.5	8.7	8.0	6.4
Olympia 1/	8.0	11.2	14.1	19.5	11.3	14.2	—	—	—	--
Hamm 1/	--	--	--	--	10.9	10.0	13.0	13.8	15.9	17.3
Grain Belt 2/	—	—	—	—	9.7	10.5	14.7	16.1	18.9	19.3
Heileman 2/	6.2	7.6	5.7	—	7.0	6.7	8.2	8.4	8.4	8.6
Miller	24.8	17.4	9.2	3.7	2.4	1.8	2.6	2.4	2.6	2.6
Falstaff	--	--	--	--	1.2	1.2	1.5	1.4	1.8	1.9
Cold Spring	—	—	—	—	0.4	0.4	0.5	0.5	0.6	0.5
August Schell	—	--	—	--	0.3	0.3	0.4	0.4	0.6	0.6
Pearl	—	—	—	—	0.2	0.4	0.5	0.7	0.6	0.7
All Others	2.3	2.7	8.2	16.8	--	--	--	--	--	--
Concentration:										
Top 4	83.5	78.6	76.4	79.5	67.7	69.3	75.3	76.6	76.3	72.4
Top 8	—	—	—	--	97.7	97.4	98.1	97.5	97.1	91.9

1/ Olympia includes Hamm 1974-77.

2/ Heileman includes Associated and Grain Belt, 1974-77.

Packaged only 1968-73.

Tennessee

Brewer	1977	1976	1975	1974	1973	1972	1971	1970	1969	1968	1967	1966	1965	1964	1963	1962
A-B	28.7	26.3	33.6	35.3	32.1	31.4	31.3	29.3	25.6	26.5	24.2	22.3	21.2	20.2	20.4	23.6
Pabst	13.1	16.7	16.3	18.0	20.8	22.5	22.6	21.2	19.6	22.2	20.3	16.0	11.3	7.2	5.8	4.8
Schlitz	14.1	18.9	19.4	19.9	20.0	19.2	17.1	15.6	13.9	12.7	10.9	11.4	11.1	11.6	11.9	10.6
Falstaff	—	—	—	—	7.1	8.1	9.9	11.7	14.5	14.4	17.2	20.1	22.0	22.8	23.1	21.9
Miller	26.8	18.6	11.1	6.4	3.7	2.6	2.7	2.7	3.1	2.9	3.2	3.1	3.0	2.8	3.1	3.1
Heileman 1/	—	—	—	—	2.9	3.7	5.7	7.2	8.5	7.7	0.7	0.8	1.2	1.4	1.4	--
Falls City	--	—	—	—	2.0	1.8	1.8	2.2	2.0	1.3	1.2	1.2	1.2	1.1	1.1	1.2
Carling	—	—	—	—	1.2	1.7	2.4	3.7	5.1	5.5	5.3	6.1	6.8	7.3	8.1	8.1
Pearl	—	—	—	—	—	—	—	—	—	—	—	—	—	1.6	3.4	3.1
Oertel	—	—	—	—	—	—	—	—	—	—	1.3	2.2	2.9	3.9	4.1	5.0
Associated	—	--	—	—	—	—	—	—	—	—	8.1	8.5	10.0	11.3	12.9	15.2
Stroh	6.0	7.4	6.7	2.5	—	—	—	—	—	—	—	—	—	—	—	--
All Others	11.4	12.1	12.8	17.9	—	—	—	--	—	--	--	—	—	—	—	—
Concentration:																
Top 4	82.7	80.5	80.4	79.6	80.0	81.2	80.9	77.8	73.6	75.8	72.6	69.8	65.6	65.9	68.3	71.3
Top 8	—	—	—	—	89.8	91.0	93.5	93.6	92.3	93.2	90.5	89.7	88.3	87.1	89.7	92.3

1/ Starting in 1968, Associated added to Heileman.

Packaged only 1962-73.

Texas

Brewer	1977	1976	1975	1974	1973	1972	1971	1970	1969	1968	1967	1966	1965	1964
Schlitz	31.3	31.1	33.6	32.7	31.5	28.6	26.9	24.8	21.6	16.3	12.1	10.1	9.9	8.9
A-B	17.3	14.4	19.9	20.5	19.2	18.3	16.6	14.7	12.3	13.2	9.2	7.3	7.6	5.4
Coors	23.1	25.6	15.1	14.3	12.9	12.2	10.9	9.8	8.8	7.9	—	—	3.7	3.7
Lone Star 1/	6.5	7.4	9.1	9.4	11.7	12.1	12.8	14.2	15.6	16.6	—	—	18.4	16.5
Pearl	4.5	5.4	4.9	8.2	9.0	10.6	10.6	13.4	15.8	17.2	—	—	21.1	21.6
Falstaff	—	—	—	—	6.7	7.7	8.0	8.8	10.6	13.0	—	—	17.0	19.2
Miller	10.5	8.6	7.1	3.8	3.1	2.7	3.4	3.6	3.6	3.5	—	—	3.1	—
Jackson	—	—	—	—	3.8	5.3	6.2	6.7	7.4	7.8	NA	NA	10.8	NA
Pabst	1.0	1.0	1.2	1.0	0.6	0.6	0.8	1.0	1.2	1.4	—	—	—	—
Shiner	—	—	—	—	0.3	0.3	0.3	0.4	0.4	0.4	—	—	—	—
Hamm 1/	—	—	—	—	—	—	—	—	—	—	—	—	3.1	—
All Others	5.7	6.4	9.2	10.1	—	—	—	—	—	—	—	—	—	—
Concentration:														
Top 4	82.2	79.7	77.7	76.9	75.3	71.3	67.2	67.1	65.3	63.3	—	—	67.3	—
Top 8	—	—	—	—	97.9	97.6	95.4	96.0	95.7	95.5	—	—	91.6	—

1/ Now Olympia.

