Commentary: Excess Capacity, a Commentary on Markets, Regulation, and Values

Bernard Friedman

Professor Carolyn Madden attempts something very difficult in her article, "Excess Capacity: Markets, Regulation, and Values." She points out that analysts of the healthcare sector disagree on the desirability of new policies or reforms to influence the capacity and costs of hospitals. (For illustrative examples of policy questions, consider these: Should Medicare reimbursement penalize excess capacity in hospitals? Should antitrust enforcement against mergers by hospitals be eased?) She aims not only to contrast a number of different theoretical and empirically based arguments, but also, taking a longer historical overview, to argue that a changing social context of policy debate affects theoretical frameworks (or at least the choice to focus on specific factors) and the dominant policy implications drawn. Finally, she infers some revealed values that must be reflected in any new or reformed policies. She concludes with a call for reconciliation and consensus on the issue of optimal capacity in healthcare. To accomplish all of this compellingly in a short journal article would be a most remarkable achievement.

In this commentary, I attempt to formulate more carefully and augment Professor Madden's assessment of divergent viewpoints on the issues of excess bed capacity and costs in hospitals. Then, despite her useful discussion of the history of policy over four time intervals ("contexts"), I question the evidence for her conclusions about changes in dominant conceptual frameworks. I then offer a somewhat different review on the progress of research about hospital costs, capacity, efficiency, and the political economy of regulation.

The views in this commentary are those of the author, and no endorsement by the Agency for Health Care Policy and Research or the Department of Health and Human Services is intended or should be inferred.

Address correspondence and requests for reprints to Bernard Friedman, Ph.D., AHCPR, Suite 500, Rockville, MD 20852.

Finally, there is the matter of Madden's assertions that competition has failed already in the 1990s as a policy direction for healthcare efficiency, and the worry that power has become highly concentrated in monopolies to dominate the markets. Little supporting evidence is given—in fact, recent evidence on hospital costs is rather reassuring. In other areas such as the production of public goods, cross-subsidized by paying patients, concerns about market forces might be more urgent than those dealing with hospital costs and efficiency. However, the latter are the primary focus of this discussion. Despite some critical questioning of Madden's work to be found in this commentary, the common ground is a basic agreement that policy evaluation involves a necessary weighing of imperfect markets, with some results that are inefficient or unfair, against imperfect policy interventions with inefficiencies and other drawbacks of their own.

REVIEW AND INTERPRETATION OF RESEARCH

There is considerable agreement that unused bed capacity in community hospitals is present and has increased in recent decades. (The Prospective Payment Review Commission [ProPAC] reported a decline in total community hospital occupancy from 75.8 percent in 1981 to 59.7 percent in 1995, with three-fourths of the decline occurring by 1985 but continued gradual decline in the 1990s.) One general disagreement among analysts concerns the length of time that these recent high rates of unused capacity are likely to persist. Low occupancy rates could be transitory if they contribute to vigorous price competition by hospitals that are going to be included in managed care plans. Also, unused capacity would likely be cut as hospitals find opportunities or incentives (perhaps as part of a merger or joint venture) to redirect space, even the whole facility, to more profitable uses. However, some outside forces—for example, pressure brought by state agencies against closure, or enforcement of antitrust laws, both suggested by Keeler and Ying (1996)—may inhibit some of the important market forces. In addition, studies of not-for-profit hospitals show that they are slow to close or merge even with chronically poor financial performance (see, e.g., Duffy and Friedman 1993). This may be due partly to the inability of managers and trustees of a not-for-profit enterprise to openly sell their "equity" and position with the enterprise. Also, perhaps community-minded trustees cannot easily assure the future production of public goods by closing or selling the hospital.

