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DataWatch

Costs And Price Competition In California Hospitals, 1980-1990
by Jack Zwanziger, Glenn A. Melnick, and Anil Bamezai

Abstract: Critics of health care reform proposals that incorporate managed competition contend that it has never been broadly implemented. However, insurance plans that combine insurance with the provision of care have been widely implemented and have been tested most extensively in California. This DataWatch explores California’s experience with health maintenance organizations (HMOs) and preferred provider organizations (PPOs), the introduction of which was followed by overall reductions in hospital costs. These reductions were larger in competitive markets. If implemented on a national scale, such selective contracting could be expected to reduce the growth of hospital costs even more rapidly than occurred in California.

Several health care reform proposals rely on managed competition to control costs. This approach envisages multiple levels of competition. Large health insurance purchasing pools would be created and would provide their members with information needed to rank competing insurance plans along several dimensions, such as price, coverage, and quality. Workers would be encouraged to be price-sensitive in their purchase of insurance by a requirement that the costs for services beyond those included in a standard minimum benefit package be paid for out of pocket. Insurers would compete vigorously for enrollees by trying to offer the most attractive combination of prices and plans. Insurers would play a critical role in a managed competition-based system by contracting with providers that offer the best prices, locations, and quality, thereby transmitting competitive pressure from the insurance market to health care providers. Providers would organize themselves into entities that could absorb the risk of contractual obligations that specify costs (and possibly quality) in advance. In combination, these changes are designed to provide all parties—beneficiaries, insurers, and providers—with incentives for cost-effective behavior.

A major criticism of managed competition is that it is largely a theoretical construct, with little or no experience or empirical evidence to support its effectiveness. Although this is the case for some elements of the current health care reform proposals—particularly, forming purchasing pools and

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changing insurance purchasers’ incentives—there has been substantial experience (since the early 1980s) with the effects of insurance plans that combine insurance and the provision of care. While some of these plans have employed physicians and owned their hospitals—Kaiser Permanente is the most prominent example—plans more commonly contract with a selected group of providers. Selective contracting, an important component of managed competition proposals, has had its most extensive test in California.

In June 1982 California was the first state to enact legislation to encourage the formation of insurance plans able to contract with selected providers. The legislation allowed the state’s Medicaid program (MediCal) and private insurance plans to contract with hospitals to which they would channel their beneficiaries in return for price (and other) concessions.

The insurance plans that resulted from this legislation, known as preferred provider organizations (PPOs), have grown to dominate the California health insurance market. The restructuring of the California health insurance industry also has accelerated the growth of health maintenance organizations (HMOs), particularly those that contract for hospital services. By 1990 more than 80 percent of California beneficiaries were enrolled in PPOs or HMOs.

This DataWatch focuses on hospital costs and how they were affected by the growth of selective contracting in California. First, we show why a change in the insurance market would be expected to induce price-based competition among hospitals. Then we examine how overall hospital cost trends changed in California following the passage of selective-contracting legislation. Finally, we compare the costs and revenues of hospitals in the most and least competitive markets, demonstrating that cost reductions were concentrated in competitive markets. This implies that hospital competition has, in fact, reduced the rate of growth of hospital revenues and forced hospitals to restrain their costs.

Effects Of The Insurance Market On Hospital Competition

Competitive dynamics in hospital care are shaped by the multiple parties involved in the transaction of “buying” hospital services: physicians, patients, insurers, and employers. Each has different criteria for selecting, or guiding the selection of, a hospital. The nature of hospital competition within a market depends on each party’s relative ability to influence this choice. Insurers can exhibit two basic modes of operation. They can be either “passive,” acting purely as a financial intermediary processing provider claims, or “active,” channeling beneficiaries to selected providers. The focus of competition differs dramatically in these two types of markets.
In the first, hospital selection is largely under physician control. Thus, hospitals compete for patients largely by trying to attract physicians. Since physicians generally are not price-sensitive, the demand for hospital services in this type of market is largely determined by a comparison of hospitals’ quality and amenities. The availability of technically sophisticated services, modern facilities, and convenient parking are some of the critical dimensions of competition among hospitals. As a result, hospital competition in physician-dominated markets tends to increase hospital costs.