Source: 1968-73: Lone Star.
1964-67: State data.

Utah

Brewers	1977	1976	1975	1974	1973	1972	1971	1970	1969	1968	1967	1966	1965	1964	1963	1962	1961
Coors	35.8	49.0	46.8	54.9	54.2	50.5	46.2	42.3	39.2	37.7	42.0	40.2	38.0	38.0	37.6	36.9	33.7
Olympia 1/	12.2	13.7	11.7	20.0	15.8	16.4	17.9	23.5	26.5	25.2	21.0	20.3	17.5	13.2	6.8	5.3	2.0
A-B	38.4	20.5	18.2	14.3	11.2	9.2	7.8	5.0	3.7	3.0	2.6	2.7	2.4	2.3	2.1	2.0	2.1
Hamm	—	—	—	—	6.8	6.1	4.1	3.0	0.1	—	—	—	—	—	—	—	—
General Brewing	—	—	—	—	4.4	9.0	15.0	16.2	19.4	23.1	25.7	26.8	30.2	32.4	37.0	36.6	36.9
Miller	3.6	4.6	3.7	3.3	3.6	3.6	5.4	5.9	3.9	2.9	1.9	2.0	1.8	1.9	1.6	1.9	1.9
Schlitz	6.8	7.4	5.3	2.1	1.8	2.1	2.1	2.6	5.3	5.8	5.0	3.8	2.6	2.3	2.9	2.1	2.5
Walter Brewing	—	—	—	—	1.6	2.7	0.9	1.0	1.3	1.3	1.0	1.1	1.2	1.3	—	0.2	2.0
Pabst	2.0	3.3	4.0	1.0	0.4	0.2	0.3	0.2	0.3	0.5	0.5	0.6	0.7	0.8	0.9	1.6	1.8
Fisher	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3.1
Peilno Products	—	—	—	—	—	—	—	—	—	—	—	—	0.9	4.8	6.7	8.2	9.4
Arizona Brewing	—	—	—	—	—	—	—	—	—	—	—	—	—	1.1	1.6	2.0	2.7
All Others	1.1	1.5	10.4	4.4	—	—	—	—	—	—	—	—	—	—	—	—	—
Concentration:																	
Top 4	93.2	90.6	82.0	92.5e/	88.0	85.1	86.9	87.9	90.4	91.8	93.7	91.1	88.3	88.4	88.1	87.0	83.1
Top 8	—	—	—	—	99.4	99.6	99.4	99.5	99.6	99.5	99.7	97.5	94.6	96.2	96.3	95.0	92.1

e: estimated.

1/ Includes Hamm 1974-77.

Packaged only 1968-73.

Vermont

Brewer	1977	1976	1975	1974	1973	1972	1971	1970	1969	1968	1967	1966	1965	1964	1963	1962
Schlitz	20.9	27.3	25.6	30.1	27.9	28.0	19.3	15.4	11.2	7.6	6.6	6.1	5.0	5.2	4.7	4.5
A-B	29.7	23.4	27.5	27.3	25.9	27.1	29.7	29.2	27.9	29.6	25.9	22.3	18.1	14.4	12.3	12.8
Schaefer	5.5	7.0	10.7	10.9	13.9	14.4	17.5	20.8	20.6	19.9	19.4	18.1	17.7	16.4	16.0	15.6
Genesee	7.9	8.6	8.1	—	6.9	5.6	5.3	5.6	6.8	6.9	11.1	12.9	14.7	15.3	16.4	16.7
Falstaff 1/	—	—	—	—	6.2	6.2	8.4	7.7	8.4	8.9	6.2	5.0	4.7	4.2	3.1	2.3
Miller	16.0	11.1	7.2	5.7	5.3	4.4	5.5	5.5	5.4	5.2	5.0	5.2	3.8	2.6	6.7	1.4
Carling 2/	3.0	3.8	4.6	6.0	4.3	4.7	4.9	5.7	7.3	7.6	7.5	9.0	10.7	15.1	19.0	20.2
Associated	—	—	—	—	2.0	2.1	1.8	2.0	2.0	2.0	3.1	3.7	2.3	2.4	2.4	2.6
West End	—	—	—	—	1.2	0.8	1.1	1.3	1.5	1.7	1.5	1.2	1.0	0.9	0.8	1.0
Rheingold 3/	—	—	—	—	0.7	2.4	3.1	4.2	5.6	7.4	10.6	12.7	17.4	17.9	19.8	17.6
Van Munching	—	—	—	—	0.4	0.3	0.3	0.2	0.2	0.1	—	—	—	—	—	—
National	—	—	—	—	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.5	0.8	1.5	1.0	0.3
Pabst	8.7	9.3	6.7	3.0	2.1	2.2	1.9	1.6	1.9	2.0	1.9	2.1	2.2	2.8	1.1	0.6
All Others	8.4	9.5	9.6	17.0	—	—	—	—	—	—	—	—	—	—	—	—
Concentration:																
Top 4	75.3	71.1	71.9	75.8e/	74.6	75.7	74.9	73.1	68.1	66.0	67.0	66.0	67.9	64.7	71.2	70.1
Top 8	—	—	—	—	92.5	92.5	93.7	94.1	93.2	93.1	92.3	91.3	92.1	91.3	93.7	92.3

e: estimated.

