Cite this article as:
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Controlling hospital cost inflation: new perspectives on state rate setting
Health Affairs 5, no.3 (1986):22-33
doi: 10.1377/hlthaff.5.3.22

The online version of this article, along with updated information and services, is available at:
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Prologue: In the seventeen years since New York created a state hospital rate control agency, more than a dozen states have developed regulatory variations on this theme as their favored policy approach to moderating health costs. The antiregulatory mood that currently pervades many state capitols and which remains a central theme of the Reagan administration has slowed but not stopped the proliferation of state rate-setting agencies. In this essay, the three authors, all of whom advocate state rate setting as a workable approach to cost containment, take a new look at state-level hospital rate regulation and examine three questions concerning its effect: (1) Does regulation have a significant long-term impact on the rate of cost inflation? (2) Does utilization of the hospital change significantly in regulated states? (3) Does rate setting adversely affect the financial strength of institutions in regulated jurisdictions? Carl Schramm, who holds a law degree and a doctorate in economics, is director of the Center for Hospital Finance and Management at The Johns Hopkins University and former chairman of the Maryland Health Services Cost Review Commission, one of the oldest state regulatory bodies. Steven Renn, an attorney who is an assistant professor of health policy and management, also works at the center. Brian Biles, who holds a medical degree, is staff director of the House Ways and Means Subcommittee on Health.
The question of whether state rate-setting programs have been successful in reducing the rate of increase in hospital costs remains one of the most hotly contested in health policy. Studies have suggested that such programs have been unsuccessful in controlling hospital inflation, have had an inconclusive effect, or have exerted a significant downward influence on the rate of change in hospital expenses. In addition, speculation has emerged on what might be called the “secondary effects” of state rate setting, for example, its impact on the utilization of hospital services, the accumulation and acquisition of capital by hospitals, and the practice patterns of physicians.

The controversy over the efficacy of rate setting assumed new importance with the passage by Congress in 1983 of legislation establishing a system of prospective payment based on diagnosis-related groups (DRGs) for Medicare. Both the establishment of prospective limits on hospital revenues or charges and DRGs as a method of setting payment levels have been previously used only in rate-setting states. Thus, the experience of the rate-setting states has taken on added importance because of the lessons it can offer for further development of a national system of prospective payment.

Further, a number of new states have considered rate setting as an approach to controlling hospital cost inflation. In 1983, Maine, West Virginia, and Wisconsin enacted mandatory, all-payer hospital rate-setting legislation. During 1984 and 1985, legislatures in Nebraska, Kansas, South Dakota, Florida, Hawaii, Kentucky, Alabama, and Tennessee considered similar proposals. It may well be that a second generation of state rate-setting programs is emerging. In this vein, Congress has moved to support state rate-setting programs by establishing a statutory right to a waiver under which Medicare payment will be subject to the regulatory authority of a state rate-setting agency.

Rate Setting: The Evidence

The first study demonstrating the link between state-level hospital rate regulation efforts and reduced levels of cost inflation appeared in 1980. It showed that during 1976-78, the cost of a hospital stay in the six states that had implemented rate setting was increasing at an annual rate that was, on average, three to four percentage points less than the rate in the remaining forty-five nonregulated jurisdictions. These findings have been confirmed subsequently by studies using several other statistical techniques, including multiple regression analysis. Since the first study appeared, six additional years of data have been accumulated. This information is of particular interest, since one of the most abiding criticisms of rate setting is that, while it may have initially had a dampening effect on hospital inflation, its influence in the long-run would diminish.
This article presents data on six additional years of hospital rate setting from 1979 to 1984 at the state level and examines three questions concerning its effects. First, does regulation have a significant long-term impact on the rate of cost inflation? Second, does utilization of the hospital change significantly in regulated states? Finally, does rate setting adversely affect the financial strength of institutions in regulated jurisdictions?

Data And Methods

Data for this study were taken from the past fourteen annual surveys of the nation’s hospitals conducted by the American Hospital Association (AHA). Only community hospitals were examined because they best represent the group of hospitals operating under state regulation.

