5.
Industry Performance

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Industrial economists generally expect an industry's structure to have an important influence on the industry's behavior and its quality of economic performance. This performance is generally gauged in terms of the efficiency with which resources are allocated and utilized. From a policy viewpoint, good performance is the ultimate objective, and policies that can improve that performance become attractive. This section discusses some of the key features of the industry's economic performance.

PRICES AND PROFITS

As a guide to economic performance, economists often focus on prices and profits. Low prices are attractive to consumers. Prices and costs together determine a firm's profits. Profits, although the logical reward to successful business activity, can arise for a variety of reasons. For example, successful innovation or unexpectedly large increases in demand for an industry's product could lead t o high profits, at least for some period of time. However, when profits are much higher than investors are earning in other parts of the economy, it ma, signal monopoly power. Such power imposes costs on consumers, via high prices, and on the society at large, via inefficient utilization of society's resources (see (80)).

Analysis of market prices and profits is complicated by a variety of factors, including various sorts of data limitations. For example, some price data may be available, but these published prices are list prices and do not necessarily reflect the transact ion prices, which are often discounted from list price. Even if transaction prices were available, comparisons over time would require adjusting for changes in the nature of the products being sold. Technological improvements and various other modifications make the specific list of products sold today different from those sold several years ago.

Profit data are also not generally available through published sources. Firms that are not publicly held are not subject to the disclosure rules of publicly held corporations. Foreign-owned companies also pose special difficulties. Even in cases where there is public disclosure, profits on hemodialysis equipment and disposables may be difficult to ascertain. As noted in appendix A, many of the firms in the industry operate in a variety of markets. Although the Securities and Exchange Commission does require some product line breakdowns of sales and profits, the breakdowns are generally too broad (e.g., "medical care products") to allow for assessment of this market in particular.

Surveys can overcome some but not all of the above limitations. In its study of ESRD equipment and supplies, Orkand Corp. (68) notes various difficulties in estimating prices, but seems to conclude that prices have, in general, shown little upward movement and, indeed — after adjusting for inflation —have actually declined. For dialyzers, it concludes that the decline has been especially notable.

The discussion of prices here concentrates on dialyzers since they have been a principal concern of this case study and price data for this market are relatively easy to interpret. The IMS America survey referred to earlier provides data that allow for the calculation of the average price paid for dialyzers by hospitals. These data are presented in table 13.

The results are rather remarkable. Prices, even in current dollar terms, have fallen over the past 5 years. After adjusting for inflation, the overall decline is approximately 34 percent. Furthermore, this decline in real prices seems to exist for all kinds of dialyzers. For example, Baxter Travenol's hollow fiber dialyzers and the dialyzers of CD

Table 13.—Average Prices for Dialyzers Purchased by Hospitals From Major Producers by Year[a] (current dollars)

Company and dialyzer	1978	1979	1980	1981	1982	1983b
Baxter Travenol[c]	$25.4	$23.1	$24.3	$23.4	$21.7	$17.9
Hollow fiber	27.7	25.0	26.2	24.6	22.0	17.9
Coil	23.9	20.3	20.1	19.5	19.5	23.5
Parallel Plate	31.5	32.7	–	—	–	–
CD Medical Inc. (Cordis Dow)	30.2	28,6	26.1	24.6	21.7	20.7
Gambro AB	(e)	20,4	24.4	24.0	24.7	22.3
Extracorporeal	(e)	18,9	21.1	18.7	17.6	16.3
Bentley	(e)	16.6	16.4	16.2	NA	NA
Cobe Labs	21.5	22.7	23.3	23.2	22.5	24.8
Becton Dickinson	21,6	27,6	18.8	NA	NA	NA
Erika	21.5	19.0	25.1	25.7	26.5	21.6
Hospal	43.0	37.6	38.0	37.6	34,3	34.0
Terumo-America, inc.	NA	27.0	19,1	25.4	NA	18,5
Organon-Teknika	NA	NA	NA	10,9	NA	NA
Grand averaged	20,1	23.3	23.7	22.9	21,8	19,2
Grand average (adjusted for inflation)[f]	20.1	21.0	18.8	16.6	15.2	13.2

NA indicates data not available
[a]Prices are calculated as dollars sales divided by total units sold
[b]Based on first 5 monthsof 1983
[c]Data for Baxter Travenol allowed for computation overall and by dialyzer type prices for other companies may Include a mlx Of types Of dialyzers
[d]Computed from totalsales to sample hospitals of all types of dialyzers from allcompanies
[e]Data did not allow for meaningful calculations
[f]Adjustment to 1978 prices is based on the producer price index for finished goods Values of price index for 1983 is value for June 1983(US Department of Commerce, Bureau of Economic Analysts, *Business Statistics 1982*. 23d ed., November 1983, and U.S Department of Commerce, Bureau of Economic Analyses, *Survey of Current Business*, November 1983)