1/ Includes Narragensett and Ballantine.

2/ Includes National 1974-77.

3/ Includes Ruppert.

Packaged only 1962-73.

Washington

Brewer	1977	1976	1975	1974	1973	1972	1971	1970	1969	1968	1967
Rainier 1/	25.5	24.9	24.1	24.5	24.0	24.1	25.8	25.3	26.7	27.6	28.0
Olympia 2/	23.9	24.2	24.5	26.6	23.8	24.3	24.9	28.4	29.3	28.0	27.4
General Brewing	7.1	9.5	10.8	--	15.6	16.7	15.5	13.4	13.5	15.3	14.6
Carling 3/	7.9	9.3	10.5	11.4	10.6	10.7	10.6	11.5	10.6	10.2	8.7
A-B	16.3	13.2	14.5	11.3	7.7	6.1	5.5	3.6	3.4	2.9	3.4
Hamm 2/	—	--	—	—	4.4	4.4	4.6	3.8	3.3	3.2	3.9
Blitz-Weinhard	—	--	--	--	3.8	4.1	3.6	3.4	3.0	3.1	2.4
Heileman 4/	—	—	—	—	2.6	3.4	4.1	5.0	4.5	4.3	0.3
Miller	7.5	6.3	5.3	3.2	2.6	2.2	2.2	2.3	2.3	2.1	2.2
Falstaff	—	—	—	—	1.8	1.1	0.2	0.1	0.1	0.2	0.8
Schlitz	6.0	6.0	4.1	2.3	1.2	0.9	0.9	0.9	1.0	1.1	1.4
National 3/	—	—	—	—	0.8	0.7	0.7	0.8	0.6	0.3	0.2
Pabst	1.0	1.2	1.2	0.8	0.6	0.6	0.1	1.1	1.2	1.2	1.8
Coors	1.4	0.6	0.0	—	—	—	—	—	—	—	—
Schmidt	—	—	--	—	—	—	2.7	3.3	3.3	3.1	3.1
All Others	3.3	4.8	5.0	19.9	—	—	—	—	—	—	--
Concentration:											
Top 4	73.6	71.8	73.9	73.8	74.0	75.8	76.8	78.6	80.1	86.1	78.7
Top 8	—	—	—	—	92.5	93.8	94.6	94.4	94.6	94.8	91.5

1/ Includes Rheinlander. Acquired by Heileman in 1977.

2/ Olympia includes Hamm 1974-77.

3/ Carling includes National 1974-77.

4/ Includes Associated Brands.

Packaged only 1968-73.

Wisconsin

Brewer	1977	1976	1975	1974	1973	1972	1971	1970	1969	1968	1967	1966	1965	1964	1963	1962
Pabst	44.1	45.2	47.0	46.8	43.5	41.1	37.6	32.0	31.7	32.1	36.5	33.3	32.0	30.2	28.7	27.5
Schlitz	10.0	12.2	14.5	15.8	18.6	18.5	18.6	19.7	16.4	15.7	14.4	15.1	15.6	16.1	15.5	13.9
Heileman 1/	15.5	13.4	11.7	10.9	11.1	11.3	12.4	14.2	13.9	12.9	9.3	9.6	9.7	9.9	9.6	4.3
A-B	9.3	8.7	10.9	10.3	9.6	10.1	9.3	9.1	8.7	9.8	7.6	7.0	6.3	5.7	5.3	5.6
Miller 2/	6.3	5.2	5.1	5.3	5.5	5.5	6.6	7.4	8.5	8.8	7.3	7.9	6.2	3.8	4.0	4.4
Hamm 3/	4.2	5.9	2.2	—	3.7	4.3	5.2	5.9	8.1	8.4	9.1	9.8	9.8	10.3	10.8	11.4
Huber	—	—	—	—	2.2	2.0	2.1	2.1	1.8	1.5	1.1	0.9	0.9	0.9	0.8	0.6
Grain Belt 1/	—	—	—	—	1.6	1.8	2.0	2.2	2.7	2.2	1.7	—	—	—	—	—
Leinenkugel	—	—	—	—	1.3	1.2	1.4	1.6	1.8	1.8	2.0	2.0	2.1	2.1	2.2	2.2
Stroh	2.6	1.7	0.7	—	0.2	0.2	0.1	0.1	0.1	0.1	—	—	—	—	—	—
Falstaff 4/	—	—	—	—	0.2	0.2	0.1	—	—	—	—	—	—	—	—	—
Carling	—	—	—	—	0.2	0.2	0.3	0.5	0.5	0.4	0.2	0.2	0.3	0.3	0.3	0.4
Kingsburg 5/	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4.4
Gettleman 2/	—	—	—	—	—	—	—	—	—	—	—	—	1.5	3.3	3.4	3.5
All Others	7.8	7.7	8.0	10.8	—	—	—	—	—	—	—	—	—	—	—	—
Concentration:																
Top 4	78.9	79.5	84.1	83.8	82.8	81.0	77.9	75.0	70.7	70.5	69.3	67.8	67.1	66.5	64.6	58.4
Top 8	—	—	—	—	95.8	94.6	93.8	92.6	91.8	91.7	87.9	85.6	83.2	81.4	79.5	75.0

1/ Heileman includes Grain Belt 1974-77.