If a high rate of unused capacity is not a transitory phenomenon, an important question is, How large are the costs imposed on society that result from unused capacity above some safety margin? A deeper issue is that perhaps even if there were *no* unused beds there would be reasons to think that the amount of hospital care supplied is not optimal in terms of social benefits versus costs of care. Madden reviews selected studies and authors to exemplify four different theoretical approaches for defining an optimal capacity. The approaches are:

a. *Neoclassical.* The optimum is an amount necessary to serve exogenous consumer demand for hospital care by the community and provide a margin of safety (e.g., keeping the probability less than some small fraction α that a person would ever be turned away) at minimum cost. Joskow (1980) derives the margin of safety from consumer desires in a competitive market. Friedman and Pauly (1981) assume potential declines in quality if a facility were to become congested: some amount of unused capacity is therefore planned by managers to provide an optimum of quality and average cost. These two approaches are used in the econometric work of two recent studies that estimate the costs of unused capacity, Keeler and Ying (1996) and Gaynor and Anderson (1995).

b. *Market imperfections due to imperfect information.* The optimum is the amount necessary to provide the care actually observed, plus a safety margin, but reduced to take out the demand induced by providers when they are dealing with poorly informed patients. The size of such distortions has been argued for many years, from Roemer's work in the 1950s through later authors such as Ginsburg and Koretz (1983) who found much smaller effects. The incentive for demand inducement is less when providers have a financial incentive to limit services such as a capitation rate. Some literature is concerned with comparing fee-for-service plans against health maintenance organizations that use less hospital care (see the experimental evidence reported in Manning, Leibowitz, and Goldberg 1984). There is ongoing debate over whether capitation payment creates a strong incentive for substantial *under*-service due to the same underlying problem of poorly informed consumers.

c. *Market imperfections due to public policies.* The optimum is the amount in items 1 or 2, reduced to take away the additional effects of tax subsidy of third-party insurance, any incentives for growth due to

cost-based reimbursement, or policies that restrict the entry of new hospitals that would compete to lower prices and cost of care. Such entry restrictions to protect existing hospitals may or may not be justified by the production of other public goods. Feldstein (1971) initiated a stream of econometric studies that estimated the increased service use and welfare loss due to the tax subsidy of health insurance. The tax subsidy and an associated increase in insurance coverage interacts with other factors to support higher costs by increasing the willingness of consumers to pay for higher levels of quality and amenities of service. (See the discussions of a "medical arms race" or nonprice competition among hospitals by Robinson and Luft 1985, and Farley 1985).

d. "New age" approach—based on the views of Rice (1997) and earlier writings. Since the revealed preferences of consumers include the effects of income and insurance, the optimal amount of hospital care by a benevolent social planner would possibly (but not assuredly) be a lesser amount than today and would be somewhat reallocated across the public. The important determinants, within a budget constraint, are the expected health benefits versus total costs of treatment for all persons in a population service area.[1]

Most analysts and policymakers concerned with the imperfections in b and c have accepted that market-determined hospital use would likely be too large, in the sense of an inefficient use of resources. This would support an interest in regulation or other intervention. But what level of use and capacity have actual regulators aimed to achieve? This perhaps deserves a perspective of its own for comparison. Did they actually attempt to achieve the level in perspective d? In CON programs there were supposed to be standards of need, with the definition of need left somewhat open to allow for local deliberation by representative interests. Some numerical standards of convenience for hospital beds emerged, attempting to keep all areas down to a rate of between three and four beds per thousand population, equal to an average of a base year or to international experience in planned systems. Sloan (1988) gives a very useful, brief review of actual CON practice in the heyday of health planning.

After presenting the perspectives gathered here as a, b, c, and d, Madden concludes that "the conceptual differences among the various perspectives are modest." Much disagreement is about the analysis of data and experience; for example, how sizable are certain market imperfections? Virtually all studies

in health economics make some allowance for a number of possible market imperfections when fitting empirical demand and cost relationships. It is also quite common to advocate that governments address market imperfections directly with consumer information on healthcare effectiveness and quality with changing either or both the tax laws or payment incentives in public insurance.

Given wide agreement that market imperfections deserve attention, it can also be said that some debates about health policy do focus on conceptual differences, not on differences in interpreting data. Well-known authors in health economics, who happen to be proponents of the different conceptual perspectives surveyed, recently joined in a vibrant and heated debate (see the exchanges in four articles by Thomas Rice, Robert Evans, Mark Pauly, and Martin Gaynor/William Vogt 1997). Rice rejected the neoclassical premises that supply and demand reveal consumer preferences and rejected the Pareto-efficiency criterion of welfare improvements commonly underlying discussions of policy change. The Gaynor/Vogt and Pauly discussions, however, held strongly to making theoretical deductions from Pareto-efficiency and claimed that utility functions could be properly specified. Evans and Pauly, who had both previously worked on testing the amount of induced demand by physicians, ran into conflict on whether the vested interests and income class of analysts determine their support for competitive markets. Evans saw a collusive, redistributive agenda among parties that sponsor policies promoting "market forces." Pauly, on the other hand, rejected the assumption that a scholarly debate on policy can resolve anything by inquiring into the social position and incentives of the debaters. Gaynor and Vogt, taking an approach different from that of Evans, gave attention to the theories of policy "capture" by regulated industries. These are theories that have garnered adherents after experience with regulation in past decades. They are also, of course, positive or predictive theories (as will be discussed further on) that can stand or fall on interpretation of data. However, most of the debate by these authors did not fit well with Madden's view that "much of the real discord relates less to theory and more to interpretations of empirical realities."