In the second type, insurer-dominated markets, hospitals compete on the basis of price as well as quality. Through their ability to channel beneficiaries to selected providers, insurers often are able to negotiate price concessions from hospitals. Hospitals must play a complex competitive game. Hospitals must attract patients by competing for the favor of admitting physicians, but first they must compete for inclusion in insurers’ preferred provider networks. Price becomes a much more important factor in attracting and retaining a patient base. As a result, hospitals that can control their costs are in a much better position to secure contracts with insurers. Although a contract in and of itself does not guarantee an increased flow of patients, it channels patients by creating a “cost gap” so that out-of-pocket costs are lower for patients who seek treatment in hospitals that are under contract with their insurance plan. Failure to win a contract generally will all but eliminate a hospital’s chances of attracting the HMO’s or PPO’s subscribers.

In California the locus of control has shifted notably over the past decade from physician-dominated markets to a greater degree of insurer control. This situation has created an ideal environment in which to test whether this shift has induced price competition and thus has forced hospitals to control their costs.

<table>
<thead>
<tr>
<th>Hospital Cost Containment And The Growth Of Selective Contracting</th>
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</table>

A profile of behavior changes in California hospitals can be developed using data from the 1992 Hospital Fact Book, published by the California Association of Hospitals and Health Systems. These data are drawn from an annual survey of hospitals performed by the American Hospital Association (AHA). We compared California and U.S. hospitals on a variety of measures for two time periods: 1975-1982, prior to the implementation of selective contracting, and 1982-1990, after the implementation of selective contracting.

The most global measure of the change in total hospital expenditures (inpatient and outpatient) is the proportion of total per capita income this spending consumes (Exhibit 1). At the state level this measure is analogous
to the common “percentage of gross national product (GNP)” that is used as a measure of national performance. The proportion of total per capita income consumed by the hospital sector increased by approximately the same amount between 1975 and 1982 for both California and the nation as a whole. Between 1982 and 1990 the proportion continued to increase for the nation, although at a somewhat slower rate, but declined in California.

The reason for this decline was a reduction in the rate of growth of hospital costs, rather than extremely rapid income growth. This can be seen by comparing the percentage change in real per capita hospital expenditures (Exhibit 2). Whereas California per capita hospital spending increased at a slightly lower rate than that for the nation as a whole between 1975 and 1982, there was a large difference in the rate of growth in the later period.

The lower rate of increase in per capita hospital spending was primarily the result of a lower intensity of resource use per unit of output. Whereas hospital expenses per adjusted discharge—probably the best measure of the cost of a unit of hospital output—increased much more rapidly in California than in the United States as a whole during the 1975-1982 period, spending increased at a lower rate after the introduction of selective contracting. Further, although expenses per adjusted day increased more rapidly than expenses per adjusted discharge in California after the implementation of selective contracting—reflecting substantial reductions in average length-of-stay—these expenses still increased at a far lower rate than did the national average. Finally, the lower growth rate of spending reflects lower resource use—California hospitals have had almost no increase in the
Exhibit 2
Reasons For The Decline In Growth Of California Hospital Costs, 1975-1990

<table>
<thead>
<tr>
<th>Percent change</th>
<th>United States</th>
<th>California</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
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<tr>
<td>3</td>
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<tr>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: Average annual percent change, deflated by the hospital market basket.

number of full-time-equivalent personnel per adjusted day (Exhibit 3).

Competition And Hospital Cost Growth

In the previous section we presented data comparing the overall performance of hospitals in California with the performance of hospitals in the
United States as a whole. In this section we demonstrate that the cause of the reduction in the rate of growth of California hospital costs was price competition, induced by selective contracting. We isolate the effects of selective contracting by noting that it would have little to no effect in monopoly hospital markets, since insurance plans would have little negotiating power in the absence of any credible threat to divert patients to a competitor. Selective contracting should have its maximum effect in very competitive markets that offer many alternatives. If selective contracting reduces the rate of growth in hospital costs, then we would expect the growth rate to decrease as hospital markets become more competitive.

