

# Apparel stores display above-average productivity

*Output per hour of all persons rose an average of 2.9 percent annually in the retail apparel store industry between 1967 and 1983, with growth accelerating between 1977 and 1983*

BRIAN FRIEDMAN

Output per hour of all persons<sup>1</sup> in the retail apparel store industry increased at an average annual rate of 2.9 percent between 1967 and 1983, compared with an average annual rate of 1.2 percent for the total nonfarm business sector of the economy during the same period. This gain in productivity over the 16-year period reflects average annual increases of 4.5 percent in output and 1.5 percent in hours of all persons in the apparel store industry. (See table 1.)

Productivity trends can be divided into two periods, 1967–77 and 1977–83. During the first period, productivity rose at an average annual rate of 2.8 percent, and in the latter period, it accelerated to 3.6 percent, reflecting average growth in output and little increase in hours.

During the 1967–77 period, productivity advances were not steady; in 1972 and 1973, there were relatively large increases. In 1972, productivity rose 8.2 percent as output increased 6.3 percent and hours declined 1.8 percent. In 1973, output advanced 11.3 percent, while hours increased only 1.7 percent, resulting in a productivity increase of 9.5 percent. However, there were moderate productivity declines in 1967, 1970, 1974, 1976, and 1977. Output experienced only two declines during the period, falling in the recession years of 1970 and 1974. In 1969, 1976, and 1977, increases in hours exceeded increases in output, resulting in the productivity falloffs.

---

Brian Friedman is an economist in the Division of Industry Productivity and Technology Studies, Bureau of Labor Statistics.

During the 1977–83 period, there were no productivity declines, and only one small output decline in 1982. In 1978, output per hour rose 10.0 percent based on very strong growth in output of 13.4 percent and moderate gains in hours of 3.1 percent. Output recorded moderate growth in 1980 and above-average growth in 1981 (6.1 percent), while industry hours declined in 1980 and 1982. Productivity had above-average gains in 1980 and 1981.

## Trends in four subindustries

The retail apparel store industry<sup>2</sup> consists of several subindustries. In addition to productivity measures for the total industry, separate measures are presented for men's and boys' clothing and furnishing stores, women's ready-to-wear stores, family clothing stores, and shoe stores. (See table 2.)

*Men's and boys' apparel stores.* Productivity grew moderately in the men's and boys' apparel store industry, accounting for 15 percent of total sales and 11 percent of total employment in 1983. Output per hour grew at an annual average rate of 2.5 percent between 1967 and 1983, reflecting average annual growth in output of 1.8 percent and an average annual decline of 0.6 percent in hours.

Productivity grew at an annual rate of 3.8 percent between 1977 and 1983 compared with a 2.2-percent increase in 1967–77. This gain reflected a slowing of the increase in output from a rate of 2.9 percent between 1967 and 1977

to an average decline of 0.4 percent between 1977 and 1983. Hours declined at a rate of 4.1 percent from 1977 to 1983 compared with a small average gain of 0.7 percent in the preceding period. Among apparel stores, this subindustry alone showed a definite trend toward fewer number of stores.

Among the retail apparel subindustries, men's and boys' apparel stores had the slowest output growth between 1967 and 1983. This subindustry was also the most cyclical, experiencing output declines in 1970, 1974, and 1980-83.

*Women's ready-to-wear-stores.* This subindustry, the largest, accounting for 36 percent of sales and 33 percent of employment in 1983, experienced the highest gain in productivity among those measured. Output per hour rose at an average annual rate of 4.4 percent from 1967 to 1983 as output increased 5.5 percent and all person hours grew 1.1 percent annually.

Between 1967 and 1977, productivity increased at an average annual rate of 4.3 percent, while output grew 5.6 percent and hours 1.3 percent. In the 1977-83 period, productivity growth increased to 6.3 percent annually reflecting average annual output gains of 5.5 percent and an average hours decline of 0.7 percent.