Professor Madden draws the following conclusion from a historical review of health policies and behavioral trends: although competing conceptual frameworks still have some currency and advocates today, Madden reasons, the context has changed over time with different perspectives becoming dominant in different contexts, leading to different policies. Support for this proposition is found in a sequence of four time periods since 1945:

1. The era of largesse (1945–1965)
2. Rising demand, regulated supply (1966–1983)
3. A shifting tide: prospective payment (1983–1989)
4. The power of competition (1990s).

To support this proposition, it would seem that one must show a particular, dominant conceptual approach, with a set of policy recommendations adopted during each period. Of course, four observations are not many, but the fit between the history and the conclusion can be questioned. Early in period 2, evidence on the growth of expenses led to a concentrated focus on market imperfections and policies for direct controls on capacity and pricing of healthcare. These were implemented early in period 2. But later in period 2, the dominant thrust of research argued that controls were not achieving the desired results. The problems of regulation and of suppression of the competitive entry of new suppliers were diagnosed at the time (add Havighurst's writings culminating in his book of 1982, and Enthoven 1980), and then different policies involving market competition were widely advocated. A strong regulatory proposal of the Carter administration found insufficient support in 1978. It seems fair to say that the dominant conceptual framework and policy recommendations by the end of period 2 were different from those at the beginning, because the likely efficacy of direct capacity controls was dropped in the interim.

Period 3 is defined here by the major payment policy change in public insurance. The policy reflects a different approach to dealing with market imperfections and cost-increasing incentives. Health planning laws expired. So while policies changed, it is not clear in what way the dominant conceptual framework changed. Finally, evidence was not offered about a change in the conceptual framework from period 3 to 4. Experience with competition was (and is) accumulating, and no major intervention has been judged by the political process to be attractive for dealing directly with evidence of falling hospital occupancy rates. Perhaps the change has been a wider acceptance of the ability of managed care plans and payment policies in public plans to overcome market imperfections of the type conceived in perspectives b and c.[2]

The historical review offers evidence of the major changes in policies. However, it does not show very explicitly that a dominant conceptual framework changed from the middle of period 2, when certificate-of-need controls were disparaged, through period 4. It is fair to say that models of provider-dominated decisions on the use of hospital care, together with a

"target income" model, became much less persuasive after 1966 (see early tests by Davis 1972). Windfalls were not spent in ways predicted by such models. Since then, the evidence has been roughly consistent with the view that the dominant conceptual framework contains a neoclassical view of market interactions, with market imperfections as in perspective c occurring as a consequence of policies maintained for other reasons. Perhaps the dominant view of the size and significance of these imperfections has been changing—it would be hard to determine that precisely. This is not to say that the normative policy recommendations of a benevolent social planner have had no applicability (e.g., direct rationing is observable in areas such as organ transplantation).

It will be interesting to monitor the decision making by managed care plans to study whether their behavior substantially overrides or ignores consumer preferences and concentrates instead on highly standardized treatment protocols based only on average health benefit and cost considerations. If consumers do not strongly react individually or politically to having their preferences ignored or overridden by health plans, this would tend to come in conflict with a neoclassical view of demand and supply as important parts of the dominant conceptual framework.

SUPPLEMENT ON HOSPITAL BED CAPACITY AND COSTS

A number of advances have occurred over time in behavioral models and in the econometric fitting of hospital costs. Analysts continue to address the deceptively straightforward questions. What is the cost of carrying a bed that is never used? Or a bed that is staffed to be used but is not used? These questions can require somewhat subtle considerations, and all studies remain subject to one or another limitation. Nevertheless, studies now use better data with more refined methods. Moreover, questions about hospital cost and hospital inefficiency have been asked in wholly new ways that are bringing new types of evidence into play.