2/ Miller includes Gettleman 1965-77.

3/ Now Olympia.

4/ Includes Ballantine.

5/ Purchased by Heileman.

1968-73 Packaged only. 1962-67 Includes draught.

Wyoming

Brewer	1977	1976	1975	1974	1973	1972	1971	1970	1969	1968	1967	1966	1965	1964
Coors	43.9	51.2	53.6	54.3	53.6	52.3	50.4	47.5	46.4	44.2	41.4	41.4	40.4	41.1
A-B	26.9	22.2	24.2	24.7	22.9	22.8	21.8	20.5	18.5	19.4	21.4	18.9	18.0	17.3
Schlitz	5.3	6.7	5.9	6.3	6.9	7.5	7.8	9.3	10.0	10.0	9.8	10.7	11.0	11.9
Olympia 1/	8.8	8.1	8.3	8.3	6.0	5.1	4.5	4.6	5.0	4.5	3.7	3.5	2.8	2.9
Hamm 1/	—	—	—	—	3.8	5.1	7.3	8.8	10.2	11.2	12.3	12.9	12.5	13.0
Pabst	4.1	3.5	2.2	1.4	1.7	1.6	1.7	1.7	2.0	2.0	2.2	2.1	2.3	1.9
Miller	8.3	5.7	3.2	2.1	1.6	1.5	1.7	2.2	2.5	2.4	2.7	2.9	4.2	2.9
Heileman 2/	—	—	—	—	0.8	1.1	1.5	1.5	1.2	1.0	—	0.6	—	—
Falstaff	—	—	—	—	0.7	0.7	0.7	0.8	1.0	1.0	1.0	1.1	1.3	1.6
Carling	—	—	—	—	0.4	0.5	0.5	0.8	0.6	0.8	0.6	0.9	1.3	1.3
Pearl	—	—	—	—	0.3	0.3	0.3	0.3	0.3	0.4	—	—	—	—
National	—	—	—	—	0.3	0.3	0.3	0.4	0.3	—	—	—	—	—
Rainier	—	—	—	—	0.2	0.3	0.3	0.6	0.4	0.5	—	—	0.3	0.5
Grain Belt	—	—	—	—	0.1	0.3	0.6	0.6	1.1	1.1	—	—	—	—
All Others	2.7	2.5	2.5	3.1	—	—	—	—	—	—	—	—	—	—
Concentration:														
Top 4	87.9	88.2	92.0	93.6	89.4	87.7	87.3	86.1	85.1	84.8	84.9	83.9	81.9	83.3
Top 8	—	—	—	—	97.3	97.0	96.7	96.1	95.8	94.8	94.5	93.5	92.5	92.6

1/ Olympia includes Hamm 1974-77.

2/ Includes Associated.

Packaged only 1968-73.

Appendix B

U.S. Breweries

Source: Brewers Digest Brewery Dirctory - 1977 (except as noted).

(Capacity is in barrels per year)

	Company	Location	Capacity	Brands
1.	Anheuser-Busch*	St. Louis	10,700,000	Budweiser, Michelob,
		Jacksonville	5,900,000	Busch Bavarian
		Tampa**	1,600,000	
		Newark, N.J.	4,700,000	
		Los Angeles	3,600,000	
		Houston	2,600,000	
		Columbus, Ohio	6,000,000	
		Merrimack, N.H.	2,700,000	
		Williamsburg, Va.***	3,100,000	
		Fairfield, Cal.****	3,400,000	
		Company Total	44,300,000	
2.	Blitz-Weinhard	Portland, Or.	800,000	Blitz-Weinhard
3.	Carling National	Phoenix	350,000	Heidelberg, Carling Label
		Baltimore	800,000	Tuborg, Columbia
	(Heidelberg)	Tacoma	650,000	Red Cap Ale, National Premium,
	(Stag)	Belleville, Ill.	1,200,000	National Bohemian, Colt 45, Grape
		Frankenmuth, Mich.	800,000	Malt Duck, Apple
		Baltimore	1,650,000	Malt Duck,
		Company Total	5,450,000	Van Lauter, Altes, A-1

* Capacities of plants are taken from A-B 1977 SEC Form 10-K and represent 1978 capacity.

** To be expanded to 2.2 million barrels. Wall Street Journal, March 24, 1978, p. 14.

*** Current labor force of 400. To be expanded to 7.5 million barrels with a labor force of about 650 by 1980, according to The Washington Post, June 24, 1977, p. E-10.

**** Began production Oct. 1976. Capacity is eventually to reach 3.6 million barrels. Source: Beverage World, Jan., 1977, p. 18.

	Company	Location	Capacity	Brands
4.	Champale*	Trenton, N.J. Norfolk, Va. Company Total	350,000 200,000 550,000	Champale M.L., Pilser's Original, Olbrau, Metbrew Non-Alc., Champ Ale, Edelbrew, Copenhagen Castle, Trenton Old Stock Black Horse, Pink Champale
5.	Cold Spring	Cold Spring, Minn.	**	Cold Spring, Fox Deluxe, North Star, Kegle Brau, Western, Karlsbrau, Northern, Gluck, White Label
6.	Coors	Golden, Colo.	15,000,000***	Coors
7.	Dixie	New Orleans	****	Dixie
8.	Duncan	Auburndale, Fla.	100,000	Dunk's, Fischer's, Regal

* Wholly-owned subsidiary of Iroquois Brands.