For this analysis, states are classified as rate-setting states only if they meet the following four criteria: the rate-setting program is operated directly by a state agency; compliance by hospitals is mandatory; a majority of non-Medicare hospital expenses are subject to regulation, that is, regulation applies to a majority of payers; and the agency has been regulating rates actively since 1976 or earlier. The six states that meet these criteria are Connecticut, Maryland, Massachusetts, New Jersey, New York, and Washington.

The rate of change in expense per adjusted admission was used to measure the effect of mandatory state rate-setting programs. Expense per adjusted admission (EPAA) was defined as total hospital expenses in the state divided by the number of adjusted admissions, which were calculated in a manner consistent with our earlier, and other previous, studies. The EPAA was thus calculated each year from 1971 to 1984 for each of the fifty states and the District of Columbia.

Rates of change in EPAA, expressed in terms of the percentage change from the previous year’s value, and in terms of the percentage change relative to a base year of 1972, were calculated. The mean rates of change in EPAA for the six mandatory rate-setting states were then compared with the mean rates of change in the nonrate-setting states and the District of Columbia as a group. The rates of change in expense per capita were also calculated for each jurisdiction. Expense per capita was defined as total hospital expenses in the state divided by the state’s population.

To examine the effect of rate setting on hospital utilization, the rates of change in admissions per capita and average length-of-stay were calculated for each jurisdiction. Admissions per capita were calculated by dividing total inpatient admissions in the state by the state’s population; the value published by the American Hospital Association for the state’s average length-of-stay was used. The mean rates of change in average length-of-stay and the number of admissions per capita were each com-
pared for the six rate-setting states and the remaining forty-five jurisdictions.

Finally, to examine the effect state regulation has had on the financial status of hospitals, statewide total margins were calculated by dividing the surplus of gross hospital revenues over total expenditures in the state by gross revenues. Average total margin in rate-setting states was then compared with average total margin in nonrate-setting jurisdictions.

Results

Exhibit 1 compares the mean annual rate of change in EPAA for the six rate-setting states with that of the nonrate-setting jurisdictions from 1972 to 1984. The consistent three to four percentage point difference in the annual rate of increase in the cost of a stay noted through 1978 in the 1980 study continues at roughly the same magnitude except for the period 1983-84.

In Exhibit 2, the aggregate rate of change in EPAA between 1972 and the indicated year in the six regulated states is compared with that of the forty-five nonrate-setting jurisdictions. The cumulative effect of the lower rate of increase in the rate-setting states between 1976 and 1984 totals 87 percent.

The effect of rate setting on per capita hospital expenditures is shown in Exhibit 3. Since the passage of the enabling legislation, the differential in cost per capita between the rate-setting and nonrate-setting states has fallen steadily from a high of 28 percent in 1973 to 8 percent in 1983.

Exhibits 4 and 5 present data addressing two issues which often raise speculation regarding the impact of rate setting on hospital utilization. In Exhibit 4, admissions per capita for the six rate-setting states were compared with the nonrate-setting jurisdictions. Exhibit 5 compares the mean annual rate of change in average length-of-stay in the six regulated jurisdictions.
Exhibit 2
Percentage Change Since 1972 In Expense Per Admission (Adjusted)

<table>
<thead>
<tr>
<th>Year</th>
<th>Nonregulated 45</th>
<th>Regulated 6</th>
<th>Percentage difference</th>
</tr>
</thead>
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<tr>
<td>1972</td>
<td>$107.02</td>
<td>$135.08</td>
<td>26.22</td>
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<tr>
<td>1973</td>
<td>117.83</td>
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<td>28.42</td>
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<td>1974</td>
<td>133.66</td>
<td>169.94</td>
<td>27.14</td>
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<tr>
<td>1975</td>
<td>158.24</td>
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<td>27.36</td>
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<td>1976</td>
<td>183.94</td>
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<td>267.61</td>
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<td>312.49</td>
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<td>1981</td>
<td>366.40</td>
<td>402.43</td>
<td>9.83</td>
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<td>1982</td>
<td>422.64</td>
<td>457.29</td>
<td>8.20</td>
</tr>
<tr>
<td>1983</td>
<td>467.24</td>
<td>503.86</td>
<td>7.84</td>
</tr>
<tr>
<td>1984</td>
<td>488.42</td>
<td>542.41</td>
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Source: Johns Hopkins Center For Hospital Finance And Management