A very brief, and selective, assessment of research on hospital costs through the 1980s should be helpful in setting the stage for the new work of the mid-1990s, at least to clarify the reasons why some analysts doubt that excess capacity imposes high costs while others argue that it does. First of all, we need to set aside the notion of opportunity costs that often arise in an economic analysis. We are dealing instead with direct outlays and historical costs only.

We might seek direct access to accounting records to find depreciation and interest costs for maintaining a certain bed capacity; this would give us roughly the capital cost of beds, ignoring maintenance. Depreciation and interest generally take up a small portion of hospital budgets, and little of that can be saved even if the hospital closes.[3]

We generally cannot observe the proportion of beds that were staffed to be used. But using an econometric model, we can ask what the average cost was of providing a bed-day of service, as well as the marginal cost (extra costs generated by filling a bed). The difference between the two is the average fixed cost of a bed-day, reflecting whatever proportion of beds were staffed to be used. This was for some time the most common method of estimating the cost of empty beds. A second method used in other studies, where data resources permit, is to fit total hospital cost as a function of all of the different types of outputs and input prices plus the level of bed capacity. The marginal effect of beds on total cost, for some chosen level of the outputs, gives the full cost of an extra unoccupied bed. Policy-relevant findings have not hinged on which of these two methods was used, or even on what a reasonable "margin of error" in staffed beds would be in case of a disaster.

Some early studies examined cross-sections of hospitals. The analyses tended to find the average cost of care to be very close to the marginal cost, yielding relatively low costs for an empty bed. A frequent caveat was that the nature and scope of services was believed to be different in larger hospitals, leading to higher costs that perhaps would mask economies of scale (see Feldstein 1981, ch. 2, originally published in 1974). Time series studies, however, showed that the marginal cost of extra output was only 40 percent to 75 percent of the average cost, yielding a relatively high cost of unused capacity (for an influential study, see Lave and Lave 1970). Friedman and Pauly (1981, 1983) offered a reconciliation of these findings by suggesting that the difference was whether or not hospitals were observed in equilibrium, where the actual demand was close to the level expected and planned for. In time series studies over short intervals (Lave and Lave used six months), one might observe disequilibrium comparisons, including seasonal fluctuations, with a higher proportion of unused beds staffed for use, and hence the cost of unoccupied beds appearing higher. More precisely, the average cost depended strongly on an expected level of demand, and much less on the actual level of demand. This would be consistent with the common observation that many rural or other hospitals with quite low occupancy rates to which they are adjusted tend to have a relatively low average cost even controlling for case mix. Pauly and Wilson (1986) used a different data

source and direct questionnaires to hospital administrators to ask about the demand expectations and found similar results of low costs of unused beds in equilibrium.

In several respects those earlier analyses were hampered by inadequate data and weak methodology. It was not possible to measure output properly, allowing for the high variation in the amount of resources required for different types of problems. Therefore, any attempts to include bed capacity and occupancy rates in an econometric equation could have resulted in confounding the desired effects with a more difficult case mix in larger hospitals. Quality variation across hospitals should also be explicitly considered in looking at bed capacity and total cost. In addition, hospitals have become more of a multiproduct enterprise beyond inpatient care, so this should be reflected in the empirical cost function to decipher the role of bed capacity on total cost. Finally, accounting measures must be viewed with some suspicion in that a high proportion of hospitals belong to systems that reallocate system costs among member hospitals.

Gaynor and Anderson (1995) use a multiproduct cost function for hospitals from 1983–1987 and include a case-mix index for inpatient care, the number of outpatient visits, and measures of the variability of demand. They find much higher estimates of costs of an "expectedly" empty bed than did Friedman and Pauly, and suggest that technology changes may have required greater equipment cost invested per bed. They note the slow adjustment of bed capacity to the decline in volume of care after the Medicare prospective payment system was begun. They do not offer possible explanations about the slow adjustment. Perhaps the higher investment per bed was deemed important in the nonprice competition for patients and physicians in order to fill beds. Perhaps it is required by more severely ill patients, or because of genuine improvements in quality of care due to the diffusion of new knowledge.

