Could a merger that substantially increases concentration in a market actually cause lower prices? The special characteristics of hospital services make this an intriguing possibility. In *U.S. v. Carilion*, the proponents of a merger between two hospitals in Roanoke, Virginia, rebuffed the Justice Department’s challenge by demonstrating to the court that hospital markets function differently from those in other lines of commerce.

The basic industrial organization and antitrust law paradigm holds that increases in market concentration can adversely affect market performance and consumer welfare. Two characteristics of hospital markets, however, suggest that this paradigm could apply with less force: the prevalence of health insurance, and the dominant role that nonprofit hospitals play as providers of hospital services.

First, traditional health insurance is characterized by low co-payment provisions and deductibles and permits the insured to exercise free choice of medical provider. The effect of such policies is to reduce patients’ incentives to search for low-cost suppliers and encourage the consumption of more costly, higher (perceived) quality care. As a result, hospitals are likely to compete on the basis of nonprice rather than price dimensions. The larger the number of hospitals present within a locale, the greater is the intensity of service competition. Because this form of competition drives up costs and prices, it is sometimes referred to as the “medical arms race.”

David Eisenstadt testified on behalf of the merging hospitals. The author wishes to thank William Kopit, Esq., and Dr. Stephen Silberman for helpful comments.

Second, most hospitals are not-for-profit institutions. Depending on the objectives that these hospitals pursue, prices and output may not be set at the profit-maximizing level. For instance, some health experts hypothesize that nonprofit hospitals pursue charitable goals and therefore maintain lower average prices and higher outputs (Jacobs, 1974; Schlesinger et al., 1987). Others argue that some nonprofit hospitals set their prices at below profit-maximizing levels because employers, who pay insurance premiums, control their boards (Eisenstadt and Masson, 1989; Lynk, 1994, 1995). In either case, increased concentration in markets dominated by nonprofit suppliers may affect market performance differently than if the hospitals were exclusively for-profit firms.

Before the 1980s, these distinguishing characteristics probably affected federal agency antitrust enforcement in this industry. However, over the past decade, changes in the nature of hospital reimbursement and innovations in hospital contracting with managed-care providers have placed increasing pressure on hospitals to engage in price competition. This appears, in turn, to have caused increased federal antitrust scrutiny of, and more frequent challenges to, hospital mergers.

In 1988, the U.S. Department of Justice (DOJ) challenged two mergers among nonprofit hospitals in the moderately sized cities of Rockford, Illinois, and Roanoke, Virginia. In both areas, hospital competition was at a crossroads. Competitive bidding among hospitals for contracts with health insurers was not significant in either area, yet prospects existed for its future growth. The situations provided a natural opportunity for judicial examination of hospital competition and the applicability of the basic industrial organization paradigm to hospital markets. When the DOJ sued to enjoin the consolidation of Roanoke Memorial Hospital (RMH) and Community Hospital of Roanoke Valley (CHRV), the debate was joined.

THE SPECIAL CHARACTERISTICS OF HOSPITAL MARKETS

As was mentioned briefly in the introduction, hospital markets have two potentially distinguishing characteristics—the prevalence of health insurance and the dominant role of nonprofit hospitals—that could dictate a different antitrust perspective than is appropriate for most other markets. This section will discuss these two characteristics at greater length.

The Importance of Health Insurance and Third-Party Payment

Health insurance is different in several respects from many other forms of indemnity insurance. First, when an insured patient suffers an illness, the
The typical patient covered under traditional indemnity insurance values the last “units” of health care services or amenities at a fraction of their cost, creating a welfare loss from overconsumption. For example, if a patient has hospital insurance that covers 90 percent of the bill, that individual will be willing to undergo a diagnostic test that costs $1000 even if the test yields an expected benefit of only $100 for the patient. Stated differently, many patients (or doctors acting on their behalf) would not demand expensive tests or procedures if the patient paid for the test directly (or, equivalently, had the choice of receiving the cash versus opting for the test).

Resources are optimally allocated when social marginal value equals social marginal cost (and when price is equated to social marginal value).

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2In contrast, when an individual has a car accident, his or her automobile insurance premiums typically increase in the following rating period.

3Total U.S. health care expenditures are also affected by technological change (e.g., the ability to treat an increasing number of illnesses) and by the fact that employer-paid health care premiums are a form of income on which employees pay no taxes.
Traditional indemnity health insurance produces a resource misallocation because the price paid by the patient is less than marginal resource cost. Too many resources are devoted to production of insured health care, and too few resources are employed in the production of other goods and services.

Further, the size of this resource misallocation is affected by market concentration. In markets with greater numbers of hospitals, nonprice competition for patients will be more intense, and costs and prices (paid by insurers) will be higher than in markets with fewer hospitals.