** 250,000 in 1973.

*** Has slated a $65 million expansion to 25 million bbl., according to Beverage World, July, 1976.

**** 300,000 in 1973.

	Company	Location	Capacity	Brands
9.	Eastern	Hammonton, N.J.	250,000	Milwaukee Prem., Canadian Ace, Old Bohemian, Old German
10.	Erie*	Erie, Pa.	500,000	Pilsener, Lager, Jackson, Yacht Club, Olde Pub, Wunderbrau, Jackson Koehler Imperial Cream Beer and Light Lager
11.	Falls City	Louisville	800,000	Falls City, Drummond Bros.
12.	Falstaff	San Francisco	_____	Falstaff,
		St. Louis	_____	Narragansett,
		New Orleans	_____	Krueger,
		Omaha	_____	Haffenreffer,
		Ft. Wayne	_____	Croft Ale,
		Galveston	_____	Hanley,
	(Narragansett)	Cranston, R.I.	_____	Ballantine
		Company Total	7,000,000	

*To be closed and brands sold to C. Schmidt, according to Business Week, March 13, 1978, p. 40.

Company	Location	Capacity	Brands
13. General*	San Francisco	1,200,000	Lucky, Fisher
	Vancouver, Wash.	400,000	Brew 102,
	Company Total	1,600,000	Regal Select
14. Genesee	Rochester, N.Y.	3,000,000	Genesee, Fyfe & Drum
15. Geyer Bros.	Frankenmuth, Mich.	30,000	Geyer's, Frankenmuth Bav.
16. Peter Hand	Chicago	1,000,000	Old Chicago, Braumeister, Old Crown, Alps Brau, Old German, Van Merritt, Burgemeister, Oertels, Peter Hand
17. Heileman**	La Crosse, Wis.***	_____	Old Style, Special Export,
(Sterling)	Evansville, Ind.	_____	Blatz, Grain
(Wiedemann)	Newport, Ky.	_____	Belt, Wiedemann,
(J. Schmidt)	St. Paul, Minn.***	_____	Drewrys, Kingsbury,
	Company Total	6,500,000****	Sterling, Pfeiffer, Mickey's, Schmidt

* Will acquire Pearl Brewing in early 1978. Wall Street Journal, Dec. 13, 1977, p. 48.

** Acquired Rainier effective April, 1977

*** Capacity of the LaCrosse plant is 3 million and the capacity of the St. Paul plant is 1.5 million, according to Beverage World, Jan., 1977, p. 30.

**** Apparently intends to expand to 10 million by 1980. Source: Ibid. Capacity will near 9 million in 1978, according to 1977 SEC Form 10K.

Company	Location	Capacity	Brands
18. Horlacher*	Allentown, Pa.	300,000	Pilsner, Brew II, Imperial Pilsener, Perfection
19. Huber	Monroe, Wis.	340,000	Huber, Golden Glow, Hibrau, Wisconsin Club, Wisconsin Gold Label, Regal Brau, Bavarian Club, Rhinelander, Augsberger, Bohemian Club, Holiday, Alpine
20. Hudepohl	Cincinnati	1,000,000	Hudepohl, Hofbrau, Burger, Tap Beer
21. Hull	New Haven, Conn.	150,000	Hull's
22. Jones	Smithton, Pa.	150,000	Stoney's Gold Grown, Esquire, Fort Pitt, Old Shay

* Planning a new 400,000-500,000 bbl. plant, according to Beverage World, June, 1976.

	Company	Location	Capacity	Brands
23.	Fred Koch	Dunkirk, N.Y.	105,000	Deer Run, Koch's Golden Anniversary, Simon Pure, Iroquois, Bavarian Select
24.	Latrobe	Latrobe, Pa.	750,000	Rolling Rock
25.	Leinenkugel	Chippewa Falls, Wis.	85,000	Leinenkugel's, Chippewa Pride, Bosch, Gilt Edge
26.	Lion-Gibbons/ Stegmaier	Wilkes-Barre, Pa.	350,000	Gibbons, Bartels, Stegmaier
27.	Miller	Azusa, Cal.	2,000,000	Miller High Life, Milwaukee's Best, Meister Brau, Lite, Lowenbrau
		Fulton, N.Y.	4,000,000*	
		Fort Worth	6,000,000**	
		Milwaukee	8,000,000	
		Eden, N.C.	under construction***	
		Albany, Ga.	under construction****	
		Company Total	20,000,000*****	
28.	Olympia (Lone Star)	St. Paul, Minn.	3,000,000	Hamm's, Olympia, Buckhorn, Lone Star
		San Antonio	1,500,000	
		Olympia, Wash.	4,000,000	
		Company Total	8,500,000	
29.	Ortlieb	Philadelphia	600,000	Ortlieb, Kaier, Neuweiler's, Ivy League, Old English 800

* To be expanded to 8 million, according to Beverage World, Jan. 1977, p. 18.

** To be expanded to 7 million by the end of 1977 and to 8 million by 1980. Source: Beverage World, April 1977, p. 18.

*** To be expanded from 3 million to 8.8 million by 1978, bringing total investment to $250 million. Source: Wall Street Journal, July 8, 1977, p. 26.

