

# Retail hardware stores register productivity gain

*Output per hour of all persons grew at an above-average annual rate of 1.3 percent over the 1972-86 period, reflecting strong demand and improvements in store operations*

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Productivity, or output per hour of all persons, in the retail hardware store industry<sup>1</sup> rose at an average annual rate of 1.3 percent from 1972 to 1986. This increase was well above the 0.8 percent annual gain in productivity registered by the nonfarm business sector of the economy. The growth in productivity reflects an increase in output of 2.2 percent per year, and a rise in hours of 0.9 percent annually. Contributing to the growth in productivity were strong demand, an increased use of computers in store operations, and benefits derived from affiliation with dealer-owned cooperatives. The productivity trend for the 14-year period examined here was marked by much volatility. From 1972, annual increases in productivity occurred in 7 years, ranging from 0.2 percent to 14.5 percent. Declines in productivity also occurred in 7 years, the largest in 1981, when output per hour fell 3.7 percent. (See table 1.)

The retail hardware store industry is strongly affected by cyclical changes in the economy. Expansions and contractions in output, and the associated changes in productivity are closely linked to changes in the housing market. While increases or decreases in sales of new homes affect industry output, sales of previously occupied homes have an even greater impact. In the sale of existing homes, hardware store purchases are boosted,

both when the dwelling is prepared for sale and when it is redecorated by its new owner.<sup>2</sup>

During periods of economic expansion, hardware items are purchased to prepare homes for resale, to remodel older homes, and to maintain new and existing homes. These factors contribute to output and productivity gains in the retail hardware store industry.

When the economy contracts and the housing market is weak, output in the retail hardware store industry slows or declines, and productivity tends to fall off. During an economic downturn, industry output may grow because of expenditures on improvements, maintenance, and repairs of existing homes, but be offset by declines in disposable income and new construction. This would slow the rate of growth in industry output, or even lead to a decline in output. Evidence of the cyclical influences on the retail hardware store industry can be seen in the four subperiods examined here.

## Subperiod trends

In the early years of the period studied, productivity in the retail hardware store industry fell 1.2 percent annually from 1972 to 1976, as output grew at a slow rate of 1.2 percent, and hours rose 2.4 percent per year. The influence of the 1974-75 recession on the industry was mixed. The industry felt the effect of a sharp decline in housing starts, but this was offset by an increase in expenditures on improvements, maintenance, and repairs of residential properties.<sup>3</sup>

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The retail hardware store industry benefited from the economic recovery of the late 1970's. Strong activity in the housing market was an impetus to growth in sales of hardware products. Between 1976 and 1979, housing starts rose 4 percent annually, and sales of existing one-family homes advanced nearly 8 percent per year.<sup>4</sup> Output of the retail hardware store industry grew at an average annual rate of 6.6 percent. With hours rising only 1.0 percent annually, productivity advanced 5.5 percent per year.

The recessionary periods of 1980 and 1981-82 had a more negative impact on the industry than the earlier recession. From 1979 to 1983, sales of both older and new homes declined. Expenditures on improvements, maintenance, and repairs fell 4 percent annually. With output dropping at an average annual rate of 2.6 percent and hours falling 1.0 percent per year, productivity in the retail hardware store industry decreased 1.6 percent annually.

The retail hardware store industry shared in the economic recovery at the end of 1982. Productivity advanced 2.9 percent per year during the subperiod 1983-86, as output rebounded at a 4.0-percent rate of growth, while hours increased at an average annual rate of 1.0 percent. Rapidly rising expenditures on improvements, maintenance, and repairs of almost 24 percent annually, and a strong resale home market were largely responsible for the business recovery of the retail hardware store industry.