Figure 2-1 helps to illustrate the adverse welfare effects and resource misallocation resulting from comprehensive health insurance. The graph depicts patient market demand and costs for hospital care under different market structures. The “coinsurance” demand curve, $D_{NI}$, shows the quantity of hospital care demanded as a function of the out-of-pocket price that patients pay. This demand curve represents patients’ marginal valuations and is the appropriate demand curve for measuring patient surplus.

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4If the patient’s employer valued the test at $900, one might argue that total marginal value ($100 plus $900) equaled marginal cost. However, given some employers’ frequent complaints about employee usage of medical care, and given recent efforts by most to impose greater cost sharing on employees, this seems unlikely.

Of course, physicians can limit the amount of overconsumption by refusing to recommend care that they believe is not truly cost justified. However, as the patient’s agent, a doctor may often recommend a service when the perceived benefit to the patient exceeds the patient’s out-of-pocket cost.

5Like any demand curve, the position of $D_{NI}$ is affected by income. If patients received cash payments when they were diagnosed with particular ailments, those cash payments would increase their out-of-pocket demand for health care services.
The second demand curve, \(D^I\), is patients’ expected market demand for hospital care given the presence of insurance coverage. The \(D^I\) curve is drawn to depict employer-provided coverage that pays for 80 percent of the cost of hospital care.\(^6\) Prices along \(D^I\) represent hospital charges per unit of care. At quantity \(Q_0\), the difference between \(P_0\) and \(P_C^N\) is the per unit amount covered by insurance. The ratio of \(P_C^N\) to \(P_0\) is the patient coinsurance rate, \(k\), which in this example equals 0.2.

Consider a hospital that sells care in a competitive, uninsured market. If \(D^{NI}\) represents patients’ true valuations of hospital care, and \(AC_0\) and \(MC_0\) are average and marginal facility costs respectively,\(^7\) competitive equilibrium occurs where \(Q_0\) care is purchased and sold at price \(P_C^N\). By way of contrast, in a competitive insured market, \(Q_1\) units of care are consumed and total premiums equal \((P_C^N \times Q_1) \times (1-k)\). The area \(ABC\) represents the welfare loss from the excess consumption of hospital care.\(^8\) The replacement of competition by a monopoly hospital can reduce this resource misallocation. A monopolist operating in an insured market would charge price \(P_M\), and the associated deadweight loss from monopoly (triangle \(EAG\)) would be substantially smaller than the welfare loss from excess consumption in competitively structured, insured market. Of course, the monopolist elicits a sizable wealth transfer from employers, since the difference between \([\,(P_M \times Q_M) \,(1-k)\] and \([\,(P_C^N \times Q_1) \,(1-k)\] represents increased premium payments, which constitute additional expected income for the monopolist.

In insured markets, the relatively low marginal value placed on additional services does not deter consumers from selecting hospitals that offer the greatest amenities. So long as marginal value to the patient exceeds the out-of-pocket cost (plus the time cost of consumption), patients will choose more expensive care, and hospitals will compete for these patients by engaging in quality or cost-increasing competition. In turn, these increases in perceived quality (even though they are valued at a fraction of their cost) shift the patient market demand up and to the right of \(D^I\). This causes prices to rise and creates another round of cost-increasing competition. The process continues until employers resist increases in insurance premiums.

Interestingly, and not infrequently, a hospital merger that diminishes the intensity of this competition might be opposed by patients and supported by employers. Mergers that reduce the intensity of cost-increasing competition can reduce insurance premiums, which are largely paid by employers. Moreover, the expected drop in premiums could substantially...

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\(^6\) For simplicity, the graph assumes no deductibles or other aspects of insurance coverage that would make \(D^I\) nonlinear.

\(^7\) For simplicity in this diagram, hospitals are assumed to produce care over the relevant range of output under a constant returns-to-scale technology.

\(^8\) This welfare loss must be compared with the consumer gain from risk spreading to compute the overall welfare loss from health insurance.
exceed the welfare loss to patients from lower quality care because the extra quality is valued at only a fraction of its cost. In sum, if the “medical arms race” paradigm is correct, hospital mergers can increase the collective welfare of patients and employers.9

The Advent of Managed Care

Health insurance companies and other third-party payers (e.g., the U.S. government for the Medicare program) were slow to recognize the problems just discussed. In the mid-1980s, however, the Medicare program changed the way hospitals are reimbursed when they treat elderly patients.10 Coupled with employer frustrations over rising premiums, traditional indemnity coverage has declined in importance. Under the most prevalent, current system of Medicare reimbursement, hospitals are paid on a per-case or per-diagnosis basis regardless of the patient’s length of stay. Since the level of payment is fixed, higher margins from treating Medicare patients can be earned only by reducing costs. This creates incentives for hospitals to discharge these patients earlier. It also results in excess capacity—unfilled hospital beds.

Hospitals confronted with excess bed capacity are more likely to offer discounts to private third parties or employers who promise or threaten to “steer” a large number of patients to the hospital. Collectively, third-party organizations that restrict or threaten to reduce patient choice in exchange for hospital discounts are known as managed-care plans. Today, managed care plans conduct business in almost every geographic locale within the United States. By way of contrast, managed care contracting in many communities was nascent or nonexistent in the mid-1980s.