Keeler and Ying (1996), using state average data for the decade of the 1980s, find relatively high costs of unused beds. At the state level of aggregation, they are less able to control for case-mix and quality variables. Moreover, the notion that all hospitals in the state are in equilibrium with their current outputs and capacities, built into their econometric specification, could be a problem. If some hospitals are not in equilibrium but others are, then the model could benefit from separate estimates for particular classes of hospitals.

Another quite different verdict on the cost of an empty bed from data at the end of the 1980s comes from the study by Zuckerman, Hadley, and

Iezzoni (1994). They look at the issue by asking questions in a new way. First they ask how inefficient particular hospitals are. Then they ask, what is that inefficiency related to? They use the appealing but still not widely adopted technique of frontier analysis. Their total cost function, with much attention to multiple products, case mix, and quality (an innovation in itself), assumes that each hospital could be inefficient for a variety of reasons not separably measurable. An efficiency score (the extent to which costs are higher than the minimum for the bundle of actual outputs, quality, and input prices) is derived for each hospital. They find an average inefficiency of 14 percent, which is certainly enough to worry about. They proceed to discuss how efficiency scores vary with several hospital-specific differences. They find that bed capacity has only a small effect. This implies a cost of an empty bed closer to the accounting minimum than to the estimates developed by the other recent authors. Critics point out that the efficiency scores from frontier methods are likely confounded statistically with other unmeasured factors that vary among hospitals. For example, newer hospitals, those with more recent modernizations, and those subject to more variability of demand will be found to be more expensive. These issues could be addressed with additional information.

There is no clear consensus from these recent studies. The important questions about hospital cost and inefficiency can be asked in novel ways, with better data on outputs and quality, and not find bed capacity to be a substantial determinant of inefficiency scores. On the other hand, disequilibrium between actual and expected demand at particular types of hospitals, or delayed adjustment to a new equilibrium level of demand appears to underlie some estimates of high estimated costs of unused capacity. Some obstacles to reaching an equilibrium via closures are suggested by Keeler and Ying. Others were discussed by Madden and by Duffy and Friedman in terms of the behavioral motivations in not-for-profit hospitals. While a consensus on high costs should not be assumed on the basis of the literature, this may be an area where some existing public policies could be given a nudge to promote more rapid adjustment to changing conditions.

IS A NEW ERA OF INCREASED REGULATION AT HAND?

The inefficiency of hospitals apparently is not widely perceived in the political arena as a problem sufficiently acute to call for major policy changes.

Hadley, Sulvetta, and Englert (1996) worked out models in some detail of how Medicare payment might be tilted against inefficient hospitals based on frontier cost functions. Calls by influential legislators over many years and continued concern over the growth of Medicare spending have yet to muster sufficient support.

Perhaps the reasons for federal inaction are ideological or the result of partisan politics, or perhaps this inaction is due to frustration and inefficiency in past experience with regulation. A case can be made for the latter by a number of authors who argue not only that CON and price controls were ineffective and unsustainable, but also that regulatory behavior has a tendency to be "captured" to some degree by the industry regulated in efforts by the latter to put up entry restrictions and dampen price competition. Entry restrictions and reduced competition, together with the diversion of resources to compete for the favor of regulators, impose a burden on society that should be assessed against any benefits of regulation. In the general economics literature, see the noted studies by Posner (1974), Peltzman (1976), and Stigler (1988), whose work is followed by recent game-theoretic treatments. Several authors have examined regulatory programs in healthcare along those lines (Havighurst 1982; Sloan 1988), and others specifically rejected "public interest" theories of decisions to adopt state-level regulation in favor of narrow interests (e.g., Bauer 1982; Cone and Dranove 1986). In general, these authors do not believe that regulation failed due to technical organizational problems; they believe it should not be expected to achieve the goals that many people would desire.[4]

Recently, Morrisey (1997) sounded a warning about new efforts emerging in state legislation and producing policies to constrain the behavior or impact of managed care plans. His research argued that new state policies are strongly motivated by the organized interests of providers, health insurers, and employers to restrain price competition and protect established incomes and discretionary power. That should not imply that a public interest in regulating entry and price competition in healthcare could not, on balance, be beneficial, only that this movement now under way can lead to imperfect regulation with biases favoring provider interests, just as markets can be imperfect. If Morrisey is correct, we can look forward to continued experience with both imperfect markets and imperfect regulation, simultaneously.