states with that of the forty-five nonregulated jurisdictions. Although the rate-setting methods employed in several of the six states focus on establishing unit prices which might induce upward changes in volume of hospital services used, these exhibits indicate no significant change in either per capita admissions or average length-of-stay in the regulated states through the regulated period.

Finally, the effect of regulation on the financial status of hospitals is presented in Exhibit 6. Examining total operating margins, it is apparent that rate setting has not had a discernible effect on the most commonly used indicator of hospital operating performance between the regulated and unregulated jurisdictions. Comparing average occupancy of 72.9 and 83.4 percent in the unregulated and regulated jurisdictions respectively, as well as the difference in capital stock (4.45 beds per 1,000 in unregulated versus 4.18 beds per 1,000 regulated), classical economic.
principles would suggest that hospitals in regulated states are more efficient than those in unregulated jurisdictions.16

Discussion

Returning to the question of whether state rate-setting programs have had a significant long-term impact on the rate of inflation in hospital costs, Exhibit 1 clearly confirms trends previously reported.17 From 1976 to 1983, states with rate-setting programs have consistently had a significantly lower rate of cost inflation than states without such programs, whereas in prior years, no apparent difference between the rates of inflation in regulated and nonregulated jurisdictions is observed. Much more

Exhibit 4
Admissions Per 1,000 Persons

<table>
<thead>
<tr>
<th></th>
<th>Nonregulated 45</th>
<th>Regulated 6</th>
<th>Percentage difference</th>
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<tbody>
<tr>
<td>1972</td>
<td>152.8</td>
<td>131.1</td>
<td>16.6</td>
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<tr>
<td>1973</td>
<td>155.7</td>
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<td>158.5</td>
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<td>1975</td>
<td>160.0</td>
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</tr>
<tr>
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<td>160.4</td>
<td>138.1</td>
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<td>1979</td>
<td>159.3</td>
<td>137.7</td>
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<tr>
<td>1982</td>
<td>160.1</td>
<td>140.0</td>
<td>14.4</td>
</tr>
<tr>
<td>1983</td>
<td>157.1</td>
<td>141.1</td>
<td>11.1</td>
</tr>
<tr>
<td>1984</td>
<td>150.2</td>
<td>139.1</td>
<td>8.0</td>
</tr>
</tbody>
</table>

Exhibit 5
Annual Percentage Change In Average Length-Of-Stay

Source: Johns Hopkins Center For Hospital Finance And Management.
important for contemporary policy purposes, however, is the apparent endurance of the effectiveness of the regulatory efforts. The regulation of hospital rates seems to have a long-run impact and has not, as some have previously suggested, produced merely a short-lived difference which would diminish once initial cost savings were made in response to government supervision of budgets. The disappearance of the effect in 1984 reflects the curtailment of hospital expenses in the unregulated states in response to DRG payment. (Maryland, Massachusetts, New Jersey, and New York were insulated from the DRG shock by virtue of their Medicare waivers.) The effect observed in the unregulated states is expected, and long-term observation is required to appreciate its potential for effecting a downturn in expense similar to that of the rate-setting initiatives.

As a result of the consistent yearly difference between the rate of inflation in the two groups of states, the cumulative difference since 1976 is 87 percent, as indicated in Exhibit 2. An alternative perspective on the effect of rate setting is gained by calculating the amount saved as a result of this difference. Comparing actual inflation in total hospital expenses in the six states with a predicted rate of inflation equal to the nationwide rate, noncompounded savings in the six states from 1976 to 1984 totaled nearly $8 billion.

