Retail liquor stores experience flat trend in productivity

Output per hour of all persons remained relatively stable during 1972–85; technological innovations have not been sufficient to offset weak demand and small, labor-intensive operations

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Output per hour of all persons[1] in the retail liquor store industry[2] increased at an average annual rate of 0.2 percent from 1972 to 1985, compared with an average annual rate of 0.7 percent for the total nonfarm business sector of the economy during the same period. This overall productivity gain reflects no change in output on an average annual basis coupled with a corresponding decrease in all person hours of 0.3 percent. (See table 1.)

In 1972–78, productivity in the retail liquor industry declined at a rate of 0.8 percent. The rate of growth in output was only 0.7 percent and was outpaced by a growth in hours of 1.5 percent per year. Productivity declined every year of this subperiod except in 1976, when it increased by 4.7 percent. This increase occurred as output rose 1.6 percent and hours declined 3.0 percent. Recessionary conditions in 1974 and 1975 may have contributed to the weak demand exhibited during this period. Sales declined in 1975, the year the recession reached its trough, but rebounded in 1976 and 1977—both years of economic recovery.

From 1978 to 1982, productivity experienced a sharp turnaround, rising at a 3.3-percent annual rate. However, it still reflected a decrease in hours. Output increased an average of 0.4 percent annually, while hours declined at a rate of 2.9 percent. Output increased in only 2 years of this subperiod, 1979 and 1980.

Despite the general recovery in the economy since 1982, productivity declined at an average annual rate of 1.9 percent from 1982 to 1985. Output declined at a rate of 3.9 percent, exceeding the 2.1-percent rate of decrease in hours. Output posted declines in every year except 1983, when there was a small increase of 0.6 percent. Substantial declines of 6.6 and 4.7 percent occurred in 1984 and 1985. Increased health concerns, changes in social attitudes toward drinking, and tougher drunk-driving laws have proba-

Table 1. Retail liquor stores indexes of output per hour of all persons and related data, 1972–85

[1977=100]

Year	Output per hour of all persons	Output per person	Output	Hours of all persons	All persons
1972	101.3	102.8	94.2	93.0	91.6
1973	101.2	104.7	96.7	95.6	92.4
1974	99.8	103.5	96.7	96.9	93.4
1975	96.5	99.4	96.5	100.0	97.1
1976	101.0	101.2	98.0	97.0	96.8
1977	100.0	100.0	100.0	100.0	100.0
1978	94.7	92.0	98.3	103.8	106.9
1979	96.3	91.9	101.4	105.3	110.3
1980	101.6	92.8	103.7	102.1	111.7
1981	103.2	93.2	101.7	98.5	109.1
1982	107.8	96.1	99.9	92.7	104.0
1983	101.2	93.4	100.5	99.3	107.6
1984	101.6	91.6	93.9	92.4	102.5
1985	101.0	88.6	89.5	88.6	101.0
	Average annual rates of change (in percent)				
1972–85	0.2	−1.1	0.0	−0.3	1.1
1980–85	−0.4	−0.9	−2.7	−2.3	−1.9

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bly contributed to the decline in demand.[3] The small output increase of 0.6 percent coupled with an increase in hours of 7.1 percent caused a drop in productivity of 6.1 percent in 1983. In 1984, a drop in hours of 6.9 percent enabled productivity to register a 0.4-percent increase, but in 1985 productivity declined by 0.6 percent as hours declined less than output.

Industry structure and employment

The industry is characterized by small establishments with relatively few employees. In recent years, however, small stores have declined in relative importance. Retail liquor establishments with 1 to 9 paid employees represented 85 percent of all establishments with paid employees in 1982, compared with slightly over 89 percent in 1972. These employees accounted for about 65 percent of total paid employment in 1982, down from about three-quarters in 1972. The sales volume of stores with 1 to 9 paid employees has likewise declined slightly as a proportion of the total. In 1982, their sales volume accounted for 69 percent of the total, down from about three-quarters in 1972.

Although most establishments are small, a number of firms in the industry have many establishments. These organizations can benefit from certain economies of scale, even if none of the individual establishments has large output. Although the number of multiunit firms has increased, the number of large companies has remained virtually unchanged. In 1972, there were 944 multiunit firms, accounting for a total of 6,265 establishments. Some of these firms contained numerous establishments. For example, 6 firms had 51 to 100 establishments and 11 firms had more than 100 outlets. The 11 firms actually operated a total of 2,577 establishments, an average of 234 establishments per firm. They accounted for almost 17 percent of all sales and about 10 percent of paid employment.