Madden notes that price competition and consolidation in the 1990s are tending to reduce hospital capacity somewhat, but ends her historical review by finding widespread conceptual agreement that concentration of economic power "creates monopolistic behavior that results in higher prices and reduced innovation." At this time, the worry about concentration of economic

power is not buttressed by much evidence of adverse results. Specifically, in regard to hospital expenses there is some reasonably good news to report, perhaps because concentration of power among some providers is met by countervailing concentrations on the payer side. For example, data from the HCFA Website and HCFA chartbooks show that hospital expenses and total health expenses are a declining share of the gross domestic product from 1993 to 1997, and not because GDP was accelerating (its growth was steady) but because hospital expenses decelerated. This experience, albeit still brief, is reassuring and unmatched since 1966, except for the individual years of 1973, 1978, and 1983—years of dramatic policies coupled with unusually high general economic growth.

In an era of intense competition in healthcare, some concerns other than hospital costs and inefficiency may exist to warrant more urgency in weighing the realistic benefits and costs of new policy interventions versus the results of market forces. Madden raises concern about a decline in public goods (e.g., uncompensated care, teaching, research) cross-subsidized by paying patients. This type of concern will be challenging to monitor and to address in new ways.

ACKNOWLEDGMENTS

Thanks are owed to Kelly Devers, Marty Gaynor, Mike Morrisey, and Irene Fraser for helpful discussion, and to Gloria Bazzoli for a helpful critique.

NOTES

1. Another interesting "new age" approach can be devised from the work of Daly and Townshend (1993) and related authors. An optimum capacity for an industry would be an amount free of the effects of specific industry distortions and general incentives for growth throughout the economy, and further limited, if necessary, by the "carrying capacity of the ecological system." This approach has yet to be applied in debates on health policy, but it shows another theoretical direction by economists distrustful of market forces and current policies.
2. Interestingly, the Clinton Health Reform proposal, backed by articles in two *Health Affairs* issues of 1993 and by CBO views, adopted global budgeting and other regulations to restrain the growth of expenses to a degree that was believed by some not to be achievable solely by market forces. For various reasons, including objections to controls on spending, the proposal was not politically acceptable.
3. The depreciation is "sunk" rather than a fresh outlay, and the default of interest is redistributive: the saving is a loss to someone else in society rather than a saving of resources for other purposes.

4. The Boren Amendment on reimbursement to facilities under Medicaid, enacted in 1980 with a modification in 1981, might serve as an interesting illustration of frustrated regulatory intents. The amendment to the Social Security Act was the first permission to all states to pay facilities (hospitals and nursing homes in the Medicaid program) below the principles of "reasonable cost" but adequate for an efficiently run facility. It apparently became a protective basis over time for lawsuits by providers due to the use of the term "adequate" without a compelling way of applying the notion of an efficiently run facility. In 1997, the Boren Amendment was repealed. (Thanks are due to Gloria Bazzoli for clarifying that situation.)

REFERENCES

Bauer, K. G. 1972. "Hospital Rate Setting: This Way to Salvation?" *Milbank Memorial Fund Quarterly* 55 (1): 117–50.

Cone, K. R., and D. Dranove. 1986. "Why Did States Enact Hospital Rate-Setting Laws?" *Journal of Law and Economics* 29 (October): 287–302.

Daly, H., and K. Townshend. 1993. "Introduction." In *Valuing the Earth: Economics, Ecology, and Ethics,* edited by H. Daly and K. Townshend, pp. 1–10. Cambridge, MA: MIT Press.

Davis, K. A. 1972. "Theories of Behavior in Nonprofit, Private Hospitals." *Economic and Business Bulletin* 24 (1): 1–13.

Duffy, S. Q., and B. Friedman. 1993. "Hospitals with Chronic Financial Losses: What Came Next?" *Health Affairs* 12 (summer): 152–63.

Enthoven, A. C. 1980. *Health Plan: The Only Practical Solution to the Soaring Cost of Medical Care.* Reading, MA: Addison-Wesley.

Evans, R. 1997. "Going for the Gold: The Redistributive Agenda Behind Market-Based Health Care Reform." *Journal of Health Politics, Policy and Law* 22 (2): 427–65.

Farley, D. 1985. "Competition Among Hospitals: Market Structure and Its Relation to Utilization, Costs, and Financial Position." Hospital Cost and Utilization Project Research Note #7. Rockville, MD: National Center for Health Services Research (now Agency for Health Care Policy and Research).

