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# Contract Management and Institutional Cost Control

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## Summary

The ability of contract management to control hospital cost is explored. Trends in cost-related performance factors for 61 contract-managed hospitals, three years pre- and three years postcontract, omitting the contract year, are examined. The study also considers factors derived from contract features and hospital characteristics that have been missing from past studies and more than doubles the data base of previously reported studies. To focus on current policy needs, cost-containment issues are emphasized. Analysis of these data suggests that contract management contained costs in the small isolated hospitals that have historically purchased these services during a period when cost containment was not rewarded by reimbursement policy.

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Hospital trustees find it increasingly difficult to attract and retain competent administrators and medical staff, cope with regulatory changes, keep up with reimbursement policy shifts by third parties, plan for the future, and deal with internal conflicts. To cope with these problems some hospital trustees have turned to "contract management." Under this arrangement a hospital or multihospital system assumes, under a contract for a fee, all of the management-related activities of another hospital or system. The board of the contract-managed hospital retains legal responsibility and ownership but delegates management authority. The fee is used to pay the salaries of key executives (i.e., administrator, controller, director of nursing). The management contract allows the trustees of the managed hospital to retain ownership and to take steps to improve hospital performance.

Dealing with poor financial performances seems to have been the primary motivation for adopting contract management (Derzon, LeCompte, and Lewin 1981; Spenser 1980). Although quality and other considerations are cited by contract-management advocates (e.g., Spenser 1980), the activities of contract-management firms emphasize financial issues. The managing organization usually has the prerogative to appoint and pay the administrator and key staff, manage daily operations, and provide specialized services, such as construction feasibility studies and financial packages (Brown and Money 1976). Key decisions are approved by the trustees or their equivalent. Strategic changes, such as expansions, are usually handled through consultation between the contract-management team and the trustees.

By 1982, Richards (1982) found that 634 hospitals, representing 10.9 percent of all hospitals, were contract-managed. The forecasted growth of management contracts calls for an increase from 66,700 contract-managed beds to nearly 120,000 by the 1990s (*Bernstein Research Report on Healthcare Firms* 1985). By all indications, contract management will become an increasingly important segment of the health care industry.

According to Alexander and Lewis (1984), hospitals using contract management are similar to others in terms of their profit status and ownership, but tend to be smaller (61 percent had 100 or fewer beds), rural, and located in southern or southwestern United States. Investor-owned hospitals provided more than half of these services, compared to over 30 percent provided by individual nonprofit hospitals or systems, and 18 percent by religious organizations.

Research carried out to determine the effectiveness of contract management has been both contradictory and inconclusive. Typically, bottom-line considerations, such as revenue enhancement or profit have been emphasized. Cost control has typically been treated implicitly or ignored. The purpose of this study is to look at the relationship between contract management and

hospital cost performance to determine whether this practice offers the health care industry opportunities to contain costs.

## The Study of Contract Management

Summarizing earlier studies designed to determine the impact of contract management, Table 1 contrasts them in terms of their data bases, design, and findings. It also offers a brief critique of each study. Although these studies vary in terms of the data bases used and methods employed, there is some degree of uniformity in their findings. All of the studies conclude that management contracts have an influence on various financial performance indicators. The studies having data available on profitability find a positive relationship between management contracts and profit. A major issue needing to be further addressed is whether the positive effect on profits results from reductions in cost or expansions in revenue. Most of the evidence thus far falls heavily on revenue expansion, due to price increases or increases in volume. None of these studies concluded that costs were contained or reduced by contract management.

One explanation for this apparent lack of attention to cost containment concerns the type of payment systems in operation during the time periods studied. Because most hospital revenues prior to 1983 were directly tied to costs, neither cost-reduction nor cost-control mechanisms would improve profit. It seems likely, therefore, that more effort would have been directed toward pricing of services or service expansion.

Another reason for the lack of attention to cost containment in earlier studies might be due to the methodologies used, which make it difficult to draw conclusions about any type of financial performance. All studies suffer from several serious deficiencies that make it difficult to determine performance effects. For example, in the largest study (Alexander and Lewis 1984), which sampled more than 800 hospitals, cross-sectional data were employed and correlations were used to identify relationships that may or may not be causal. Other studies (Kralewski et al. 1984; Biggs, Kralewski, and Brown 1980) attempted to match contract- and noncontract-managed hospitals to make performance comparisons. Attempts to match hospitals that use contract management to hospitals under traditional management are difficult, if not impossible, which leads to invalid comparison groups (Cook and Campbell 1979). One hospital differs from another in many ways. Any characteristic that is not controlled in the match becomes a plausible explanation of the findings. Before and after comparisons of individual hospitals control for hospital differences, but studies employing this approach have had very small ( $n < 10$ ) "convenience" samples.