All of the previous studies of the effects of competition in California after 1982 have shown that hospitals in more competitive markets had far lower rates of cost increases.\(^1\) The most striking observation is that the rate reductions followed very quickly on the heels of the enactment of selective-contracting legislation in 1982. By 1983 hospitals were responding, and their responses depended directly on the competitiveness of their markets. Hospitals in more competitive markets had substantially lower rates of growth in their costs.

To examine how cost savings that have resulted from managed competition in California have been shared between insurers and providers, we used models with the same structure as the multivariate model described in 1988 by Jack Zwanziger and Glenn Melnick to estimate the effect of competition on total hospital revenues and expenses over the 1980-1990 period.\(^2\) The models relate hospital revenues and expenses to patient volume, case-mix, hospital specialization, hospital size, ownership, location, input prices, and policy variables that capture the impacts of selective contracting by private payers, of selective contracting by MediCal, and of Medicare’s prospective payment system.

To describe competition’s impact more graphically, we simulated how total hospital spending and revenues have changed over time among hospitals located in markets with high competition compared with hospitals located in markets with low competition (the most and least competitive quartiles of all California hospitals).\(^3\) All other hospital characteristics were held constant over time. We calculated the ratio of average expenses for all hospitals in “high-competition” areas to the overall average expense for that year. “Low-competition” time trends were calculated similarly. We used 1980-1982 data as a base period (prior to selective contracting). Competition’s effect on hospital revenues was simulated in the same way.

Our analysis, based upon eleven years of data (through the end of 1990) suggests that selective contracting has successfully curbed the growth of both hospital expenses and hospital revenues. Exhibit 4 presents data comparing trends in relative expenses in high- and low-competition mar-
### Exhibit 4
Comparison Of Total Expenses And Total Revenues Of Hospitals In High- And Low-Competition Areas, 1980-1990

<table>
<thead>
<tr>
<th>Year</th>
<th>Expenses Low competition</th>
<th>Expenses High competition</th>
<th>Revenues Low competition</th>
<th>Revenues High competition</th>
</tr>
</thead>
<tbody>
<tr>
<td>1980-1982</td>
<td>0.952320</td>
<td>1.081527</td>
<td>0.937728</td>
<td>1.066993</td>
</tr>
<tr>
<td>1983</td>
<td>0.929023</td>
<td>1.077076</td>
<td>0.942364</td>
<td>1.061699</td>
</tr>
<tr>
<td>1984</td>
<td>0.958034</td>
<td>1.044186</td>
<td>0.955639</td>
<td>1.046826</td>
</tr>
<tr>
<td>1985</td>
<td>0.966587</td>
<td>1.034869</td>
<td>0.952152</td>
<td>1.050692</td>
</tr>
<tr>
<td>1986</td>
<td>0.963095</td>
<td>1.038652</td>
<td>0.951199</td>
<td>1.051754</td>
</tr>
<tr>
<td>1987</td>
<td>0.965123</td>
<td>1.036451</td>
<td>0.96603</td>
<td>1.03547</td>
</tr>
<tr>
<td>1988</td>
<td>0.968099</td>
<td>1.033238</td>
<td>0.979948</td>
<td>1.020639</td>
</tr>
<tr>
<td>1989</td>
<td>0.980449</td>
<td>1.020113</td>
<td>0.998417</td>
<td>1.001599</td>
</tr>
<tr>
<td>1990</td>
<td>0.981676</td>
<td>1.018827</td>
<td>1.018384</td>
<td>0.981795</td>
</tr>
</tbody>
</table>

**Source:** California Office of Statewide Health Planning and Development, Quarterly Data Set, 1980-1990.

**Note:** Multivariate regression models were estimated. The coefficients were used to calculate the ratio of expenses and revenues of hospitals in the most competitive and least competitive quartiles to the overall average in each year.

Markets over time in California. For the base period, 1980-1982, prior to the introduction of California’s managed care legislation, hospital costs in highly competitive markets were approximately 17 percent higher than the costs for hospitals located in less competitive markets. The finding that greater competition leads to higher hospital costs is exactly what would be expected in markets in which physicians select hospitals and hospitals compete on the basis of quality and amenities. Following the introduction of PPO legislation in California, this gap narrowed consistently, ending at approximately 4 percent in 1990. Selective contracting had induced highly competitive hospitals to decrease their costs by almost 13 percent relative to costs at less competitive hospitals.