*(Average annual rates, in percent)*

	<i>Output</i>	<i>Output per hour of all persons</i>
1972-86 .....	2.2	1.3
1972-76 .....	1.2	-1.2
1976-79 .....	6.6	5.5
1979-83 .....	-2.6	-1.6
1983-86 .....	4.0	2.9

### Industry structure and employment

The industry is characterized by small, single-unit firms designed to serve individual local markets. Retail hardware stores have relatively few employees per store. In 1972, the industry consisted of 18,530 establishments with an average work force of about five employees per store. By 1982, there were 19,870 establishments with an average of about six employees. In recent years, single-unit firms have declined slightly in relative importance.

While single unit firms still account for the majority of the stores in the industry, there has been an increase in the number of multiunit operations during the period studied. In 1972, multiunit operations accounted for 8 percent of total stores and generated 20 percent of industry sales. By 1982, the number of multiunit firms increased to 10 percent while the proportion of industry

**Table 1. Productivity and related indexes for the retail hardware store industry, 1972-86**

Year	Output per hour of all persons	Output	Hours of all persons	All persons
1972 .....	101.1	90.8	89.8	88.3
1973 .....	98.9	90.0	91.0	90.1
1974 .....	95.3	88.9	93.3	92.9
1975 .....	97.9	92.4	94.4	94.1
1976 .....	95.9	95.0	99.1	95.5
1977 .....	100.0	100.0	100.0	100.0
1978 .....	100.2	104.0	103.8	102.8
1979 .....	114.7	116.1	101.2	103.8
1980 .....	111.4	112.4	100.9	104.6
1981 .....	107.3	106.2	99.0	102.9
1982 .....	108.9	103.6	95.1	98.8
1983 .....	107.0	105.8	98.9	102.6
1984 .....	112.8	118.4	105.0	109.1
1985 .....	111.4	117.0	105.0	110.1
1986 .....	118.1	120.9	102.4	107.8
<b>Average annual rates of change (in percent)</b>				
1972-86 .....	1.3	2.2	0.9	1.4
1981-86 .....	1.7	3.3	1.5	1.8

sales had risen to 25 percent. Employment in multiunit firms increased during this period, from 20 to 22 percent of the industry's work force.

The work force of the retail hardware store industry consists of self-employed, nonsupervisory workers, supervisory workers, and unpaid family workers. The number of persons employed in the industry rose 22.1 percent, or 1.4 percent annually, from 143,820 in 1972 to 175,600 in 1986. Hours of all persons increased at a slower 0.9-percent average annual rate, showing a rise in part-time workers, and a decline in the average weekly hours of nonsupervisory workers. Between 1972 and 1986, average weekly hours of nonsupervisory employees fell 9.1 percent, from 36.1 to 32.8.

Employment of nonsupervisory workers, the largest component of the industry work force, increased 26.2 percent—from 105,000 in 1972 to 132,500 in 1986. Supervisory workers grew 64.1 percent, from 15,300 to 25,100. From 1972 to 1986, the number of self-employed persons fell 10.7 percent, from 19,040 to 17,000; unpaid family workers declined nearly 80 percent, from 4,480 to 1,000.

The industry's work force is dominated by persons in marketing and sales occupations.<sup>5</sup> In 1986, nearly two-thirds of the industry's work force was employed in marketing and sales. Within this occupational group, salespersons represented the largest group and accounted for 39 percent of the total. Cashiers made up nearly 12 percent of the industry's work force. Stock clerks represented 9 percent of employment in the industry.

### Factors affecting productivity

The major technological change within the retail hardware store industry has been the increased use of computers for retail operations. However, because most

retail hardware stores are small, the use of computers varies greatly throughout the industry.

Recent productivity growth has benefited from the spread of computer technology. In the larger establishments, computers are often used in conjunction with point-of-sales terminals (cash registers), and electronic scanning devices. Information coded on merchandise is fed into the computer using these scanning devices. This results in accurate inventory records and reduces employee time required for monitoring shelf stocks. In addition, the computer provides the location of each item in the stockroom, and where it belongs on the sales floor. Purchase orders are automatically printed when stockroom quantities are too low. Computers are used to perform recordkeeping and administrative functions formerly performed manually. By using computerized information provided on sales activity, store managers can schedule staff hours more efficiently.<sup>6</sup>

Although not all retail hardware stores have fully computerized their operations, most have replaced mechanical cash registers with electronic cash registers (ECR's). Memory capacity of ECR's has also reduced employee hours in accounting and inventory control.