Of equal importance to the effect of rate setting on reducing the rate of inflation is its apparent impact on the level of real hospital spending.
Through time it has become clear that the ultimate policy problem related to hospital finance is not year-to-year increases in prices but rather the continuing shift of social resources into the hospital sector. From the data in Exhibit 3 it appears that, on a comparative basis, the regulatory states have actually been able to reduce per capita expenditures on acute care hospitals by narrowing the difference from 26 percent in 1972 to 11 percent in 1984.

The second question examined relates to changes in hospital utilization in regulated states. The presence or absence of regulation appears to have no systematic effect on either admissions or length-of-stay, suggesting that, to date, regulation of hospital rates affects the management of hospitals more than the practice of medicine within the hospital.

Finally, with regard to the third question of whether regulation forces hospitals into a position of eroding financial resources, the evidence indicates that hospitals in rate-setting states do not suffer reduced operating margins through time. Of more interest is the observation that regulation emerges in states where operating margins are historically lower than those typical elsewhere. Hospitals in the rate-regulated states may have been more poorly capitalized to begin with, served more ambitious social goals such as the subsidization of teaching or care for the poor, and/or operated in states where Medicaid programs had already begun to shift costs through the hospital to other payers, causing hospital margins to fall through a period of transition. Further, as suggested above, hospitals in regulated states appear to be more efficient, in part because they operate in what appear to be competitive circumstances.

The persistence of state rate setting suggests that several issues other than the effectiveness of rate setting in controlling inflation now deserve closer scrutiny. To the extent that the methodology employed under the new Medicare prospective payment system (DRGs) largely resembles that used in state regulation, these issues are germane to the development of future federal approaches to hospital cost containment. Careful consideration may also be useful to those formulating new state regulatory initiatives as well as private-sector cost-containment efforts.

**Impact on total health care systems costs.** The rate of increase in aggregate hospital spending per person in the rate-setting states has been less than that experienced in nonrate-setting jurisdictions. This observation indicates that although rate-setting laws generally do not establish explicit controls over utilization and expansion of hospital capacity, hospitals have not responded to controls over unit costs by increasing admissions or length-of-stay.

Rate-setting agencies have been able to exert some control over hospital utilization despite the formal delegation of this power to other separate agencies such as professional standards review organizations (PSROs) and health planning bodies. Since the control of per capita hospital costs
should be the logical focus of hospital cost-containment policy, future legislation might consolidate utilization control and hospital capacity regulation within the state rate-setting agency. This approach was recently taken by the West Virginia legislature in establishing hospital rate-setting in that state, and has been recommended by a governor’s task force in Maryland.  

Effect on financial viability of regulated hospitals. As is the case with other regulated industries, hospital managers have feared that government-set budgets may not include revenues adequate to meet actual expenses. As a result, the argument is voiced that hospitals may be compelled to use capital reserves to meet operating shortfalls.

These data suggest that hospitals are able to respond to revenue limits by reducing expenses in order to maintain and improve total operating margins. In the case of those costs that are beyond a hospital’s control, such as the cost of uncompensated care, one of the most attractive features of rate setting has been the commitment of the regulating agencies to spread those costs equitably among hospitals and thus protect the financial positions of individual institutions. As a result, hospitals have not needed to use accumulated capital to cover operating losses and, in fact, operating surpluses have become a source of capital in rate-setting states. Moreover, because of a strengthened operating position, and the express guarantees made by rate-setting agencies to bondholders that revenues will be sufficient to meet debt-service obligations, hospitals in rate-setting states generally have not been disadvantaged when turning to public debt markets for capital.

As noted above, falling hospital utilization, much commented on recently, will inevitably cause certain hospitals to suffer relatively severe financial stress. Likewise, as the Medicare DRG price schedule becomes fully implemented in 1987, and if DRG inflation is frozen at below marketbasket levels, certain hospitals may be forced to close. To the extent that the presence of regulation is observed to significantly accelerate or retard the amount of excess hospital capacity driven from the system relative to nonregulated states, future research will have to assess the influence of regulation in terms of improving or diminishing the efficiency and effectiveness of the remaining hospital system in the regulated states compared to the nonregulated jurisdictions.