At the time of the Carilion merger, managed-care plans had made small inroads into the Roanoke, Virginia, area. The DOJ believed that RMH recognized the growing significance of managed care and that a purpose for and effect of the merger would be to forestall entry of such plans and curtail emerging price competition.

Objectives of Nonprofit Hospitals

There is no unified theory of nonprofit firm behavior in economics. Economists have attributed varied and numerous motives to nonprofit entities,

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9It is unclear what economic welfare standard the federal antitrust agencies use to evaluate a hospital merger. The DOJ and FTC Merger Guidelines refer to consumer welfare; however, total economic welfare is the sum of consumer plus producer welfare, known as consumer surplus plus producer surplus (profit).

10The elderly account for roughly 40% of all hospital admissions. Until October 1983, the federal government, which pays hospitals under the Medicare Part A program administered by the Health Care Financing Administration, reimbursed facilities on a cost-plus basis for services rendered to (Medicare) beneficiaries.
including pursuit of profit, quality, output, and market share. The simplest and most naive theory of nonprofit hospital behavior postulates that hospital administrators maximize profits or surplus and dissipate these rents through generous salaries and/or perquisites to administrative staff.

A variant of this theory presumes that profits will be spent on new programs or charity care.\(^{11}\) Either way, paying patients are charged the profit-maximizing price, even though the hospital has no shareholders or owners.

A different theory of nonprofit firm behavior treats nonprofit hospitals as quasi-regulated institutions. Under this theory, hospital administrators are constrained by their boards of trustees, typically composed of community leaders and often leading employers. Board members further their own self-interests by dictating that the hospital offer affordable care. Therefore, even if a hospital administrator sought to exploit market power, the board would thwart any such efforts.

Since the economic theory of nonprofit hospitals is incomplete, one is tempted to turn to available empirical evidence on the subject for additional insight. Here too, however, the evidence is less than definitive. On the one hand, it is conventional wisdom that nonprofit hospitals “cost shift” (Dranove, 1988; Hadley and Feder, 1985), a phenomenon that is inconsistent with profit maximization. Cost shifting occurs when charges or prices to one customer group are raised in response to lower reimbursement received from another group. If a hospital starts from a break-even position, reduced reimbursement from one customer group requires price increases to other groups if the hospital is to maintain output without experiencing financial losses. Cost shifting is inconsistent with profit maximization because the latter theory presumes that prices are already set at profit-maximizing levels to each group. Hospitals that cost shift have, for whatever reasons, not fully exercised their available market power.

On the other hand, some empirical work finds few differences in performance or behavior among nonprofit hospitals and their for-profit counterparts.\(^{12}\) This body of literature has been cited by the federal antitrust agencies as a basis for treating mergers among nonprofit hospitals no differently from mergers among for-profit institutions.

The presence of substantial differences in behavior among nonprofit hospitals may be one reason that theory and empirical observation provide no definitive guide. The significant variation among nonprofit hospitals

\(^{11}\)Another theory is that nonprofit hospitals are operated for the benefit of staff doctors (Pauly and Redisch, 1973). Profits may be sought, but they are exhausted through provision of extra equipment and other practice inducements to physicians. These expenditures may show up on the hospital’s books as a “cost,” thereby leaving the impression that the facility earns no profit. In fact, however, the hospital could set profit-maximizing prices.

\(^{12}\)See, for instance, Noether (1988). Other evidence that postdates the Carilion trial suggests insignificant price differences between the two types of hospitals in some areas of the country; see, for instance, Melnick et al. (1992), and Simpson and Shin (1996).
prevents generalizations and forces the parties’ nonprofit status to be considered on a case-by-case basis. Of course, this approach does not ensure unanimity of opinion. In *Carilion,* the parties and the DOJ separately considered these pieces of evidence and came to fundamentally different conclusions about the role of nonprofit status and the motives of the merging institutions.

**BACKGROUND ON THE CONSOLIDATION**

Roanoke Memorial Hospital is a tertiary-care hospital that draws patients from a wide area of western Virginia. When the merger was announced, RMH was licensed for 677 beds and staffed with slightly over 600. Its occupancy rate based on staffed beds averaged close to 80 percent. Community Hospital of Roanoke Valley was about one-third RMH’s size, staffed with about 220 beds, and had a daily patient census of about 175. During the months preceding the merger, its occupancy rate had fallen to less than 50 percent of licensed bed capacity, with projections for further declines.

The two campuses were located less than a mile apart. RMH contended that the consolidation would provide it with the physical space needed to accommodate its growing patient population. Some clinical services, notably obstetrics, were slated to be consolidated at CHRV, while others would be offered only at RMH. In the absence of the merger, RMH was committed to a capital improvements program that required expansion and refurbishment of its existing physical plant.