**** Eventually to reach 10 million, with limited production in 1980, Wall Street Journal, April 12, 1978, p. 17.

***** Expected to reach 40 million by 1980, according to Business Week, Nov. 8, 1976, p. 60. The Azusa plant will be replaced by a five million barrel plant to be finished by 1980 at Irwindale, Cal., according to the Wall Street Journal, Nov. 21, 1977.

	Company	Location	Capacity	Brands
30.	Pabst	Los Angeles	1,350,000	Pabst, Andeker, Eastside,
		Pabst, Ga.*	4,500,000	Burgermeister,
		Peoria Heights, Ill.	3,300,000	Red White and Blue
		Newark, N.J.	2,650,000	
		Milwaukee (owns former Blatz plant at Milwaukee)	6,200,000	
		Company Total	18,000,000	(5 plants)
31.	Pearl**	San Antonio	1,700,000	Pearl, Country Club Malt Liquor, Goetz, Jax, Pale Near Beer
32.	Pickett	Dubuque, Iowa	150,000	Pickett's, Vat 7., Dubuque Star, E&B, Weber, Fox Head, Edelweiss, Champagne Velvet, Barbarossa
33.	Pittsburg	Pittsburg, Pa.	1,250,000	Iron City, Tech., Mustang, Dubois, Gambrinus, Augustiner, Robin Hood, Mark V, Old German, Old Dutch, American, Old Export

* To be expanded to 8 million before 1980. Beverage World, July, 1976. The 1977 SEC Form 10K lists its current capacity at 5.5 million.

** To be acquired by General Brewing in early 1978. Wall Street Journal, Dec. 13, 1977, p. 48.

	Company	Location	Capacity	Brands
34.	Prinz Brau Alaska	Anchorage	90,000	Prinz Brau, Prinz Extra
35.	Rainier*	Seattle	1,000,000	Rainier, Rheinlander
36.	Rheingold**	Orange, N.J.	1,500,000	Rheingold, Knickerbocker, Esslinger, Gablinger's
	(Forrest)	New Bedford, Mass.	300,000	
		Company Total	1,800,000	
37.	Schaefer***	Baltimore	1,600,000	Schaefer, Gunther, Piels
		Allentown, Pa.	5,000,000	
		Company Total	6,600,000	
38.	August Schell	New Ulm, Minn.	50,000	Deer Brand, Fitger, Stein-Hauf

* Acquired by Heileman effective April, 1977.

** Acquired by C. Schmidt. New Bedford plant has been closed and Orange plant will be closed in Dec., 1977, according to Schmidt officials.

*** Source: 1977 SEC Form 10K.

	Company	Location	Capacity	Brands
39.	Schlitz	Van Nuys, Cal.	3,100,000	Schlitz
		Tampa	1,400,000	Old Milwaukee
		Honolulu	400,000	Primo
		Winston-Salem	5,500,000	
		Baldwinsville, N.Y.	2,000,000*	
		Memphis	6,200,000	
		Longview, Texas	4,500,000	
		Milwaukee	6,500,000	
		Company Total	29,000,000**	
40.	C. Schmidt	Cleveland	1,500,000	Schmidt's, Silver Top, Duke, POC, Bavarian, Tiger Head, Prior, Rams Head, Brew 96
		Philadelphia	2,040,000	
		Company Total	3,540,000	
41.	Schoenling	Cincinnati	200,000	Schoenling, Top Hat, Fehr, Sir Edward Stout
42.	Spoetzl	Shiner, Texas	60,000	Shiner

*To be expanded to 6 million. Business Week, Nov. 8, 1976, p. 61.

**To reach 32 million in 1978, according to 1977 SEC Form 10K.

	Company	Location	Capacity	Brands
43.	Steam Beer	San Francisco	10,000	Anchor Steam, Anchor Porter, Liberty Ale
44.	Stevens Point Bev.	Stevens Pt., Wis.	55,000	Point Special
45.	Straub	St. Mary's Pa.	30,000	Straub
46.	Stroh	Detroit	6,500,000	Stroh's, Goebel
47.	Walter	Eau Claire, Wis.	150,000	Walter's
48.	West End	Utica, N.Y.	800,000	Utica Club, Matt's, Fort Schuyler, Maximus Super
49.	Yuengling	Pottsville, Pa.	200,000	Yuengling's Lord Chesterfield, Old German

Brewers Ranked by 1976 Capacity
Source: Brewers Digest Brewery Directory - 1977

Company	Capacity in barrels per year	Operating Breweries
Anheuser - Busch	39,000,000	10
Schlitz	29,000,000	8
Miller	20,000,000	4
Pabst	18,000,000	5
Coors	15,000,000	1
Olympia	8,500,000	3
Falstaff	7,000,000	7
Heileman	6,500,000	4
Schaefer	6,500,000	3
Stroh	6,500,000	1
Carling National	5,450,000	6
C. Schmidt	3,540,000	2
Genesee	3,000,000	1
Rheingold	1,800,000	2
Pearl	1,700,000	1
General	1,600,000	2
Pittsburg	1,250,000	1
Peter Hand	1,000,000	1
Hudepohl	1,000,000	1
Rainier	1,000,000	1
Falls City	800,000	1
West End	800,000	1
Blitz-Weinhard	800,000	1
Latrobe	750,000	1
Ortlieb	600,000	1
Champale	550,000	2
Erie	500,000	1
Lion	350,000	1
Huber	340,000	1
Horlacher	300,000	1
Eastern	250,000	1
Schoenling	200,000	1
Yuengling	200,000	1
Hull	150,000	1
Jones	150,000	1
Pickett	150,000	1
Walter	150,000	1
Koch	105,000	1
Duncan	100,000	1
Prinz Brau	90,000	1
Leinenkugel	85,000	1
Spoetzl	60,000	1
Stevens Point	55,000	1
Schell	50,000	1
Geyer	30,000	1
Straub	30,000	1
Steam	10,000	1
No capacity listed for Cold Spring or Dixie		
Total	184,995,000	94