SOURCE Computed from data in IMS America, Ltd., Hospital Supply Survey, contract reporfprepared forthe Office of Technology Assessment US Congress, Washington, DC, 1983

Medical (which focuses on the hollow fiber) show an average decline of about 56 percent, after adjusting for inflation (and weighting by their relative sales). Prices of Baxter Travenol's coil dialyzers also show a decline in real terms of 32 percent. And prices of plate dialyzers have probably also fallen. Data are not separately available, but the two leading manufacturers of plate dialyzers, Gambro and Cobe (79), both experienced price declines, once an adjustment is made for inflation. Although these figures are based on prices paid by hospitals, the results are consistent with general business assessments of price movements (39,68,79).

For reasons alluded to earlier, the profit consequences of this price decline are not easily assessable. Profits for dialyzers are rarely singled out, although some assessments of profitability do exist. A 1983 evaluation of Baxter Travenol stock contends that the company is making good profits on hollow fiber dialyzers (47). CD Medical (formerly Cordis Dow), on the other hand, has been experiencing losses overall for the last 3 years; this appears at least partly due to its hollow fiber dialyzers (17,59,114,115).

Overall, however, the major companies remain viable. In part this is because they have been able to lower production costs (47). Profit margins have apparently declined, but as noted earlier, over the past few years, some new entrants have found the potential sufficient to entice them into the market.

Given the description of market structure provided earlier, the downward movement in prices and, apparently, in profits requires some further explanation. The market as described has been one of high seller concentration and generally low buyer concentration. This may help explain the attractive profits earned several years ago (79). But the measured market concentration of sellers has not evidenced a decline that might explain a fall in prices. Clearly other factors must have been at work.

One likely source of the price problem for manufacturers is the unduly optimistic past expectations about the growth in the market. When profit prospects were good, capacity was expanded, especially in the production of hollow fibers. Yet, the rate of growth in unit sales of dialyzers has

been falling over the past several years, both overall and for hollow fiber dialyzers in particular (see table 5 in ch. 3; also, (79)). Indeed, unit sales of hollow fibers have actually shown a decline in the past year. The result is extensive overcapacity in the industry (47,79). The overcapacity led to price cutting as manufacturers strove to maintain output and share in a decelerating and finally shrinking market.

The major factor that slowed the growth in dialyzer demand was the growth in reuse. As reuse increased, the number of new dialyzers required per patient fell. With demand failing to keep up with supply, it was inevitable that there would be downward pressure on prices—even in this concentrated market. A 1981 market survey notes that "market share has lost much of its traditional significance. . . . Dialyzers have become a pure, price-sensitive commodity for which prices determine share" (79).

Buyers have contributed to reaching this outcome. Although they had little concentrated market power, buyers were both prepared and motivated to take advantage of the manufacturers' dilemma. Buyers, too, have been under pressure—in this case from Federal Government insurers—to control the costs of treatment, Reuse was one potential source of cost savings. More active bargaining with suppliers was another.

There is some support for the notion that buyer pressures to reduce prices may matter. That lies in the diversity of prices paid by various buyers. GAO, for example, notes in its survey that Medicare paid $12.70 more per dialyzer session for supplies than did the Veterans Administration (105). Informal discussions with users and various market surveys suggest that prices of new dialyzers may vary considerably among customers (79). The data in table 13, which show some variation in actual prices, despite relative stability in official list prices, support such a view (68). Thus, there appears to be some scope and potential for bargaining by buyers.

PROSPECTS FOR THE INDUSTRY

Prospects for Prices and Profits

Market prospects depend to a great degree on technological, medical, and policy developments. Over the next few years the dialyzer market seems likely to continue to contract (47,79). Two *factors* should contribute to this decline. One is a continued growth in reuse of dialyzers. The other is the likely growth in alternative treatment modalities.

As noted earlier, reuse has been growing in the United States. Given the cost savings associated with reuse and the current consensus that reuse is indeed safe when proper procedures are followed, this growth will probably continue. The ultimate extent of the practice is difficult to assess. Although statistics for Europe show some decline over time in the percentage of patients reusing dialyzers, these statistics are based on an expanding patient base and may reflect additional single-use cases rather than any discontinuation of reuse (41). Certainly, there is room for further increase in reuse in the United States.

The dialyzer market will also be affected by expected changes in the mix of treatment modalities for patients with ESRD. Most projections show a slowed rate of growth in the number of patients on dialysis (46,79). If transplantation possibilities improve, this growth will be further slowed. On the other hand, any broadening of the criteria for placing patients on dialysis would increase the patient population.