Productivity showed declines in only 1976 and 1977. Output declined only in 1977 and showed no growth in 1980. Hours of all persons, however, declined in 1968, 1970, 1974, 1975, and 1980-82.

*Family clothing stores.* In 1983, family clothing stores accounted for 22 percent of retail apparel store sales and 18 percent of employment. Despite a strong overall increase in output, long-term productivity growth was moderate, reflecting above-average growth in employment. Output per hour grew at an average annual rate of 2.7 percent from

**Table 1. Total retail apparel (sic 56) indexes of output per hour of all persons and related data, 1967-83**  
[1977 = 100]

| Year  | Output per hour of all persons | Output | Hours of all persons | All persons |
|---|--------------------------------|--------|----------------------|-------------|
| 1967  | 82.1                           | 70.2   | 85.5                 | 80.0        |
| 1968  | 84.2                           | 73.0   | 86.7                 | 83.0        |
| 1969  | 83.4                           | 74.3   | 89.1                 | 85.5        |
| 1970  | 82.2                           | 74.0   | 90.0                 | 86.1        |
| 1971  | 84.6                           | 78.3   | 92.6                 | 88.9        |
| 1972  | 91.5                           | 83.2   | 90.9                 | 89.3        |
| 1973  | 100.2                          | 92.6   | 92.4                 | 90.9        |
| 1974  | 99.5                           | 90.9   | 91.4                 | 90.4        |
| 1975  | 105.3                          | 95.0   | 90.2                 | 89.5        |
| 1976  | 103.3                          | 99.3   | 96.1                 | 95.4        |
| 1977  | 100.0                          | 100.0  | 100.0                | 100.0       |
| 1978  | 110.0                          | 113.4  | 103.1                | 103.9       |
| 1979  | 112.0                          | 118.6  | 105.9                | 107.8       |
| 1980  | 116.4                          | 122.3  | 105.1                | 108.1       |
| 1981  | 122.0                          | 129.8  | 106.4                | 109.6       |
| 1982  | 123.8                          | 129.6  | 104.7                | 108.1       |
| 1983  | 125.2                          | 133.5  | 106.6                | 110.7       |
| Average annual rates of change (in percent) |                                |        |                      |             |
| 1967-83                                     | 2.9                            | 4.5    | 1.5                  | 2.1         |
| 1967-77                                     | 2.8                            | 4.0    | 1.2                  | 1.8         |
| 1977-83                                     | 3.6                            | 4.5    | 0.8                  | 1.4         |

**Table 2. Output per hour of all persons for the total retail apparel industry and subindustries, 1967-83**

| Year  | Total apparel stores | Men's and boy's clothing stores | Women's ready-to-wear stores | Family clothing stores | Shoe stores |
|---|----------------------|---------------------------------|------------------------------|------------------------|-------------|
| 1967  | 82.1                 | 84.5                            | 72.2                         | 75.7                   | 96.4        |
| 1968  | 84.2                 | 85.4                            | 74.4                         | 78.7                   | 99.1        |
| 1969  | 83.4                 | 86.8                            | 74.6                         | 75.9                   | 105.7       |
| 1970  | 82.2                 | 83.8                            | 77.5                         | 76.0                   | 96.5        |
| 1971  | 84.6                 | 87.2                            | 83.8                         | 85.8                   | 87.7        |
| 1972  | 91.5                 | 97.8                            | 87.2                         | 95.1                   | 95.6        |
| 1973  | 100.2                | 104.2                           | 94.9                         | 109.6                  | 101.4       |
| 1974  | 99.5                 | 98.2                            | 96.9                         | 107.7                  | 88.8        |
| 1975  | 105.3                | 102.7                           | 107.0                        | 109.7                  | 95.5        |
| 1976  | 103.3                | 97.6                            | 104.9                        | 107.4                  | 97.6        |
| 1977  | 100.0                | 100.0                           | 100.0                        | 100.0                  | 100.0       |
| 1978  | 110.0                | 105.4                           | 111.3                        | 96.4                   | 108.7       |
| 1979  | 112.0                | 110.5                           | 115.0                        | 99.6                   | 111.2       |
| 1980  | 116.4                | 110.0                           | 116.2                        | 109.6                  | 107.7       |
| 1981  | 122.0                | 120.9                           | 125.5                        | 113.3                  | 110.8       |
| 1982  | 123.8                | 121.3                           | 139.0                        | 116.2                  | 106.0       |
| 1983  | 125.2                | 125.2                           | 147.8                        | 118.1                  | 104.6       |
| Average annual rates of change (in percent) |                      |                                 |                              |                        |             |
| 1967-83                                     | 2.9                  | 2.5                             | 4.4                          | 2.7                    | 0.8         |
| 1967-77                                     | 2.8                  | 2.2                             | 4.3                          | 4.3                    | -0.2        |
| 1977-83                                     | 3.6                  | 3.8                             | 6.3                          | 3.6                    | 0.3         |