After the parties filed notice of the consolidation under the Hart-Scott-Rodino Antitrust Improvements Act in the fall of 1987, the matter was assigned to the DOJ for review. After a six-month investigation, the agency concluded that the proposed consolidation was likely to violate both Section 1 of the Sherman Act and Section 7 of the Clayton Act. A suit was filed in Federal District Court in western Virginia in late May 1988. From June through mid-December, the parties conducted discovery and entered pretrial motions. During this period, the court ruled that mergers among nonprofit hospitals were exempt from Section 7 of the Clayton Act, but were subject to federal jurisdiction under the Sherman Act. The court also appointed an “advisory jury” to assist in fact finding at trial; however, their verdict was not binding on the court. Trial commenced on December 12, 1988.

**THE DOJ’s POSITION**

The DOJ believed that the merger would (1) substantially increase market concentration, (2) raise the price of inpatient acute-care hospital services, (3) permit the merged firm to engage in exclusionary conduct, and (4) convey no significant efficiencies.
Market Definition

Product Market

The DOJ contended that acute-care inpatient services provided by private, general acute-care hospitals were a relevant product market. The DOJ advanced two principal arguments in favor of this product market definition. First, it is administratively convenient. While hospitals provide hundreds of different services, most of which are not demand-side substitutes for one another, only acute-care hospitals are likely to offer most of these. Therefore, even though one might define each inpatient service as a separate product market, as a practical matter it often makes little difference whether concentration is computed on a service-specific basis or by aggregating all inpatient services. This is especially true if most hospitals in an area can easily provide those inpatient services not currently offered.

Second, patients admitted for a specific service often require additional services when medical complications arise. The full array of services needed is often unknown to the patient prior to admission. Hence, patients (and physicians) often prefer a hospital over an outpatient setting because only the hospital provides the complete spectrum of services that may be required.

Geographic Market

The DOJ alleged a geographic market defined as the Roanoke Valley, which included Roanoke County, the cities of Roanoke and Salem, and portions of several adjacent counties. The competitors in this alleged market were the merging hospitals and Lewis-Gale Hospital (LGH), another secondary-tertiary-care hospital (406 licensed beds, 335 staffed beds) located in Salem, about 10 miles from Roanoke. Lewis-Gale Hospital is owned by Hospital Corporation of America (HCA), one of the largest chains of for-profit hospitals in the country. According to the DOJ, the proposed consolidation would reduce the number of acute-care hospital competitors in the geographic market from three to two.

Several pieces of evidence were used by the DOJ to delineate geographic market boundaries. First, over 90 percent of Roanoke County residents used the three hospitals. The nearest acute-care facility to these institutions was located over 20 miles from Roanoke. Moreover, hospitals in the outlying rural areas were typically small and failed to provide the breadth of service or level of quality offered by LGH or the merging parties.

The DOJ restricted the product market to include only private hospitals because federal facilities such as military base hospitals, Veterans Administration hospitals, and prison hospitals are not open to the general public.

Further, even if some services delivered on an outpatient basis were substitutable in demand for inpatient services, a plaintiff might attempt to redefine the product market to include only those core inpatient services that do not face significant competition from outpatient providers.
Second, most Roanoke Valley physicians did not possess active admitting privileges at outlying hospitals. Therefore, even if these institutions provided comparable services to RMH, CHRV, and LGH, Roanoke Valley residents would have to switch doctors to obtain admission there.

Third, patients from outlying areas who traveled to hospitals in the Roanoke Valley often needed services not provided at the smaller hospitals closer to their residences. For these services, the outlying hospitals were not in competition with RMH, LGH, or CHRV, even for the local population residing in these areas.

Fourth, key purchasers of inpatient hospital care, notably Virginia Blue Cross and Blue Shield (VABCBS), believed that contracts with at least one of these three hospitals were required for Blue Cross to offer a saleable insurance product to Roanoke Valley employers.

**Barriers to Entry**

Virginia Certificate of Public Need (COPN) laws regulate expansion and entry of new hospitals. The statute requires hospitals to obtain state government approval for any sizable capital expenditure. Gaining approval typically requires a demonstration that the proposed service or additional capacity is “needed” by residents of the affected area. A hospital that circumvents the COPN process risks losing reimbursement for its Medicare patients. Regulators employed by the Virginia Department of Health and Human Resources considered the Roanoke Valley to be an “overbedded” area, partly based on CHRV’s substantial excess bed capacity. The DOJ contended that obtaining a COPN for new beds would therefore have been extremely difficult.

**Market Concentration**

In the DOJ’s alleged market, consolidation of CHRV and RMH would increase RMH’s market share (based on admissions) from 49 percent to approximately 73 percent and increase the Herfindahl-Hirschman Index (HHI) from approximately 3700 to 6050.15

**Likely Competitive Effects**

The DOJ alleged that the consolidation would substantially reduce price competition. It relied on several pieces of evidence to support its position of adverse competitive effects. First, several purchasers of hospital care opposed the merger. The CEO of VABCBS testified that the consolidation

15Government exhibit 145. Calculation of market concentration statistics using setup and staffed beds and licensed beds showed similar levels of premerger and postmerger concentration.
might decrease discounts offered by the party hospitals, and smaller purchasers of hospital care expressed similar concerns.