Hospital revenue followed roughly the same trajectory as hospital costs did. Initially, hospital revenue in high-competition areas was 14 percent higher than in low-competition areas. By 1989 hospital revenues were lower in the high-competition areas. The trend continued in 1990, with hospitals in high-competition areas having revenues that were 4 percent below revenues in low-competition areas, a swing of 18 percent in the nine years of experience with selective contracting. These findings demonstrate that the observed cost and revenue reductions are long term, rather than a one-time effect—a distinction of critical importance with regard to any cost containment program.

**Policy Implications**

Competition prior to selective contracting was cost-increasing because
the competition was not based on price. With selective contracting (price competition) insurers were able to restrain the rate of growth of hospital revenue. Hospitals responded by becoming more efficient, thereby reducing the rate of cost increases over the nine years. By the end of the period a 14 percent shift in relative costs had taken place. California’s near-decade of experience with selective contracting suggests that price competition can change provider behavior.

Further, data for the hospital sector nationwide show that while selective contracting is most effective in competitive markets, its effects extend to the entire hospital sector, with California hospitals representing more than 10 percent of the national total. As a result, Californians devoted a smaller proportion of their incomes to hospital services (inpatient and outpatient) after nine years of selective contracting than they did prior to selective contracting—a result quite different from the national experience. The data show that the cost savings had several sources: reductions in admission rates, a lower average length-of-stay, and increased provider efficiency in reducing the cost per adjusted discharge and cost per adjusted day.

These results provide a two-sided message for health care reform proposals that are based on managed competition. On the one hand, they show that even in the absence of the massive buying power represented by purchasing cooperatives, insurers that have the capacity to channel beneficiaries to preferred providers are able to change providers’ behavior. It is likely that the dramatic reductions in the growth of California hospital costs would take place even more rapidly in the context of national health system reform, partially because the pooling of small businesses would create extremely powerful and knowledgeable buyers and partially because individual insurers typically will have greater market shares, and thus more market power, nationally than was the case in California. Finally, utilization management “technology” has developed far beyond the rather rudimentary programs and organizations available in 1982. Combined, these features of the present health care system would create an environment amenable to dramatic reductions in the growth of hospital costs.

On the other hand, the effectiveness of selective contracting depends critically on the presence of credible alternative providers of hospital services. Two elements are necessary: First, and most obviously, there must be other hospitals in the market. Second, and less obviously, these hospitals must have occupancy rates that are low enough to allow them to accept additional patients. California has been an ideal environment for the effective functioning of competitive strategies—its hospital markets are competitive, and occupancy rates are extremely low. California’s experience suggests that hospital closures or conversion to long-term care facilities will not reduce competition or increase occupancy rates sufficiently to
threaten effective competition. Hospital days per capita have fallen so dramatically since 1982 that enormous spare capacity remains. Moreover, hospitals have learned to operate efficiently even at occupancy rates of 50 percent or lower, so that occupancy rates by themselves will not force a rapid downsizing of the hospital sector. What will threaten the potential success of selective contracting is if mergers or acquisitions of hospitals under the guise of increasing efficiency significantly reduce the options available in a given market. Widespread consolidations could undercut any possibility for using competitive forces to constrain providers’ behavior.

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NOTES


2. The measure of the effect of selective contracting is the competitiveness of the hospital market, the Hirschmann-Herfindahl Index (HHI) as described in Zwanziger and Melnick, “The Effects of Hospital Competition and the Medicare PPS Program.”

3. For constructing these simulations, high competition was defined as the mean HHI of all hospitals that fell in the lower twenty-fifth percentile of the HHI (low HHI means high competition). Low competition Was defined as the mean HHI of all hospitals that fell in the upper twenty-fifth percentile of the HHI.


5. Ibid. This paper shows how an increase in the proportion of a hospital’s patients who are insured by a given plan increases that plan’s bargaining power and lowers prices.

6. Ibid. Price competition is not as effective in high-occupancy markets. The study showed that prices were indeed higher in markets that had occupancy rates above 75 percent.