In 1982, the number of multiunit firms totaled 2,124, accounting for 8,008 establishments. Among these were 6 firms with 50 to 99 establishments (the category shown in the 1982 Census of Retail Trade). Twelve firms had 100 establishments or more. Thus, over a 10-year period, while the number of multiunit firms increased, there was virtually no change in the number of large chains. The 12 largest firms operated 2,973 establishments, an average of 248 establishments per firm, a slight increase over previous years. Their share of total sales decreased slightly to less than 14 percent and their share of paid employment fell to less than 8 percent. The average number of employees per establishment increased from 3.8 in 1972 to 4.1 in 1977 and 1982.

Between 1972 and 1985, the number of persons working in the liquor store industry increased by 10.3 percent, from 150,900 to 166,400. This represents an average annual rate of increase of 1.1 percent. Despite the increase in employment, the total hours of all persons actually decreased at an average annual rate of 0.3 percent. This primarily reflects a rise in part-time workers and a decline in the average weekly hours of nonsupervisory employees of 13.6 percent, from 33.0 to 28.5 hours.

The work force of the liquor store industry consists of partners and proprietors, nonsupervisory workers, supervisory workers, and unpaid family workers. Nonsupervisory workers make up the largest group. They represented 58.4 percent of all liquor store personnel in 1972.[4] By 1985, however, they had increased to 68.9 percent of the total. Increased competition in the industry appears to have been a factor in this trend. The smallest stores, which have a higher proportion of self-employed workers, have been declining in relative importance. In the face of reduced demand in recent years, many of these stores closed and this has had a negative effect on the number of self-employed workers. From 1972 to 1985, the number of partners and proprietors declined 31 percent, from 36,700 to 25,200. The larger stores that remain have relatively more nonsupervisory employees.

The industry's work force is dominated by persons in marketing and sales occupations. Salespersons represent the largest group and accounted for nearly 40 percent of the total in 1984. Cashiers, the next largest group, accounted for nearly 19 percent. Another major occupation among marketing and salesworkers is stock clerks, who represented nearly 8 percent of the work force in 1984.[5]

A changing market

Many factors have affected the market for alcoholic beverages in recent years. Changes in demographics, consumer tastes, and social attitudes toward drinking have influenced consumer buying patterns.

One of the most dramatic shifts in drinking habits has been the growing consumption of wine and, recently, wine coolers. This shift to wine has increased employee time required to service consumers because of the greater number of bottles which must be handled for a given value of sales. Between 1970 and 1980, wine increased its share of liquor and wine sales from 40 percent to more than half of the market and has continued to increase its share in subsequent years.[6] Brandy sales have also increased.

Among distilled spirits, a large decline in whiskey consumption has contributed to the weak demand experienced by the industry. From 1972 to 1984, whiskey sales declined by more than 27 percent.[7] This has been partially offset, however, by a rise in vodka sales.

In the brewery industry, one of the most significant developments has been the growth of "low-calorie" light beer. Light beer sales, virtually nonexistent in the early 1970's, accounted for about 20 percent of total sales in 1984, having risen every year. Light beer has been an important factor in keeping up total beer sales in an increasingly diet-conscious consumer market. During 1972–84, total beer sales increased about 39 percent. However, in recent years, beer sales have been relatively stable.[8] Beer has increased its

share of the overall market, however, and has increased handling requirements per dollar of sales in the industry.

There appears to have been an increase in the diversity of beverages purchased by consumers. As already stated, there has been a considerable increase in the consumption of light beer and wine. There has also been a rise in the consumption of cordials, liqueurs, and mixed drinks. The desire to sample new tastes appears to be a factor in the increased popularity of premixed drinks now available in liquor stores. Sales of soft drinks in liquor stores have also increased.

Factors affecting productivity

While overall growth in productivity and demand has been negligible in the liquor store industry, computer technology and the shift to self-service operations have helped to offset negative factors in the industry's productivity situation, thus preventing an actual decline. Computers are often used in conjunction with point-of-sale terminals (cash registers) and electronic scanning devices. The declining prices of computers and the availability of inexpensive personal computers have made this technology feasible for more and more liquor store operators.