Second, the DOJ’s economic expert prepared an original econometric study examining the relationship between VABCBS’ per-diem hospital reimbursement rates (and, alternatively, discounts) and hospital market concentration. One exhibit entered into evidence depicted a 14-percent per-diem rate increase by RMH (to VABCBS) after the merger.

Third, the same expert testified that several published studies, as well as some unpublished research, showed a positive correlation between market concentration and hospital prices.

Fourth, the DOJ alleged that documents obtained during discovery revealed RMH’s resentment toward managed care. According to the DOJ, an effect of the merger would be less price competition for managed care contracts.

Fifth, LGH opposed the consolidation. Its administrator testified that the merger would give RMH market dominance and create the potential for predatory conduct: presumably prices below RMH’s costs.

Sixth, the DOJ rejected the nonprofit status of the merging parties as a mitigating factor. The DOJ asserted that the hospitals’ boards generally do not micromanage the activities of the respective administrations. While boards may approve overall budgets, they do not supervise individual contract negotiations with payors. Therefore, the merger would create opportunities for the exercise of market power.

Seventh, the DOJ discounted estimates of merger-related savings claimed by the parties. Roanoke Memorial Hospital believed that the merger created substantial capital avoidance because it gained access to vacant space at CHRV. The DOJ’s economic expert criticized the estimates of capital saved because unused space at CHRV was valued at zero dollars. Another DOJ expert was sharply critical of the parties’ line-item estimates of administrative and clinical operating savings. Estimated savings either were not merger related or failed to reflect true costs of departmental consolidations.

From these various pieces of evidence and testimony, the DOJ’s expert was confident that “negotiated” prices would rise in the Roanoke Valley by at least 5 percent after the merger.

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16Virginia Blue Cross and Blue Shield did not operate a managed care plan in the Roanoke Valley. It did, however, negotiate contract rates separately with each hospital for its traditional indemnity business. The threat of being excluded from VABCBS participation created the semblance of selective contracting and provided the area hospitals with a rationale for extending discounts.

17Government exhibit 249. Contract rates were predicted to rise from $715 to $818. That price increase was derived from the results of a regression equation attached to the exhibit. A separate discount regression predicted that the merger would drop RMH’s discount to VABCBS by about 3 percent. Thus, 11 percent of the predicted 14-percent price increase imposed by RMH to VABCBS was arguably attributable to the predicted increase in list prices.
THE DEFENDANTS’ POSITION

The defendants did not offer expert testimony to challenge the DOJ’s assertions about relevant product or geographic market. The cornerstones of their defense were the lack of any likely anticompetitive effect and the presence of significant cost savings.

Likely Competitive Effects

The defendant hospitals argued that there was a lack of evidence supporting the DOJ’s position that the merger would raise prices. The parties based this contention on four factors: (1) LGH’s opposition to the merger; (2) research conducted by the defendants’ economist; (3) a critique of the research relied on by the DOJ’s economic expert; and (4) the substantial support for the merger among local employers and Virginia regulators.

LGH Opposition

The hospitals argued that LGH’s opposition to the merger reflected its fear that the merged entity would become more efficient. In merger analysis, the existence of a complaining competitor is often a signal that the proposed transaction is procompetitive. After all, why would a (horizontal) competitor truthfully oppose a consolidation unless it feared the merged firm would gain a cost advantage? Moreover, a competitor who believes that marketwide prices would increase after the merger should support the transaction, or perhaps profess “neutrality.”

In addition, LGH’s purported fear of below-cost pricing was less than convincing for several reasons. First, if LGH was concerned about “classic” predatory pricing—that is, pricing below one’s own marginal cost—the strategy is plausible only if the defendant lacks a cost advantage over

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18 Competitors could behave strategically when polled about their views of a transaction. Those who believe that a merger will cause price increases could voice opposition, hoping that antitrust authorities will conclude the merger is procompetitive. Alternatively, those wishing to stop a merger could pledge their support.