NOTE: Indexes for all apparel stores are based on data for women's accessory and specialty stores, children's and infants' wear stores, furriers and fur shops, and miscellaneous apparel and accessory stores as well as the four clothing store subindustries discussed in this article.

1967-83 as output rose 5.2 percent and hours increased at a rate of 2.4 percent.

Productivity showed periods of both growth and decline. Between 1967 and 1973, productivity grew at an average annual rate of 5.9 percent with very strong growth in productivity and output in 1971, 1972, and 1973. During 1967-73, hours increased at an annual rate of only 0.1 percent. Between 1973 and 1978, productivity declined at an average annual rate of 2.5 percent as output grew 3.8 percent and hours soared to an average annual growth of 6.5 percent. In response to a strong demand for casual clothing, especially jeans, the number of family clothing stores increased during this period. Productivity declines were recorded in 1974, 1976, 1977, and 1978. Between 1978 and 1983, productivity rebounded with an average annual growth of 4.4 percent as output rose 4.6 percent and hours showed very little growth—0.1 percent. As the number of stores began to decrease, hours declined in 1979, 1980, and 1983.

*Shoe stores.* Shoe stores, which accounted for 17 percent of sales and 21 percent of all persons in the apparel store industry, posted the smallest productivity gain from 1967 to 1983 among the subindustries studied. Productivity grew at an average annual rate of only 0.8 percent between 1967 and 1983, reflecting output increases of 3.0 percent and hours increases of 2.2 percent.

During the 1967-77 period, output per hour declined at an average annual rate of 0.2 percent. There were strong productivity declines in 1970, 1971, and 1974. During this period, both output and hours had average annual gains of 1.3 percent and 1.5 percent, respectively.

During the 1977–83 period, productivity increased at an average annual rate of 0.3 percent, as output increased 3.3 percent per year and hours grew 3.0 percent annually. Much of this increase was due to the demand for athletic footwear. Output showed very strong gains in 1978 and 1979 and a large decline in 1982. Productivity declined in 1980, 1982, and 1983.

### **Factors affecting productivity**

Growth in apparel store productivity has been influenced by broad trends in general retailing. These trends include the growth of chain stores<sup>3</sup> within the industry, movement to better locations in shopping centers, more efficiently designed stores geared toward consumer self-selection, and the use of computers for store operations.<sup>4</sup>

*Changes in industry structure.* Most retail apparel stores are independents, not affiliated with chains. The number of chain stores and the proportion of chain stores within the retail apparel store industry increased between 1967 and 1983.

In 1967, 80.6 percent of all apparel stores were independents, accounting for 62.1 percent of sales. Chains accounted for 19.4 percent of establishments and 37.9 percent of sales. By 1977, the proportion of independent apparel stores had declined to 73.2 percent. The 26.8 percent of stores associated with chains had captured 50.2 percent of sales.