Shares of Total Capacity
Source: Brewers Digest Brewery Directory - 1977

	Capacity in barrels per year	Share (percent)
Top 4 Companies	106,000,000	57.30
Top 8 Companies	143,000,000	77.30
Top 8 adjusted for Heileman acquisiton of Rainier	144,000,000	78.84
Largest Breweries Listed		
Coors: Golden	15,000,000	
Anheuser-Busch: St. Louis	10,500,000	
Miller: Milwaukee	8,000,000	
Schlitz: Milwaukee	6,500,000	
Stroh: Detroit	6,200,000	
Pabst: Milwaukee	6,200,000	
Miller: Fort Worth	6,000,000	
Schlitz: Winston-Salem	5,500,000	
Top 8 Listed Breweries	64,200,000	34.70

Appendix C

State Regulation Under the Twenty-First Amendment

Although their effect on industry structure is unclear, various State regulatory programs, carried out under the authority conferred by the 21st Amendment,* have an important bearing on the nature of competition at the distribution level of the industry. Various types of conduct that otherwise would be prohibited by the antitrust laws are legitimized in many States by the fact that they are permitted or required by State legislation or by State administrative agencies. The most relevant areas of State regulation are price posting laws and territorial limitations imposed on wholesalers.** Price posting laws generally require the brewers or wholesalers (or both) to file their prices with a State agency, which prices are to remain in effect for a certain time period. Where the period is a long one, this virtually eliminates price promotions. Territorial limitations usually require agreements between brewers and wholesalers, setting forth the geographic

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* U.S. Constitution Amendment XXI. Section 2 thereof provides: "The transportation or importation into any State, Territory, or possession of the United States for delivery or use therein of intoxicating liquors, in violation of the laws thereof, is hereby prohibited." Although the term "liquors" and not "beer" is used, there has never been any question about the amendment's applicability to beer. See, e.g., State Board of Equalization of California v. Young's Market Co., 229 U.S. 59 (1936).

** In the brewing industry, beer distributors are usually called "wholesalers," the terms being used synonymously and interchangeably.

area in which a wholesaler may sell. Frequently, States will also require that only one wholesaler be permitted to sell in any one territory. The various types of regulations by States are set forth below in tables C-1 and C-2.

TABLE C-1

STATE PRICE-POSTING STATUTES AND REGULATIONS

State	Regulation or statute	Requires price posting	Type of promotion-controlling restriction
Alabama	ABC Reg. 29	X	120 days*
Alaska			
Arizona	Alc. Bev. Sec.4-252	X for suppliers on sales to wholesalers	
Arkansas	Title 48 Sec. 910 Liq. Reg. Sec. 125	X	Changes effective on 1st of the month
California	Bus. & Prof. Code 25000-25004 - ABC Reg. Art 15, Rules 90, 105	X (min. retail also may be established)	30 days for min. retail prices
Colorado			
Connecticut	Intoxicating Liquors, Sec. 30-63 LCC Regs. Sec. 30-6-A-40, 30-6-B12	X (min. retail prices also may be established)	Changes effective on 1st day of month
Delaware	ABC Regs. Rule 29	X	30 days before reduction; prices on new brands can neither be raised nor lowered for six months from initial filing

* This notation indicates the minimum period that any price increase or decrease must remain in effect.

State	Regulation or statute	Requires price posting	Type promotion-controlling restriction
Florida	Div. of Bev. Reg. 7-A-4.13	X	10 days
Georgia	Dept. Rev. Rule 560-8-3-.19	X	180 days
Hawaii	Intox. Liq. Sec. 281-43	X	Changes effective on 1st day of the month
Idaho	Alc. Bev. Sec. 23-1029	X	Increases must remain in effect for 30 days, decreases for 6 months
Illinois		Statute relating to price-posting declared unconstitutional	
Indiana			
Iowa			
Kansas			
Kentucky			
Louisiana			
Maine	ABC Reg. 59	X	30 days notice for all changes; changes effectiv on first of the month; decreases must remain in effect 90 days
Maryland			

State	Regulation or statute	Requires price posting	Type promotion-controlling restriction
Massachusetts	Title 138 Secs. 25A, 25B, ABC Reg. 55.1	X (Required on sales to wholesalers; on sales to retailers, must provide retailers with price info.)	30 days for sales to either wholesalers or retailers
Michigan	Liq. Con. Comm. Reg. 436.1625	X	Price reductions must remain in effect for 180 days
Minnesota			
Mississippi			
Missouri	Liq. Con. Law Secs. 311.334, 311.336	X	Changes effective on first of the month
Montana			
Nebraska	Liq. Secs. 53-168, 53-168.01, 53-168.02, 53-168.03	X	No price reductions permitted.
Nevada			
New Hampshire			
New Jersey	ABC Regs. 13: 2-31.1, 13:2-31.2	X (min. resale prices)	3 months
New Mexico			