To be sure, there are theories of exclusionary conduct that would predict harm both to competitors and to competition (consumers) from a merger. Suppose, for example, that in a three-hospital market employers wish to offer a managed-care plan composed of any two of the three hospitals. When all three hospitals are independent, each has a two-thirds likelihood of getting selected by managed care plans. If, however, two of the hospitals merge and keep both sites open, the combined entity could insist that the employer contract with both sites. A way to enforce this demand is for the merged firm to refuse to contract with any payer who contracts with the nonparty hospital. Since buyers have a preference for a network that contains two of the three available facilities, they have no choice but to contract with the merged hospital. Postmerger, the likelihood that the merged firm will be selected by managed care plans is “one.” And, the nonparty hospital in necessarily excluded from the buyer’s network. This is an example of full-line forcing that produces both harm to competition (higher prices) and harm to competitors (exclusion). Second, a nonparty hospital might fear that the merged entity will gain greater control over local physician admissions, thereby foreclosing it from access to doctors.
Case 2: The Carilion Case (1989)

the victim. A predator with a lower cost structure than the target could take sales away simply by pricing above its own costs and below the intended victim’s costs. Since LGH’s documents reflected a genuine concern that the merged entity would achieve a cost advantage, apprehension about classic predatory pricing seemed misplaced.19

Second, textbook examples of classic predatory pricing assume that the predator has a deep pocket and can sustain short-run losses for a longer period than the victim. While the combined RMH-CHR hospital was a larger facility than LGH, the latter probably had greater financial resources because it was owned by HCA, a large hospital chain that dwarfed the Carilion Health System.20

Statistical Evidence Concerning Market Concentration and Hospital Prices

The defendants’ case included several studies that correlated hospital prices and market concentration. The first was an event study, which analyzed postmerger price increases in other areas of the country where consolidations among nonprofit hospitals occurred.21 The list prices of hospitals located in the markets where mergers occurred did not increase at a statistically different rate from the list prices in control markets.

A second analysis examined the relationship between hospital prices and market concentration in Virginia during the period 1986–1988. Several alternative price measures were used in the statistical work, including list price per day, average price per day net of contractual allowances and discounts, and per-diem reimbursement by VABCBS to individual hospitals.22

19 This of course does not mean that Lewis-Gale would have been unaffected by the merger. Unless it could obtain similar efficiencies, its postmerger market share would fall because it would be a less efficient institution. Such harm to competitors, however, does not equate with harm to competition.

20 Additionally, predatory pricing is a more plausible strategy when used against a firm that competes with the predator in multiple markets. In effect, profits sacrificed because of below-cost pricing in one market send a signal to the victim that aggressive price competition will not be tolerated in other markets. For example, suppose the merged firm announces its intention to raise prices unilaterally in Roanoke, and LGH responds by lowering its prices. The merged hospital could discipline LGH by pricing below cost until LGH relented and agreed to raise prices to more “desirable” levels. If the merged institution and LGH competed head-to-head in other markets, the experience might deter LGH from unilateral price cutting in those areas. In effect, the profit sacrifice made in one market is amortized over the expected price increases in other markets. However, since Carilion and HCA-majority-owned hospitals did not compete in locales outside the Roanoke Valley, no such benefit would have accrued.

21Six of the consolidations examined were mergers to “monopoly,” one was a merger to “duopoly,” and the last was a merger to “triopoly.” Each market in which a merger occurred was paired with a group of control markets to assess whether the rates of price increase in the former were significantly different from those in control markets. All control markets were as or more competitively structured than were each of the merger markets before their consolidation.

22Multiple regression equations were estimated for each year using the same underlying Blue Cross price data relied on by the government’s expert. The regressions controlled for numerous factors besides market concentration, including costs, demand, and hospital organizational structure.
None of the regressions showed a positive correlation between increased market concentration among nonprofit hospitals and higher prices. The coefficient on the HHI was typically negative, indicating that higher concentration tended to be associated with lower prices. However, the negative coefficients were not usually statistically significant.23

The results suggested that the nonprofit form of organization and/or the system of voluntary hospital rate regulation in Virginia24 prevented the exercise of market power. With respect to the former theory, Blue Cross’s daily reimbursement rates to for-profit hospitals classified as monopolies were, all else equal, over $100 a day higher than per diem rates paid to sole community provider nonprofit hospitals.

**Rebuttal to the DOJ’s Evidence**

The hospitals claimed that other research relied on by the DOJ actually supported the position that the merger would not harm competition. For instance, one published study showed a statistically significant and positive association between Blue Cross preferred provider organization (PPO) contract rates and hospital market concentration in one midwestern state (Staten et al., 1988). The parties retained one of the authors of that study to analyze further the underlying sample data. Additional work indicated weaker findings than those published.25,26

Probably the greatest point of controversy pertained to original research presented by economists for both sides. Both economists relied on the same underlying VABCBS price data and, for the most part, the same market concentration data when correlating prices and concentration among Virginia hospitals. The government’s economic expert testified to a

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23 These results cast doubt on the importance of the “medical arms race” theory of hospital competition among Virginia hospitals during this period. If competition among sample hospitals had been primarily cost increasing, more competitively structured markets should have experienced higher costs and prices.

24 All hospitals in Virginia are required to submit proposed budgets and list prices to the Virginia Health Services Cost Review Commission for review. The Commission screens the proposed charges for reasonableness, and the names of facilities that do not adhere to the Commission’s recommendations may be published.