Most hardware stores had some degree of self-service operations prior to 1972. However, the continuing shift to self service operations has helped to reduce the work load of store personnel by allowing customers to browse for their choice of merchandise. More recently, changes in packaging of some hardware items—from bulk merchandise to carded merchandise—have enhanced the self-service feature of hardware stores.<sup>7</sup>

Some retail hardware stores have sought to improve their productivity by the use of employee training programs.<sup>8</sup> Retaining experienced personnel is a major problem for all retail stores. Some studies have shown that retail employee turnover is about 60 percent per year.<sup>9</sup> High turnover rates can hinder gains in productivity because new employees must undergo training and are not as productive during training periods. Because most stores are relatively labor intensive and place a great deal of emphasis on knowledgeable personal service, retaining experienced personnel is important to improving productivity in the industry.

Another factor underlying productivity change has been independent hardware stores joining dealer-owned wholesale cooperatives.<sup>10</sup> Tighter competition among hardware stores, home centers, and lumber yards led to a growth in the cooperatives during the 1970's.<sup>11</sup> Through the cooperatives, the independent hardware stores have been able to compete with integrated, mass merchandisers. The independent retailers can take advantage of volume purchasing discounts and the economies of scale associated with large wholesale distribution. Most of the independent hardware stores are currently members of cooperatives.<sup>12</sup>

Productivity in independent retail hardware stores has been fostered by their affiliation with the dealer-owned cooperatives. Improvements in ordering and distribution which have occurred in the cooperatives have aided productivity growth by reducing labor and inventory requirements in the retail hardware store industry.<sup>13</sup> Purchase orders are built around electronic communications and centralized distribution operations. Through the use of central computers, gravity flow racks, and automated conveyer systems, errors in purchase orders have been reduced and order fill rates have been increased. Cooperatives have contributed to lower inventory requirements by providing dependable delivery of merchandise from the warehouse to the retailer.

In some stores, the retailer is directly linked to the cooperative's central computer and regional distribution center. The computerized stock number is punched into a hand-held order entry terminal. The resulting ticket specifies the stock number, quantity, location, and suggested retail price. Along with the merchandise, the retailer receives preprinted price stickers and reorder information. This ordering system reduces labor requirements for the retailer because these ordering functions and pricing of items were previously done manually by the retailer.

The dealer-owned cooperatives provide hardware retailers with advertising aids such as direct mail catalogs, national media campaigns, low-cost phone directory advertising, and instore product promotion kits. These advertising aids have helped to increase store traffic for the retailer by building a strong brand identity among consumers.<sup>14</sup>

## Outlook

Industry productivity growth should benefit from the continuing diffusion of electronic data processing equipment. The availability of more affordable personal computers has put computer technology within the reach of many more small store owners. Point-of-sales technology may become more widely used in hardware stores, boosting productivity. Accounting and inventory control is expected to be greatly enhanced by the diffusion of electronic scanning equipment. However, most efforts of hardware retailers to increase productivity will probably center on raising sales per square foot in stores.

The "do-it-yourself" home improvement market is a post-World War II phenomenon, created when inflation pushed the costs of plumbers, electricians, and other skilled workers beyond the reach of many homeowners. With the baby-boomers reaching their prime home buying and remodeling years, the home improvement market is expected to remain strong.

The skill composition of the work force of the retail hardware store industry is not expected to change much

over the next decade. Based on projections by the Bureau of Labor Statistics, the proportion of marketing and sales personnel is expected to rise from 63 percent of wage and salary worker employment in 1986 to 66 percent in the year 2000. Within this broad occupational group, cashiers are expected to remain about the same, nearly 12 percent of industry employment in 1986 and also in 2000.