**Table 1**  
**Recent Research in Contract Management**

Study	Data Base and Design	Findings	Critique
Alexander and Lewis (1984)	Compared 407 contract-managed to 401 traditionally managed hospitals using financial ratios. Regression used to control for differences in hospital characteristics.	Operating margin and current ratio improved in contract-managed hospitals, but these hospitals had more debt.	Cross-sectional comparisons. No before and after comparisons. Contract arrangements ignored. Industry focus general, but not measured to qualify effects.
Biggs, Kralewski, and Brown (1980)	32 contract-managed hospitals matched with traditionally managed in terms of bed size, location, population base, and medical education programs.	Contract-managed hospitals offered more services and had shorter length of stay but did <i>not</i> better on cost control.	No time series data nor financial information. Only one year of contract-management experience and suspect matchings. Contract arrangements ignored.
Kralewski et. al. (1984)	20 pairs, matched as above. Three-year time series before and after intervention compared with means and slopes.	Markup and occupancy increased for contract-managed hospitals, suggesting enhanced revenues and profit.	Small data base and possible bias in matching. Contract arrangements ignored.
Wheeler, Zuckerman, and Aderholdt (1982)	10 hospitals before and after contract management for 3 years, compared using means and slopes of financial measures.	Profitability increased, measured by annual revenue and return on assets.	Small sample, made up of very small hospitals (19 to 151 beds). No control group. Interpreted statistically insignificant results. One system. Contract arrangements ignored.
Zuckerman and Wheeler (1982)	As in the Wheeler, Zuckerman, and Aderholdt study, measuring human and physical resource use.	Financial stability stressed. Increase in medical staff (total and board certified), without increasing FTE employees per bed, occupancy rate, or LOS was noted.	Small convenience sample, made up of very small hospitals (19 to 151 beds). No control group. Interpreted statistically insignificant results in one system. Contract arrangements ignored.

Another difficulty found in at least two of the studies (Wheeler, Zuckerman, and Aderholdt 1982; Zuckerman and Wheeler 1982) involves using "after measures" that include the first year following contract initiation. Such inclusions can invite bias due to start-up effects, potentially washing out performance changes that turn up in subsequent years. Because all but one of the

studies considered only very small hospitals (less than 100 beds), the results can be generalized only to very small hospitals. Related problems stem from the failure to consider interaction effects. These studies did not determine whether contract management was effective for some types of hospitals (identified by size, service profile, and geographic location) and not others. Finally, none of these studies measured differences in the terms of the contracts (e.g., services and commitments offered, duration, fees) or contextual factors (e.g., year of initiation).

Today hospital policymakers are placing great emphasis on costs. Improvement in financial performance in the payment environment of the 1990s is clearly related to effective cost control. If management-contract firms were successful in controlling costs when cost control was of lesser importance, these efforts could be even more effective today. Conversely, finding that contract management failed to control costs is not necessarily an indictment against management contracting, but suggests that management contracting offers no panacea for cost control.

## Study Design

This study employs a hybrid type of time series design in its investigation of the relationship between contract management and cost control. Data were collected on investor-owned contract-management organizations because they represent the most common approach to contract management. These firms offered services to over 50 percent of the 634 contract-managed hospitals in 1982. Information was collected on cost-related performance for three years prior to the intervention and three years after the contract was signed. The contract year was omitted to eliminate start-up effects. Thus, a data base was created for each hospital that spanned a total of seven years.

The proposed design treats the unit of analysis—the hospital—as its own control. In this way, the variation due to the effects of individual hospital can be eliminated from the analysis. These effects, called “individual differences,” can mask significant effects because they inflate the error variance used to make statistical tests. The proposed time series design examines the change in cost factors due to contract management by discarding cost differences of the individual hospital. In this way the cost change measure varies by individual hospital without being inflated by institutional differences in cost performance.

According to Cook and Campbell (1979), this design helps to control for key threats due to internal validity, the ability to link cause (contract management) to effect (cost control). The purpose of a design is to render key rival explanations of performance differences implausible. Comparing a hospital before and after an intervention eliminates differences due to hospital charac-

teristics that could produce selection, maturation, and history biases. Selection biases can occur due to inconsistent or incomplete matching of hospitals in the control and experimental comparison groups. Because there are a large number of relevant matching factors, differences due to incomplete matching would always offer a rival explanation of findings. Maturation bias can occur because hospitals may change or adapt to management tactics at different rates and in different ways. Differences in the rate or extent of assimilation of contract-management practices also offers a plausible explanation of findings. History poses the key threat to validity. Time-related factors, such as inflation, can cause the hospital's costs to change as contract management is implemented, making it difficult to separate the impact of inflation from contract management. Two steps were taken to compensate for history effects. First, hospital financial performance from several time periods was superimposed to look across hospital cost for different periods of time. This step illustrates why a time series design is essential for this type of research. Second, cost data were inflation-adjusted. These steps render key history effects less plausible explanations of the study findings.