Computers provide numerous capabilities to store managers which have enabled them to operate their businesses more efficiently. Inventory and the stocking of shelves can be controlled by computer technology. Information coded on bottle labels and picked up by scanning devices is fed into the computer, thereby keeping track of what is being sold from the store's shelf inventory. The computer can alert the stockroom personnel when the supply of certain items is getting low. In addition to eliminating employee time required for monitoring shelf stocks, a computer system can avert the loss of sales by monitoring inventory. The computer can inform employees exactly where each item can be found on stockroom shelves and where it belongs on the sales floor. It can also automatically print out a purchase order for suppliers whenever stockroom quantities are low.[9]

The use of scanning equipment in conjunction with computers or other memory-equipped devices removes the need to put price labels on individual products. Price information for all items can be entered into the system's memory. The scanner reads the coded information on the product labels and the appropriate price to charge the customer can then be retrieved from the system's memory. As prices change, information in the memory is updated, alleviating the need to reprice items on the shelves.[10]

Because of their capability to store information and make it readily accessible, computers have been used to perform recordkeeping and administrative functions and thus greatly reduce the amount of worktime required for these tasks. Computers can provide permanent records which may be required by the State liquor authority or other government body. They can handle the payroll, the general ledger, and accounts payable. The information provided on sales activity permits store operators to schedule staff hours more efficiently. The word-processing ability of computers can also reduce time spent on correspondence. Computers have helped store operators increase sales by providing the necessary information to determine the best selling items so that ordering can focus on a more optimal product mix. Detailed information provided by computers also contributes to a reduction in employee pilferage.

Many liquor store operators who have not introduced computer technology into their establishments have nevertheless benefited from improvements in cash registers. The development of electronic cash registers (ECR's) to replace the older mechanical versions has improved bookkeeping capabilities. ECR's provide memory capability and reduce the time involved in accounting and inventory. Because of their memory capacity, they offer store operators many of the same benefits of computer technology.[11]

Employee hours have been reduced by the shift to self-service operations which has taken place in much of the industry. Customers can browse for their choice of beverages. The workload of store personnel is reduced because they no longer need to spend time retrieving bottles for customers as their orders are placed. The increasingly tough competition which has taken place in the industry has also spurred continuing efforts to reduce labor time requirements. The reduced demand for liquor stores in recent years has made it more difficult for marginal operators to remain in business. The restrictions of various State and local laws, however, will limit any tendencies toward consolidation or concentration.

Despite the benefits of computer technology, productivity in the industry has experienced very little growth over the years. Liquor stores remain relatively labor-intensive operations. The inherent nature of store operations has prevented any significant automation of operations such as those that have been achieved in many manufacturing facilities. The introduction of data processing equipment has enhanced the capabilities of managers and employees but has not removed the basic need for their services. The opportunities to substitute machinery or equipment for employee time and effort are limited and have deterred productivity growth. Efforts to take advantage of the efficiencies associated with larger, multiunit operations have been limited by the restrictions of various State and local laws.

Outlook for productivity

Industry productivity growth should benefit from the continuing diffusion of computers and scanning equipment. The introduction of increasingly affordable personal computers has put computer technology within the reach of more and more liquor store operators. The tremendous efficiencies made possible by computers—in such areas as accounting and inventory control—can now be introduced into small-scale liquor operations as well as into larger chains. As managers become more familiar with computers, they should be able to use them more effectively to improve productivity.

Point-of-sale technology should become more widely used and further contribute to productivity gains. This technology permits electronic-scanning equipment to be connected to computers so that information from coded merchandise can be automatically fed into a computer. With the more widespread use of Universal Product Codes in the liquor industry, the adoption of such systems should be facilitated. In addition to the obvious advantages of eliminating the need for price stickers on merchandise, the marketing information gathered as a byproduct of merchandise sales should be helpful in boosting sales volume.

Competition in the liquor store industry appears to have been increasing in recent years. Changing public attitudes toward drinking may portend a tighter market for alcoholic beverages and may force more marginal stores out of operation while keeping pressure on the remaining stores to achieve greater efficiencies. However, increased efforts to curb alcohol abuse may cause liquor store operators to divert their attention from management of daily operations in order to fend off unfavorable legislation and protect their public image. Overall, opportunities for productivity improvement will be restricted because of the limited opportunities for substituting capital for labor. □

FOOTNOTES

[1] All average rates of change are based on the linear least squares trends of the logarithms of the index numbers.

[2] The retail liquor store industry is designated as Standard Industrial Classification (SIC) 592. It consists of establishments primarily engaged in the retail sale of packaged alcoholic beverages, such as ale, beer, wine, and whiskey, for consumption off the premises. All retail liquor establishments, whether operated by government or private ownership, are included in the industry. For a discussion of productivity trends in liquor stores operated by State or local government, see Donald M. Fisk, *Measuring Productivity in State and Local Government,* Bulletin 2166 (Bureau of Labor Statistics, December 1983), pp. 34–42.