State	Regulation or statute	Requires price posting	Type promotion-controlling restrictions
New York	Art 4., Sec. 55-b		No increases after a price reduction for 180 days
North Carolina			
North Dakota			
Ohio	Liq. Con. Comm. Reg. 4301:1-1-73		No increases after a price reduction for 120 days
Oklahoma	ABC Reg. Sec. 18	X	15 days after filing before a price reduction becomes effective
Oregon	Liq. Con. Comm. Reg. 10-210	X	No increases after a price reduction for 180 days; changes effective 10 days after filing unless rejected by the Commissi
Pennsylvania	Liq. Con. Bd. Reg. Sec. 11.201		Price reductions must remain in effect for 180 days
Rhode Island	Alc. Bev. Sec. 3-10-11		9% limit on wholesaler's profits

State	Regulation or statute	Requires price posting	Type promotion-controlling restriction
South Carolina			
South Dakota	Dept. of Rev. Regs. 35-405, 35-406, 35-407	X (alternate publication in trade journal permitted)	10 days after filing before change becomes effective
Tennessee	Intox. Liq. Sec. 57-305	X	Reductions must stay in effect 360 days; no limitations on number of increases but increases cannot be reduced for 360 days
Texas			
Utah			
Vermont			
Virginia	ABC Regs. Sec. 54	X	One two-week promotion permitted each 6 months; increases effective on 10 days notice, but may not be decreased for balance of 6 mo. period

State	Regulation or statute	Requires price posting	Type promotion-controlling restriction
Washington	Liq. Con. Bd. Regs., WAC 314-20-100	X	Not effective until 15 days after filing; no prices below cost; approval of Board required for all prices
West Virginia	Taxation Sec. 11-16-13a Nonintox. Beer Reg. No. 29	X	Changes not effective until 3 working days after receipt of written acknowledgement from the Commissioner
Wisconsin			
Wyoming			

TABLE C-2

STATE TERRITORIAL RESTRICTIONS

State	Regulation or statute	Requires territorial designation	Prohibits sales outside designated territory	Permits territorial designation
Alabama				
Alaska				
Arizona				
Arkansas	Title 48 Sec. 513.1	X	X	
California	Bus. & Prof. Code Sec. 25000.5	X		
Colorado	Title 12 Secs. 12-46-109, 12-46-112, 12-46-115, 12-47-128	X	X	
Connecticut	Title 30 Sec. 30-17 LCC Regs. Sec. 30-6-B7	X	X	
Delaware				
Florida				
Georgia	Dept. of Rev. Rules 560-8-2-.12, 560-8-3-.15	X	X	
Hawaii				
Idaho	Beer Sec. 23-1003	X (More than one distributor per territory is permitted)	X (Dealer or wholesaler in infringed upon territory may obtain an injunction)	

State	Regulation or statute	Requires territorial designation	Prohibits sales outside designated territory	Permits territorial designation
Illinois	Dram Shops Sec. 126, LCC Regs. Art. VI, Rule 6	X	X (Also prohibits sales within territory to retailers located outside territory)	
Indiana				
Iowa	Liq. Control Sec. 123.135	X		
Kansas	Title 41 Sec. 41-409 ABC Regs. 14-7-9, 14-7-10, 14-7-11, 14-7-12	X	X (Unless distributor in other territory refuses to sell to a retailer in that territory)	
Kentucky				
Louisiana				
Maine	Title 28 Secs. 651, 653 ABC Reg. 69	X	X	

State	Regulation or statute	Requires territorial designation	Prohibits sales outside designated territory	Permits territorial designation
Maryland	Art. 2B, Secs. 203A, 203E, 203F	X	X (Where a distributor is given an area of primary responsibility or must concentrate efforts in an area)	X
Massachusetts				
Michigan	Art. 8 Sec. 436.30a	X		
Minnesota				
Mississippi				
Missouri				
Montana	Alc. Bev. Code Secs. 4-3-207, 43-208	X		
Nebraska	Liq. Sec. 53-123.03	X	X	
Nevada	Trade Reg. & Prac. Sec. 598.300			X
New Hampshire				
New Jersey				
New Mexico	Alc. Bev. Sec. 46-9-8.1, ABC Reg. 43			X

State	Regulation or statute	Requires territorial designation	Prohibits sales outside designated territory	Permits territori designati
New York				
North Carolina				
North Dakota				
Ohio	Liq. Con. Law Sec. 4301.241	X	X	
Oklahoma				
Oregon				
Pennsylvania	Title 47, Secs. 4-431, 441	X	X	
Rhode Island				
South Carolina				
South Dakota				
Tennessee	Intox. Liq. Sec. 57-305	X	X	
Texas				
Utah	Title 32 Sec. 32-4-16	X (For light beer; beer with more than 3.2% alcohol by volume sold only by Comm.)	X	
Vermont	Beer & Wine Franchises, Sec. 705, Liq. Con. Bd. Reg. 9	X	X	

State	Regulation or statute	Requires territorial designation	Prohibits sales outside designated territory	Permits territorial designation
Virginia	Title 4 Sec. 4-80.2	X	X	
Washington				
West Virginia	Taxation Sec. 11-16-13b, Non-intox. Beer Reg. No. 42	X (For non-intox. beer; beer with more than 3.2% alcohol by volume sold only by State)	X	
Wisconsin				
Wyoming	Title 12, Sec. 12-21	X		

*U.S. GOVERNMENT PRINTING OFFICE : 1979 0-623-691/837