Coexistence of competition and regulation. It is certain that the question of state-level attempts to regulate hospital budgets and prices will continue to garner attention. During the post-Medicare era, Congress has established a number of programs aimed at reducing the apparently uncontrollable inflation in hospital costs. None of these attempts, including comprehensive planning, the PSRO effort, the use of second-opinion surgery, and funds for the training of physicians and allied health professionals, were successful in controlling the rate of hospital cost inflation. In
the face of these apparent failures, Congress has acted to regulate prices directly through the Medicare DRG program enacted in early 1984. Thus, in the short run, it is clear that a regulatory approach both at the state and, now, federal level will continue to characterize public policy regarding overall hospital price levels.

One of the most interesting aspects of research on the effectiveness of rate setting has been the role it has played in the competition/regulation debate. To the extent that cost-containment efforts are portrayed as being a regulatory as opposed to a procompetitive approach, the policy process is ill-served. Rate-setting programs are not antithetical to competition in the hospital sector. Indeed, regulation and procompetitive approaches are fundamentally alike in that they seek to restore missing incentives or correct disincentives in a market that only vaguely resembles other free markets. To be sure, rate setting rests on an assumption that government has a legitimate presence in hospital decision making. However, the existence of governmental interest and regulation does not necessarily preclude competition from playing a strong and useful part in reducing hospital costs. In Maryland and other states, for example, competition among health care providers is encouraged by regulatory policies which forbid cross-subsidization of emergency room and outpatient services. Current regulatory methods which permit hospitals to keep savings are another way in which regulatory programs attempt to install market-like incentives into the managerial milieu of the not-for-profit hospital. Moreover, there is no theoretical reason to believe that regulatory and procompetitive approaches are incompatible and that a choice must be made between one or the other: cost sharing by consumers and the development of alternative providers can coexist within a system of prospective reimbursement. The future is one of increased regulation and increased competition for hospitals.

**Conclusion**

Disproportionate inflation in health care costs continues to plague the national economy. In 1985, the price of a hospital room increased at 5.9 percent, a significant improvement from 1981, 1982, 1983, and 1984 when prices rose 14.9 percent, 15.7 percent, 11.3 percent, and 8.3 percent respectively. Yet when compared to the increase during 1985 in the overall consumer price index of only 3.6 percent, hospital prices are still rising at nearly twice the rate of inflation for all other goods and services.

Congress, in passing tough Medicare cost-containment legislation, has given new life to the search for effective hospital cost-containment measures and new legitimacy to regulatory steps with that aim. Such measures must contain overall hospital budgets while at the same time preventing cost shifting among payers. These approaches must ensure that high-
quality care will be provided and that the financial health of the hospital system will be preserved while they simultaneously avoid the development of a two-tier system of delivery. While a decade of unsuccessful attempts to control inflation in hospital costs makes one wary of expecting dramatic results meeting all of these objectives, the evidence reported here suggests that state rate setting continues to hold promise as one solution.

NOTES


7. Biles et al., “Hospital Cost Inflation.”

8. Ibid.


12. In Arizona, Minnesota, and Wisconsin, participation in the review process is mandatory, but compliance with the proposed rates is voluntary. In Rhode Island, the program is a mandated process of negotiation and contract among the state government, Blue Cross, and the hospitals.


14. Because both sample sizes and variances were significantly different, the Behrens-Fisher Statistic was used to compare the sample means. R.A. Fisher and F. Yates, Statistical Tables for Biological, Agricultural and Medical Research. 5th ed. (New York: Hafner, 1957), tables VI, VI., VI.


16. AHA, Hospital Statistics.
17. Biles et al. “Hospital Cost Inflation.”
21. Ibid.