There is every indication that chain stores continued a strong growth pattern in the retail apparel store industry after 1977. These companies have grown by acquiring smaller chains and independents. Also, larger nonapparel retailing corporations have purchased apparel chain stores in their efforts to diversify.<sup>5</sup> In 1981, the leading 25 apparel chains alone increased their number of establishments by 12.1 percent, accounting for 8,771 stores.<sup>6</sup>

On average, stores associated with chains tended to be larger in terms of sales. In 1967, the average independent apparel store had annual sales of a little under \$117,000 per establishment, while the average chain store had sales of over \$295,000 per establishment. By 1977, the gap between independents and chains had widened with average sales per establishment of \$167,300 and \$476,400, respectively.

Chain stores also had higher sales per all persons than did the independents, although in 1967, the difference was not very large. However, by 1977, the sales per all persons of chains was not only higher than that for independents, but the gap in sales per person between chain and independents had widened markedly.<sup>7</sup>

Independents have always been a sizable portion of all apparel stores. These stores are generally more labor-intensive and emphasize personal service to generate regular clientele.<sup>8</sup> Through careful choice of location and catering to the needs of their customers, independents are able to compete with chains. The change in industry structure to-

ward more chain stores, however, has been a factor in promoting industry output-per-hour gains.

An important trend in apparel store industry structure has been the rapid growth of discount apparel stores. "Off-price" apparel stores sell moderate to higher price brand name clothing at a lower price than conventional stores. They are able to buy clothing at discount prices later in the selling season than conventional stores. They locate in small shopping centers, away from other types of apparel and department stores, which are the apparel manufacturers' main accounts. The middle 1970's through the 1980's saw a decline in the percentage of disposable income allotted for clothing.<sup>9</sup> It is believed that the average middle income consumer became much more cost-conscious. Consumers became more willing to delay their clothing purchases until sales were held in conventional stores, or they would shop at off-price stores.<sup>10</sup> The number of off-price apparel stores is estimated to have increased sharply, and their number is expected to continue to grow.<sup>11</sup>

The growth of "off-price" apparel stores has likely provided a boost to industry productivity gains in recent years. Stores are mostly affiliated with large major chains, although there are also small chains and some independents. Store layout is generally geared toward self-selection and central checkout.<sup>12</sup> Employees stock the shelves and racks and run the cash registers and provide little personalized service.<sup>13</sup>

Factory outlet apparel stores are quite similar to the "off-price" stores and also grew rapidly in recent years, probably aiding productivity in the industry. These stores are supplied with clothing from parent manufacturing companies at large discounts. They are often anchor stores in small shopping centers, and more recently, several different factory outlet stores have combined to form malls located away from conventional malls and shopping centers, where the parent manufacturers have their primary department store and conventional apparel store accounts.<sup>14</sup>

*Store location.* Store location is important. Accessibility and exposure to shopper traffic is a prime determinant of how well store capacity is utilized.

The strong growth in the number of malls and shopping centers in suburban locations between 1967 and 1983 has probably had a positive influence on productivity. Although there are no data pinpointing the type of apparel store by location, industry experts believe that mostly major chains and larger independents moved into the large shopping malls, which draw their customers from a wide area. Smaller chains and independents, however, moved into the many smaller shopping centers. This movement of independents into shopping centers probably helped their competitive position in an industry shifting toward corporate chain structure.<sup>15</sup>

*Competition and seasonality.* It is difficult for retailers to forecast product demand because fashion trends are highly seasonal and consumer tastes are somewhat unpredictable.

Also, competition among the different types of apparel stores, as well as department stores, is very strong. During the 1970's, a substantial market share was lost to national department store chains.<sup>16</sup> In the late 1970's, discount department stores began to compete more vigorously with apparel stores.<sup>17</sup> The industries that sell retail apparel are "in a constant state of ferment, and competition is recognized as being more virulent in retailing than in any other branch of American industry."<sup>18</sup>

The strongly competitive nature of apparel retailing has led to periods of overexpansion followed by "shake-outs," when large numbers of marginal stores went out of business.<sup>19</sup> The lower level of capacity utilization which accompanies overexpansion probably caused downward pressure on productivity growth. The elimination of marginal stores probably boosted productivity.