Performance is measured by comparing pre- and postcontract periods and by analyzing trends or rates of change during these two three-year periods. All financial data are price-adjusted using the hospital room rate component of the consumer price index (CPI) in 1984 dollars. During this period hospitals increased their prices (e.g., room rates) to cover their rapidly rising costs. The room-rate adjustment seems more appropriate than using a CPI adjustment, which would tend to understate inflation in the health industry.

## Sample

Data for the study was obtained from two sources. The first source was *Modern Healthcare*, including issues during the period 1977–1980. Each month's issue provided a section on new management contracts signed during the preceding month. From this data we were able to identify (1) the name of the hospital that signed the management contract, (2) the hospital-management firm, and (3) the duration of the contract (in years).

A total of 61 hospitals were identified and included in this study. All of these hospitals signed a contract with one of the following firms: Hospital Corporation of America (HCA), Hospital Affiliates International (HAI), or Hyatt. No other management firm was noted. HCA had signed a total of 30 contracts during the period under investigation, HAI had signed a total of 28 contracts, and Hyatt had obtained a total of 3 contracts during the same period. Eight of these contracts were signed in 1977, 16 in 1978, 21 in 1979, and 16 in 1980.

The size of this sample is larger than any other management-contract study with the sole exception of the Alexander and Lewis (1984) study where causal



relationships were not explored. This present study makes use of data that is available to researchers who are not affiliated with the American Hospital Association (AHA) (the AHA was unwilling to provide its revenue data for this study). Summary characteristics of the data base are provided in Table 2. A comparison of the data base used in this study with that of Alexander and Lewis (1984) indicates similarity in terms of bed size, region, and control status variables.

Table 2  
Profile of Data Base

	Number	Percent
Geographic location (census region)		
1. New England	3	4.9
2. Middle Atlantic	3	4.9
3. South Atlantic	14	23.0
4. East North Atlantic	10	16.3
5. East South Central	9	14.8
6. West North Central	4	6.6
7. West North Central	9	14.8
8. Mountain	6	9.8
9. Pacific	3	4.9
Total	61	100.0
Firm		
1. Hospital Affiliates	28	45.9
2. Hyatt	3	4.9
3. HCA	30	49.2
Total	61	100.0
Size		
0-99	38	62.3
100-199	16	26.2
200 or more	7	11.5
Total	61	100.0
Duration of contract (years)		
Two	4	6.6
Three	34	55.7
Four	3	4.9
Five	5	8.2
Unknown	15	24.6
Total	61	100.0
Control status		
City and/or county	21	34.4
Hospital district	8	13.1
Nonprofit	26	42.6
Investor owned	6	9.9
Total	61	100.0

The second source of data was the annual *American Hospital Association Guide to the Health Care Field*. Information presented in the *AHA Guide* was used to provide cost-related performance measures for individual hospitals on a yearly basis. Values of these measures were tracked for each hospital during the three years preceding and for the three years following the signing of the management contract. A hospital that signed a contract in 1978 would, for example, have data values for the years 1975–1977 and 1979–1981.

The total period of data collection covered ten years, 1974–1983. The study could not consider a hospital having a contract signed after 1980 and still retain the three-year postcontract data base. This is because 1983 was the first year that hospitals faced fixed prices under the Medicare program. Although the total Medicare program used a phased implementation plan that took several years, the enactment of the plan could have altered the incentive structure for contract managers. The 61 hospitals represent over 20 percent of the contract-managed hospitals in the United States during this period. The proportion of large and small hospitals in this sample compares favorably to those reported by Alexander and Lewis (1984). Of all contract-managed hospitals, 61 percent have fewer than 100 beds. Sixty-two percent of the contract-managed hospitals in this study have fewer than 100 beds. Also, the proportions of hospitals falling in various control code categories for the sampled hospitals and those comprising the total population are nearly identical. The hospitals included in the present study had between 24 and 558 beds. All of the hospitals studied were short-term acute care facilities. Descriptions of the variables studied follow.