The share of employment held by salespersons is expected to rise slightly. Administrative support occupations, including clerical, are projected to decline from 13 percent of industry employment in 1986 to 11 percent in 2000. This could reflect the diffusion of computer technology in the retail hardware store industry in the future. □

#### FOOTNOTES

<sup>1</sup>The retail hardware store industry is designated by the Office of Management and Budget as SIC 525 in the *Standard Industrial Classification Manual, 1972*. The industry is comprised of establishments primarily engaged in the retail sale of a number of basic hardware lines, such as tools, builders' hardware, paint and glass, housewares and household appliances, and cutlery.

Average annual rates shown in the text and tables are based on the linear least squares trend of the logarithms of the index numbers. The indexes for productivity and related variables will be updated annually, and published in the annual Bureau of Labor Statistics bulletin, *Productivity Measures for Selected Industries and Government Services*.

<sup>2</sup>"Do-It-Yourself Stock Plays," *Fortune*, June 11, 1984, pp. 213-16; and industry sources.

<sup>3</sup>U.S. Department of Commerce, Bureau of the Census, *Construction Reports*, Series C50, C20.

<sup>4</sup>U.S. Department of Commerce, Bureau of the Census, *Statistical Abstract of the United States*, 1986, p. 727; and the National Association of Realtors.

<sup>5</sup>Figures cited in this section are based on data developed by the Bureau of Labor Statistics in the 1986-2000 National Industry-Occupational Matrix.

<sup>6</sup>"In-Store Computer Systems: Wholesalers Lead the Way," *Hardware Age*, April 1987, pp. 39-42; and industry sources.

<sup>7</sup>"A Tough Line That's Easy to Sell," *Hardware Age*, January 1987, pp. 38-41; and industry sources.

<sup>8</sup>"Employees: Finding, Training, and Keeping Them," *Hardware Age*, June 1985, pp. 31-35. In a recent survey of *Hardware Age* retail panelists, 64 percent of the respondents prefer to hire new workers through the recommendations of their existing staff. Hardware retailers prefer to hire through employees because it saves the time used to screen out applicants who are obviously not suited for the job, and provides the best background knowledge of the job applicant. More than two-thirds of the retailers surveyed conduct product and sales training programs for employees. These programs usually cover the areas of universally accepted sales methods, product knowledge, and individual store policies. Retaining employees is accomplished through the offering of benefits, incentives, and rewards. According to the survey, more than half of the hardware retailers offer bonuses and raises for time employed. More than two-thirds offer raises for merit. Paid medical benefits are offered by 75 percent of employers and paid vacations, 89 percent.

<sup>9</sup>Brian Friedman, "Apparel stores display above-average productivity," *Monthly Labor Review*, October 1984, pp. 37-42.

<sup>10</sup>Industry sources.

<sup>11</sup>"Screws, Bolts . . . and Tighter Competition," *Forbes*, May 24, 1982, pp. 146-49.

<sup>12</sup>"Hardware Wars: the Big Boys Might Lose This One," *Business Week*, Oct. 14, 1985, pp. 84-90.

<sup>13</sup>John Cotter and Low Cost Distribution," *Do-It-Yourself Retailing*, November 1986, pp. C5-C32; and industry sources.

<sup>14</sup>*Ibid.*

#### 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 index.

Data on the quantities of goods sold usually are not available for trade industries, including retail hardware stores. Therefore, real output was measured 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. Based on data from the National Retail Hardware Association, average transaction size (deflated by the CPI) has not changed during the period studied.

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 difference 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 hardware 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 hardware store industry is for all persons, that is, hours for paid employees, self-employed, and unpaid family workers. As in all of the output per hour measures published by the Bureau of Labor Statistics, hours and employment 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 measures to take into account increases or decreases in some services provided to the consumer. There has been some 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 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 from special tabulations compiled for the Bureau of Labor Statistics by the Bureau of the Census.