Output per hour of all persons in apparel stores grew rather unsteadily, especially between 1967 and 1977. It is probable that the variability of productivity growth was caused, in part, by overexpansion and "shake-outs."

**Technology.** The major technological change within the apparel store industry has been the increased use of computers for retail operations. Electronic data processing is used in conjunction with point-of-sale technology. Through coding of merchandise, marketing information can be gathered as a by-product of merchandise sales. Point-of-sale technology can be used for inventory control, sales audits, automatic computer-generated stock purchasing, employment planning, sales forecasts, interstore transfers, accounts receivable, and credit verification.<sup>20</sup> This technology provides accurate, useful, and readily available information for use in both the operational and merchandising aspects of the industry. Surveys have shown that retailers who use point-of-sale technology report that it allows their stores to operate with reduced inventory while preventing out-of-stock situations. Product mix can be better targeted to customer needs with better marketing information. It saves employee hours in taking inventory and lowering prices because of overstocked or slow moving inventory.<sup>21</sup>

The amount of information that is gathered using point-of-sale technology and how much this information is used varies greatly throughout the industry. The use of some form of point-of-sale technology in the apparel store industry is fairly widespread. For example, electronic cash registers that can be used to gather some inventory information have been available for some time.

"Automated accounts receivable," is another technological innovation that is used in the industry. The riskiest delinquent accounts are flagged and computer-typed collection notices are sent automatically. This system reduces employee hours in the accounts collection department.<sup>22</sup> Other technological advances include marking systems and security surveillance systems that aid in the prevention of shoplifting.

Large electronic data processing systems and other forms of advanced technology are used primarily by large chains. The much larger operation of a major chain makes the use of electronic data processing almost a necessity. Independents and even small chains "are usually unable to afford such equipment, nor make cost-effective use of it."<sup>23</sup> Higher levels of sales per person recorded by chains, however, are probably caused to some extent by electronic data processing.

**Advertising.** Advertising has been important in increasing shopper traffic and sales in apparel stores. Recent trends indicate strong customer response to special sales and highly advertised products.<sup>24</sup> Retail apparel stores generally advertise in newspapers and on radio. Radio programing allows the apparel store industry to reach a target audience.<sup>25</sup> Also, some stores have sponsored sporting events to aid sales of their activewear.<sup>26</sup>

Some analysts believe that the growth in retail advertising has been designed in part as a substitute for personnel, especially skilled salesworkers, in retail industries.<sup>27</sup> Active selling is accomplished by educating the consumer through advertising, leading to more self-selection and, therefore, lower unit labor requirements in the stores.

### **Employment changes.**

The number of persons working in the apparel store industry has increased 38 percent from 786,600 in 1967 to 1,088,400 in 1983. This represents an average annual increase of 2.1 percent. Hours of all persons, however, have increased at a slower rate of 1.5 percent per year because of a steady decline in average weekly hours. This is especially true of nonsupervisory workers, whose average weekly hours declined from 32.5 in 1967 to 28.1 in 1983.

The apparel store industry is composed of partners and proprietors, nonsupervisory workers, and supervisory workers. Nonsupervisory workers make up the largest group, which includes salespersons, cashiers, stock workers, and nonsupervisory office workers. Nonsupervisory workers represented 79 percent of all persons in 1967 and 74 percent in 1983. The decrease in average weekly hours indicates an increase in part-time salespersons, often of school age, who work during weekends and evenings.

Self-employed partners and proprietors accounted for 10.5 percent of all persons in the industry in 1967 and 10.6 percent in 1982. The actual number of self-employed grew slowly, from 82,000 in 1967 to 129,000 in 1982. The number of self-employed typically declined in times of recession as the smaller, privately owned stores had more difficulty staying in business, although 1982 was an exception.