Within the dialysis population there is likely to be continued movement toward continuous ambulatory peritoneal dialysis (CAPD). A recent investment study predicts that 19 percent of the population will be on this modality within the next 3 years (46). Other treatments such as hemofiltration may also gain in popularity. Hemofiltration involves separating a patient's blood, by filtration rather than dialysis, from fluids bear-

ing waste products. The fluids are then replaced by other sterile liquids. The process is less time-consuming and is apparently better tolerated by some patients (61). As of 1982 about 1.6 percent of European patients were on hemofiltration (50). One study suggests that if technical problems associated with cost efficient replacement of fluids are solved, hemofiltration could account for as much as 30 percent of the world market within 5 years (4).

This combination of factors points to continued downward pressure on the demand for new dialyzers. This pressure maybe particularly acute for coil dialyzers, which seem likely to continue their marked decline. Sales of parallel plate dialyzers, although generally superior in performance to coils, will also likely decline, mainly because of a continuing preference for hollow fibers. The hollow fiber dialyzer, because of its performance properties and its attractiveness for reuse, should continue to dominate the market. One study judges this the "only viable dialyzer market segment" (79). It probably will fare the best among dialyzers but still suffer declines in absolute volume.

These factors, along with continued buyers' concern for cost control, should maintain prices and profit margins at their present apparently low level. Many observers expect this pressure to lead to a "shakeout, " with weaker firms forced from the industry (46,79). To the extent that overcapacity and competition are reduced, a shakeout could lend support to prices. Some suggest that the result might be a return to higher, monopoly-like prices (35). Although the high degree of market concentration suggests potential ability for tacit price coordination, the probability of a move to near-monopoly prices seems low. The adverse demand conditions, the potential opportunities (albeit perhaps only moderate) for entry, and the diverse character of firms and their objectives, all would work against such an occurrence (80). Continued reductions in production costs would further contribute to anti-monopoly pressures (79).

New Directions for the Companies

Although the dialyzer market shows reduced profit potential, other segments of the market seem to be attracting considerable interest among manufacturers. Discussions with members of the industry, as well as studies by investment firms, suggest a number of areas where substantial potential exists, particularly in peritoneal dialysis, and especially in CAPD.

Although there is still a great deal of clinical uncertainty about CAPD, most observers, as noted earlier, are expecting an increase in its use. At present the market is dominated by Baxter Travenol, which in 1982 had more than 90 percent of market sales **(46).** Profit from these sales appears quite high. One report estimated the company's profit in 1982 to be $80 million on $100 million of sales of CAPD solutions and supplies (39). Evaluations of the company's stock cite its presence in the CAPD market as a key reason for optimism about the company's future prospects **(5,46,47).** Such potential has not gone unnoticed by other companies. For example, Abbott Labs is making strong efforts, and firms such as Gambro, which are established in hemodialysis, are entering the CAPD market as well (5,61).

Much of the success of the CAPD market may depend on technological development. While research continues on the effectiveness of the modality, manufacturers are trying to develop sterile connection devices aimed at lessening the incidence of peritonitis, a major concern with CAPD (4,46). Although uncertainties about the scope of the market abound, it is likely that this sector will become increasingly competitive.

Just as one response to the threat posed by CAPD is to enter that part of the market, companies may respond to reuse by entering the market for automated dialyzer reprocessing equipment. The success of such equipment will depend not only on its efficiency but on the ultimate course of dialyzer reuse. However, companies in

this field may also be attracted by potential in other markets where "disposable," such as catheters, are also reused. A recent business publication lists a number of companies in the field (39). Only one, Renal Systems, actually showed up as a seller in tables 8 to 11 in chapter 4, and its sales are quite small. However, such a market would constitute a natural extension for dialyzer manufacturers.

Another major area of interest is hemofiltration. As noted earlier, some analysts expect this treatment to become increasingly popular. Gambro has shown particular interest here (4,61). Various companies are also looking to apply elsewhere the technological knowledge developed in their ESRD activities. Expertise gained in dealing with dialyzer membranes and dialysis systems may prove useful elsewhere. Gambro and other companies, for example, are doing research on plasmapheresis, a process in which blood is separated into its cellular and plasma components by a process of filtration. The technique has potential applications in treating disorders of the autoimmune system, such as myasthenia gravis and hypocholesterolemia (61).

Also related is work on hemoperfusion, which involves the circulation of blood outside the body through an activated charcoal cartridge. By a process of adsorption, various toxic substances, such as those associated with a drug overdose, can be removed (61). While most of the dialyzer companies have already diversified throughout the health care field, the potential for developments and applications in other areas is significant.