Feldstein, M. 1981. *Hospital Costs and Health Insurance.* Cambridge, MA: Harvard University Press.

———. 1971. "Hospital Cost Inflation: A Study of Nonprofit Price Dynamics." *American Economic Review* 61 (5): 853–62.

Friedman, B., and M. Pauly. 1983. "A New Approach to Hospital Cost Functions and Some Issues in Regulation." *Health Care Financing Review* 4 (March): 105–14.

———. 1981. "Cost Functions for a Service Firm with Variable Quality and Stochastic Demand: The Case of Hospitals." *Review of Economics and Statistics* 63 (November): 620–24.

Gaynor, M., and G. F. Anderson. 1995. "Uncertain Demand, the Structure of Hospital Costs, and the Cost of Empty Hospital Beds." *Journal of Health Economics* 14 (3): 291–318.

Gaynor, M., and W. Vogt. 1997. "What does Economics Have to Say About Health Policy Anyway? A Comment and Correction on Evans and Rice." *Journal of Health Politics, Policy and Law* 22 (2): 475–96.

Ginsburg, P. B., and D. M. Koretz. 1983. "Bed Availability and Hospital Utilization: Estimates of the 'Roemer Effect.'" *Health Care Financing Review* 5 (1): 87–92.

Hadley, J., M. B. Sulvetta, and E. Englert. 1996. "Achieving Medicare Savings: Incorporating Measures of Hospital Efficiency in the Calculation of PPS Standardized Payment Rates." Working Paper No. 96-115. Institute for Health Care Research and Policy, Georgetown University Medical Center.

Havighurst, C. C. 1982. *Deregulating the Health Care Industry.* Cambridge, MA: Ballinger Publishing.

Joskow, K. 1980. "Effects of Competition and Regulation on Hospital Bed Supply and Reservation Quality of the Hospital." *Bell Journal of Economics* 11 (autumn): 421–47.

Keeler, T. E., and J. S. Ying. 1996. "Hospital Costs and Excess Bed Capacity: A Statistical Analysis." *Review of Economics and Statistics* 78 (3): 470–81.

Lave, J. R., and L. B. Lave. 1970. "Hospital Cost Functions." *American Economic Review* 60 (June): 379–95.

Manning, W. G., A. Leibowitz, and G. Goldberg. 1984. "A Controlled Trial of the Effect of a Prepaid Group Practice on Use of Services." *The New England Journal of Medicine* 310 (23): 1505–10.

Morrisey, M. A. 1997. "State Health Care Reform: Protecting the Provider." Unpublished conference presentation.

Pauly, M. 1997. "Who Was that Straw Man Anyway? A Comment on Evans and Rice." *Journal of Health Politics, Policy and Law* 22 (2): 467–74.

Pauly, M., and P. Wilson. 1986. "Hospital Output Forecasts and the Cost of Empty Hospital Beds." *Health Services Research* 21 (August): 404–28.

Peltzman, S. 1976. "Toward a More General Theory of Regulation." *Journal of Law and Economics* 7 (2): 259–84.

Posner, R. A. 1974. "Theories of Economic Regulation." *Bell Journal of Economics and Management Science* 5 (2): 335–58.

Rice, T. 1997. "Can Markets Give Us the Health System We Want?" *Journal of Health Politics, Policy and Law* 22 (2): 383–426.

Robinson, J. C., and H. S. Luft. 1985. "The Impact of Hospital Market Structure on Patient Volume, Average Length of Stay, and the Cost of Care." *Journal of Health Economics* 4 (4): 333–56.

Sloan, F. A. 1988. "Contain Health Expenditures: Lessons Learned from Certificate-of-Need Programs." In *Cost, Quality and Access in Health Care: New Roles for Health Planning in a Competitive Environment,* edited by F. A. Sloan, J. F. Blumstein, and J. M. Perrin. San Francisco: Jossey-Bass.

Stigler, G. J. 1988. *Chicago Studies in Political Economy.* Chicago: University of Chicago Press.

Zuckerman, S., J. Hadley, and L. I. Iezzoni. 1994. "Measuring Hospital Efficiency with Frontier Cost Functions." *Journal of Health Economics* 13 (3): 255–80.