The number of self-employed as a proportion of all persons is lower for the four apparel subindustries than for the overall industry. The percentage of self-employed in the overall industry is influenced by the remainder of the apparel store industry, for which separate measures are not avail-

able. This portion of the industry has a higher than average proportion of self-employed because it includes many small independent specialty stores.

The number of supervisory workers—office supervisors, store managers, and assistant managers—has doubled from 1967 to 1983 in the total retail apparel store industry. The growth in supervisory workers goes hand in hand with the growth in chains, both corporate and privately owned.

Retaining experienced personnel is a major problem for all retail stores. Some studies show that retail employee turnover is as high as 60 percent per year.<sup>28</sup> The high turnover rate among nonsupervisory workers hinders gains in industry output per hour because new employees must undergo training and are not as productive during this period.

One factor contributing to a high incidence of employee turnover is the industry's low hourly earnings. For example, in 1980, average hourly earnings of nonsupervisory employees were 12 percent below the total retailing average and 41 percent below average hourly earnings of production workers in manufacturing industries.

### Productivity outlook uncertain

In terms of the number of stores and sales, the apparel store industry expanded during the 1960's and 1970's but may now begin to slow. The number of prime locations for

conventional apparel stores is decreasing, as the construction of shopping centers slows.<sup>29</sup> Competition is also increasing from national department store chains as well as discount department stores with both marketing some brand name clothing.

Because of new building and acquisition, chains will probably continue to grow in terms of the number of stores and as a proportion of total stores, but at a slower rate than in the 1970's.<sup>30</sup> Independents will probably remain a sizable portion of all stores because of the targeting of specific customers. "Off-price" stores will also probably continue to grow rapidly.

Management strategies to improve productivity within chains can be expected to continue, including increased use of computers, a fine tuning of product mix, and additional training of sales personnel.<sup>31</sup> Most efforts among chains to increase productivity, however, revolve around increasing sales per square foot in stores. In the near future, greater emphasis may be placed on customer service, including additional sales personnel and more convenient shopping hours.<sup>32</sup> This trend could have a dampening effect on future output per hour growth. However, personal computers, with software geared toward the small retailer, are becoming available as well as affordable and may have some effect on productivity in the independent segment of the industry. □

### FOOTNOTES

<sup>1</sup> All average rates of change are based on the linear least squares trends of the logarithms of the index numbers.

<sup>2</sup> The retail apparel industry is designated as Standard Industrial Classification (sic) 56, which includes the following component industries: sic 5611, men's and boys' clothing and furnishing stores; sic 5621, women's ready-to-wear stores; sic 5631, women's accessory and specialty stores; sic 5641, children's and infant's wear stores; sic 5651, family clothing stores; sic 5661, shoe stores; sic 5681, furriers and fur shops; and sic 5691, miscellaneous apparel and accessory stores. Although included in the total apparel stores measure, productivity for sic 5631, 5641, 5681, and 5691 cannot be measured separately.

<sup>3</sup> A chain consists of four or more retail stores in a firm and an independent, three or fewer stores. Most chains are owned by corporations and most independents by partnerships or proprietorships.

<sup>4</sup> It is difficult to document exact cause and effect relationships between factors influencing productivity and individual productivity changes in this industry. There is not a great deal of data available on a national basis for the apparel store industry. In addition, much of the data and information available relates to overall apparel retailing which also includes other industries, especially department stores. However, retail industry experts have indicated that the impact of technological and structural changes on productivity in overall apparel retailing had a similar effect on productivity in apparel stores.

<sup>5</sup> "Retailing," *Standard and Poor's Industry Survey*, Vol. 151, No. 12, Sec. 2, Nov. 25, 1982, pp. R112 and R124.

<sup>6</sup> *Ibid.* p. R112.

<sup>7</sup> Based on single-unit or multiunit sales and paid employee data published by the Bureau of the Census in the *Census of Retail Trade*. In the analysis, data for the number of self-employed and unpaid family workers (available from the *Statistics of Income* published by the Internal Revenue Service and Current Population Survey data) were also used.