25 For instance, there was no statistical difference between bid prices submitted by hospitals that were located in three-hospital and two-hospital markets. Therefore, over the “range” of market concentration allegedly affected by the Carilion merger, there was no evidence (from this sample) that prices to managed-care plans would rise. Additionally, there was no statistically significant relationship between bids selected by hospitals chosen by the PPO and hospital market concentration. The coauthor, Dr. Michael Staten, submitted affidavit testimony at trial.

26 The DOJ also relied on another published study (Robinson and Luft, 1988) that compared the rates of cost increase from 1983 through 1986 in California and in markets across the country. Competitively structured markets (those with more than twelve hospitals) experienced lower rates of cost increase than the least competitive markets (those with one hospital). However, there was no significant difference between the rates of cost increase in markets with three to five hospitals versus those with two or fewer institutions. Again, over the range of market concentration allegedly affected by the Carilion merger, the evidence failed to suggest any adverse effect of the merger on price competition.
positive association between price and market concentration and a significant likely postmerger price increase. The economist testifying on behalf of the parties found no statistically significant relationship, and could find no statistical evidence supporting predictions of a price increase. A major reason for the different predictions was disagreement over the magnitude of, level of statistical significance of, and computational methodology used to compute expected price effects.

Efficiencies

One could argue that the merger should have been struck down because the potential existed for a large price increase, even though the statistical evidence presented by the parties indicated that likelihood was low. Hence, evidence demonstrating that the merger produced substantial cost savings was important to the parties’ case.27

Because RMH needed space to expand, and because CHRV was half empty, RMH asserted that the consolidation provided access to an unused hospital. A hospital facilities planner testified that the merger created substantial capital avoidance because construction of needed space at RMH would cost $15 to $30 million. In addition, the hospitals claimed that operating cost savings in administrative and certain clinical areas would total another $20 million over five years.

OUTCOME

The court asked an advisory jury to make findings on three questions of fact: (1) the correctness of the DOJ’s alleged geographic market; (2) the DOJ’s assertion that the relevant product market consisted of only inpatient hospital care; and (3) the consolidation’s likely effect on competition.

The jury concluded that the DOJ’s alleged geographic market was correct. But it concluded both that the product market included some outpatient care and that the consolidation would not have an anticompetitive effect.

The District Court endorsed the jury’s findings on the second and third issues and reversed its findings on geographic market. The court concluded that the relevant geographic market consisted of a broader area than the Roanoke Valley. In so doing, the court defined separate geographic markets for primary-secondary care and for tertiary hospital services. For primary-secondary services, it found that Roanoke area hospitals were in direct competition with smaller facilities in outlying areas. Further, the court rejected the argument that Roanoke Valley residents were dissuaded from using facilities other than RMH, LGH, and CHRV

27If the exercise of market power was unlikely, then the merger should have been motivated by a desire to achieve efficiencies.
because of a need to switch physicians. It referenced the testimony of one
physician who indicated that such referrals and admissions could be ac-
complished with little difficulty. Ultimately, the court determined that the
relevant geographic market included all counties and cities from which
RMH drew at least 100 patients a year. This area is composed of twenty
hospitals located in sixteen counties in Virginia and three in West Virginia.
Because of the large number of hospitals in this area, the court concluded
that RMH’s premerger and postmerger market share was well below the
levels alleged by the DOJ.28,29

The court concluded that the defendants’ nonprofit status was a miti-
gating factor in favor of the combination. The boards of both hospitals in-
cluded business leaders who would insist that cost savings be used to
lower hospital charges. The court also determined that nonprofit hospitals
tend to charge lower rates than for-profit hospitals. Further, the system of
voluntary hospital rate regulation in Virginia provided an additional deter-
rent to the exercise of postmerger market power. Last, the court rejected
testimony by the DOJ’s expert regarding the predicted rise in contract
rates to VABCBS.

With respect to reasons why the merger was procompetitive, the court
noted that announcement of the merger caused LGH to behave as a more
aggressive (procompetitive) competitor in that it rolled back charges and
contemplated an affiliation with a medical school in North Carolina. It also
credited the parties’ estimates of efficiencies. It recognized RMH’s need
for space and CHRV’s excess capacity as providing a legitimate business
rationale for the transaction. The merger created substantial capital avoid-
ance and ongoing operating savings totaling $40 million over the first five
years of the affiliation.

After an appeal by the DOJ, the Fourth Circuit Court of Appeals up-
held the lower court’s ruling by finding that the district court’s opinion was
not “clearly erroneous.”30 In reaching this determination the appellate
court noted that the district court had latitude in the interpretation of evi-
dence and evaluation of witness testimony.

28 With respect to the geographic market for tertiary care, the court conceded that the three
Roanoke Valley hospitals do not face competition from small hospitals in surrounding counties
but do compete with large institutions in other parts of Virginia and North Carolina, notably Char-
lottesvile, Winston-Salem, and Durham. These competing tertiary-care hospitals should be prop-
erly included within the relevant geographic market.