[3] "The Spirited Battle for Those Who Want to Drink Light," *Business Week,* June 16, 1986, p. 84.

[4] This does not include State liquor stores for which no separate breakdown of supervisory and nonsupervisory employees was available.

[5] Bureau of Labor Statistics, data for 1984–95, National Industry Occupational Matrix.

[6] Martin Weinberger, "What'll You Have? Changes in Consumer Attitudes," *Liquor Store,* November–December 1983.

[7] Based on data from the Distilled Spirits Council of the United States. Data include on- and off-premises sales.

[8] Trends in beer sales based on data from the Brewers Association.

[9] See "How the Personal Computer Gives Your Business an Edge," *Liquor Store,* April 1984.

[10] See "Scanning's Many Benefits," *Liquor Store,* September 1982.

[11] See "New Register Cuts 30 Hours Work a Week," *Liquor Store,* April 1981.

APPENDIX: Measurement techniques and limitations

Indexes of output per hour of all persons measure changes in the relationship between the output of an industry and hours expended on that output. An index of output per hour is derived by dividing an index of output by an index of industry hours.

The preferred output index for retail trade industries would be obtained from data on quantities of the various goods sold by the industry, each weighted (that is, multiplied) by the employee hours required to sell one unit of each good in some specified base period. This concept also embodies the services associated with moving the goods from the retail establishment to the consumer. Thus, those goods which require more retail labor are given more importance in the output index.

Data on the quantities of goods sold usually are not available for trade industries, including retail liquor stores. Therefore, real output was estimated by removing the effects of changing price levels from the current dollar value of sales. Because an adjustment for changing price levels usually lowers the dollar value, such a series is usually referred to as a deflated value measure.

Output measures based on deflated value have two major characteristics. First, they can reflect shifts in sales among products of different value which have the same unit labor requirements. (For example, if customers begin to purchase more unadvertised brands instead of "nationally advertised" brands, dollar sales will decrease if the unadvertised brand is priced lower.) Thus, a change can occur in the output per hour index even if the labor required to sell the merchandise does not change.

Second, the sales level, both in current and constant dollars, reflects differences in unit values for identical products sold in different types of establishments. For example, the unit value associated with a product sold in a self-service "discount" store may be lower than the unit value associated with the same product sold in a store that provides many sales clerks and delivery service. The output measure, therefore, reflects changes in the level of service provided to customers insofar as differences in unit values reflect the differences in service among the various types of establishments.

In addition to the deflated value technique, weights relating to labor importance were used to combine segments of the output index into a total output measure. The weights used were gross margin weights. These weights, calculated for each merchandise line category, represent the percentage markup provided by the retail liquor store industry. Gross margins are used in place of labor importance weights which are unavailable for this industry. These procedures result in

a final output index that is closer, conceptually, to the preferred output measure.

The index of hours for the retail liquor store industry is for all persons, that is, hours for paid employees, partners and proprietors, and unpaid family workers. As in all of the output per hour measures published by the Bureau of Labor Statistics, hours and employment in retail liquor stores are each considered homogeneous and additive. Adequate information does not exist to weight the various types of labor separately.

The indexes of output per hour relate total output to one input—labor time. The indexes do not measure the specific contribution of labor, capital, or any other single factor. Rather, they reflect the joint effect of many interrelated influences such as changes in technology, capital investment, capacity utilization, store design and layout, skill and effort of the work force, managerial ability, and labor-management relations.

No explicit adjustments were made to the measure for retail liquor stores to take into account increases or decreases in some services provided to the consumer. There has been a continuing shift to self-service operations. This has shifted some of the hours in retailing from the employee to the consumer. However, data are not available to measure the effect of this change.

The basic sources for the output series for this measure consist of the total sales data and sales by merchandise line data reported by the U.S. Department of Commerce. The deflators were developed using various Consumer Price Indexes published by the Bureau of Labor Statistics. The gross margin weights were developed from data reported by the U.S. Department of Commerce.

The basic sources for the all person hour series consist of data on employment and hours published by the Bureau of Labor Statistics and the Bureau of the Census, supplemented by data reported by the Internal Revenue Service and special tabulations compiled for the Bureau of Labor Statistics by the Bureau of the Census. Data on average annual hours available from various State liquor control boards were also utilized. The all person hour series includes the hours of State liquor store employees as well as the hours of employees in privately owned and operated establishments.

A note on communications

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