<sup>8</sup> Barry Bluestone, Patricia Hanna, Sarah Kuhn, and Laura Moore, *The Retail Revolution* (Boston, MA, Auburn House Publishing Co., 1981), p. 28.

<sup>9</sup> "Apparel Including Footwear: Basic Analysis," *Standard and Poor's Industry Survey*, Vol. 151, No. 16, Sec. 2, Dec. 23, 1982.

<sup>10</sup> "Editorial," *Stores*, March 1981, p. 8; "Off-Price," *Stores*, March 1981, pp. 9–12.

<sup>11</sup> "Retailing," p. R125.

<sup>12</sup> "Off-price," *Stores*, March 1981, pp. 9–12.

<sup>13</sup> Some measured productivity gains may be overstated because of shifts to self-selection. The quality of service can be considered to change as consumer hours, which are unmeasured, replace industry employee hours included in the measure. (See appendix.)

<sup>14</sup> "Retailing," p. R125.

<sup>15</sup> Based on discussion with industry experts.

<sup>16</sup> "National chains" include Sears, Roebuck and Co., J. C. Penney, and Montgomery Ward.

<sup>17</sup> "Apparel including footwear."

<sup>18</sup> Bluestone and others, *The Retail Revolution*, p. 29.

<sup>19</sup> *Ibid.*

<sup>20</sup> "Making it Work—Retail Technology," *Stores*, Nov. 1980, p. 36; "Retail Office," *Stores*, July 1980, pp. 49–54.

<sup>21</sup> Randy L. Allen, *pos Trends in the 80's* (New York, Touche Ross and Co., 1982).

<sup>22</sup> "Managing Receivables," *Stores*, April 1982, p. 42.

<sup>23</sup> Bluestone and others, *The Retail Revolution*, p. 66.

<sup>24</sup> "Apparel including footwear."

<sup>25</sup> "Ad Dollars," *Stores*, September 1980, p. 37.

<sup>26</sup> "Action Fever," *Stores*, July 1980, pp. 43–48.

<sup>27</sup> Bluestone and others, *The Retail Revolution*, pp. 115–16.

<sup>28</sup> "People Business," *Stores*, March 1981, p. 42.

<sup>29</sup> "Retailing," p. R134.

<sup>30</sup> *Ibid.*, p. R125.

<sup>31</sup> "Slower Growth into the 1980's," *Stores*, August 1980, p. 20.

<sup>32</sup> *Retail Industry Trend Analysis*, Morgan Stanley and Co., Jan. 24, 1983, p. 6.

## 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 apparel 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, shifts in sales can occur among products of different value which have the same unit labor requirements. (For example, if customers begin to purchase more store brands instead of "nationally advertised" brands, dollar sales will decrease if the store brand is priced lower.) Such a phenomenon can occur in times of economic recession, and the reverse may be true in times of economic prosperity. 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 values associated with a product sold in a self-service "off-price" store may be lower than the unit value associated with the same product sold in a store that provides a number of sales clerks as well as 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, the output measure for the total of the major group of retail apparel stores was compiled by combining output from the various component apparel industries using weights relating to labor importance (that is, all person hours). This procedure results in a total apparel store output index that is closer, conceptually, to the preferred output measure.

The index of hours for the retail apparel store industries 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 apparel stores are each considered homogeneous and additive. Adequate data are not available 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 factors 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 for apparel stores to take into account increases or decreases in some services provided to the consumer. With the growth of larger stores in the 1970's, there was a trend toward more self-service operations. This shifted some of the hours in retailing from employee to consumer. However, data are not available to measure the effect of this change. Adjustments for changes in product quality are made to the extent that changes in quality have been accounted for in the price indexes used to deflate the current dollar value of sales.

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 Consumer Price Indexes published by BLS.

The basic sources for the all-person-hour series consists of data on employment and hours published by BLS, supplemented by data reported by the Internal Revenue Service and special tabulations compiled for BLS by the Bureau of the Census.