29 In accepting the advisory jury’s opinion on relevant product market, the court found that a sig-
nificant number of medical problems could be treated on either an inpatient or an outpatient basis.
Moreover, insurance carriers have restructured their reimbursement policies to encourage the sub-
stitution of outpatient for inpatient care. Therefore, outpatient providers in the nineteen-county
area should have been included as competitors to the merging hospitals.

CONCLUSION

In this case, the key issues litigated were the likely effect on competition and the presence of efficiencies. The outcome indicates that the court believed that the DOJ failed to meet its burden in demonstrating adverse competitive effects, and that the parties more than met theirs in establishing merger-related cost savings.

Because econometric evidence played a central role in the proceeding, it is useful to consider its use in a merger case. Regression results depict the average relationship between two variables of interest—for example, between price and market concentration. Statistically insignificant results do not prove that the two specific merging firms will refrain from a price increase. Hence, it is important to consider the underlying motives of the parties when assessing the applicability of regression results to an individual transaction.

Several pieces of independent market evidence suggested the absence of a strong anticompetitive motive in this case. First, RMH was space constrained, and CHRV was not; in the absence of the consolidation RMH would have been forced to embark on an aggressive building program. Second, the concerns expressed by LGH suggested that the affiliation offered prospects for cost savings. Third, CHRV was consistently ranked in consumer surveys (conducted before the merger) as the least desirable of the three area hospitals and RMH was the most preferred. It is questionable whether managed-care plans could have used it as effective leverage against RMH in price negotiations. If RMH sought a merger to preempt an outbreak of discounting, LGH would have been a better merger partner. Fourth, regressions (relating price to market concentration across different Virginia hospital markets) presented by the parties showed that RMH’s predicted prices were typically within 2 standard deviations of its actual prices. This is important because the government’s case emanated from a concern that RMH was controlled by an opportunistic administrator who would exploit the hospital’s postmerger market position. But, if RMH were oriented toward especially high prices, its actual current prices should have greatly exceeded those predicted from the regressions. That this result was not found suggests that it was no more aggressive than the average nonprofit hospital in the sample.

The outcome in U.S. v. Carilion did not resolve policy issues concerning the efficacy of hospital competition. The court neither endorsed nor rejected the basic antitrust paradigm. For instance, it found that prices were generally lower in areas with fewer hospitals—an apparent rejection of the basic industrial organization tenet. However, it also held that the merger would not create significant market power because RMH had a small market share and LGH was a formidable competitor. These findings constitute implicit acceptance of the basic industrial organization.
paradigm that increased concentration warrants concern. It is conceivable
that the court believed that the competitive model was not particularly rel-
levant to the industry, but that this merger would not lessen competition
even if it applied. However, this logic was not clearly spelled out in the
opinion.

Since the Carilion decision, federal court opinions have been issued
in at least six hospital merger cases. In all but two, the merging hospitals
ultimately prevailed. From a policy perspective, counting wins and losses
provides little probative information because the published opinions are so
varied and emphasize different evidence. In several of the cases, the gov-
ernment lost either because it failed to prove a relevant geographic market
or because the parties demonstrated a “large” geographic market in which
the increase in market concentration (caused by the merger) was minimal.
In some of these same cases, the district and/or appellate court rejected
nonprofit status and claimed efficiencies as relevant issues or mitigating
factors. In another case, a district court’s decision to allow a merger on
grounds that nonprofit status and wasteful competition were relevant to the
antitrust analysis was overturned by the reviewing federal appellate court.
In yet another transaction, the government prevailed on market definition
yet lost the overall challenge because the district court found that nonprofit
status, significant efficiencies, and the lack of any demonstrable anticom-
petitive effects (as reflected in econometric work similar in basic construct
to that offered in Carilion) were more salient evidence. This merger was
affirmed by the appropriate appellate court, also on grounds that it was not
clearly erroneous.

Probably the best explanation for the different findings on those is-
ssues that are repeatedly litigated is that hospital merger litigation, like all
antitrust work, is a fact driven process. Although the number of litigated
issues is both finite and quite similar across the different merger cases,
the evidence presented in support or rejection of the different arguments
varies sharply from case to case. Hence, one court rejects claims that an-
other trier-of-fact credits.

Carilion was one of the first litigated merger cases where evidence on
likely competitive effects of a transaction was deemed to be more relevant
(by the defendants) than evidence on market definition. Making measure-
ment of likely competitive effects the predominant focus in antitrust
merger litigation has gained acceptance among economists within the last
decade. Indeed, many antitrust economists contend that market definition
is an imperfect and often abused process and that direct measurement of a
merger’s likely impact on consumers is the preferred inquiry. While the in-
dustrial organization paradigm holds that performance can be inferred
from structure, the Carilion decision and some subsequent cases imply
that clear and convincing evidence on both prongs is required before
mergers in the hospital industry will be deemed unlawful.
REFERENCES