### Independent Variables

Six variables were used to capture contract management and qualify its effects. These are: (1) use of a contract and time, (2) contract-management firm, (3) contract duration, (4) year of contract initiation, (5) hospital size, and (6) hospital region. In addition to these six variables, interaction terms were also analyzed (as shown in Table 3).

*Contract and time.* The key policy variables in the study were contract and time. “Contract” is a categorical variable with two levels: (1) values preceding the contract year and (2) values following the contract year. “Time” captures trends in cost performance. The purpose of these variables is to determine if there is any association between the signing of the contract and changes in the dependent variables.

*Management firm.* This is also a categorical variable representing each of the specific firms included in the study—HCA, HAI, and Hyatt. It should be noted that HAI no longer exists as a separate entity, having been acquired by HCA. Also, Hyatt no longer provides contract services. Nevertheless, these



Table 3  
Study Variables

Independent variables

*Policy variables*

1. Contract management
  - a. Mean change
  - b. Rate of change
2. Contract condition
  - a. Firm offering services
  - b. Duration of contract (in years)

*Contextual variables*

1. Hospital bed size
2. Geographic location (U.S. Census Region)
3. Year contract initiated

Dependent variables

*Volume*

1. Admissions

*Length of stay*

1. Average length of stay

*Scope of service*

1. Number of services

*Efficiency*

1. FTEs per patient day (FTE/PD)
2. FTEs per admission (FTE/A)
3. Occupancy

*Resource prices*

1. Payroll per FTE

firms offer interesting contrasts due to the way each provided different bundles of services and their individual practices. Information that compares these practices can be explored should differences in cost performances by firm prove to be significant.

*Duration.* "Duration" is defined as the number of years stipulated in the contract. In the present study, duration is two to five years. Hospital management companies argue that a longer duration is better as it affords the company more time to make significant changes such as staff reductions and service additions. Others argue that a shorter duration provides a stronger incentive to make quick, decisive changes.

*Year.* This represents the year that the contract was signed. The study includes four years, 1977–1980. Contracts signed in 1980 will have a post-contract period of 1981–1983. As was mentioned previously, 1983 was the cut-off point for the study due to the emergence of Medicare prepayment schemes in that year.

*Size.* The size variable is included because many cost-related variables are affected by hospital scale, which is denoted in this study as bed size, as reported in the *AHA Guide*. This variable was defined in accordance with its use in this standard reporting device.

*Region.* This is represented by a geographic placement of each hospital into one of the nine U.S. census regions. Region is included to isolate any effects that can be attributed to geographic location of the hospitals. Prior studies have shown that there are significant regional variations in many health care variables. For instance, length of stay varies by regional location in the United States.

*Interaction terms.* These are included in the study to qualify the results. By analyzing interaction terms we can determine whether one variable has any meaningful impact on the value of any of the other variables. By studying interaction terms it can be learned whether contract management performed better under longer or shorter durations, with various firms, for certain years, and in given regional locations. Interactions of the control variables demonstrate the impact of trends in the industry on duration, size, and location, and whether duration has selective effects due to hospital size and regional location.

### Dependent Variables

Cost in a hospital setting can be related to the following five factors: (1) volume, (2) average length of stay, (3) scope of service, (4) efficiency (productivity), and (5) resource prices. These factors make up the dependent variables reported in this study (see Table 3).

*Volume.* "Volume" was measured by admissions for each of the managed hospitals, as reported in the *AHA Guide* for each of the six years investigated (three precontract and three postcontract). An increase in admissions will increase cost, but may also increase profit. In situations where the marginal revenue of an additional admission exceeds the marginal cost of that admission, an increase in profit would result. In general, we would expect that hospitals under management contracts would be increasing their admissions. This assumption would be consistent with trends that were taking place in the hospital industry during the study period. Admissions were measured based on inpatient records. It can be argued that outpatient visits could also affect the performance of contract management. As hospitals shift emphasis from inpatient to outpatient care, volume can actually increase with a reduction of inpatient services. Although outpatient data would have been extremely useful, it was not available at the time the data were collected.

*Average length of stay.* Length of stay (LOS) was defined as total patient days divided by admissions. Both data elements used in this calculation were taken

from the *AHA Guide*. It is not clear what the expected direction for this variable should be. The Krlewski et al. study (1984) concluded that a reduction in LOS occurred for managed hospitals, while the Zuckerman and Wheeler study (1982) found no change in LOS for the managed hospitals. A reduced LOS would reduce hospital costs, but the lost revenue may more than offset any cost savings. Since LOS had been declining nationally during the study period, a finding of no change may actually imply a policy increasing LOS to produce additional revenue.

*Scope of service.* The "number of services" provided by the hospital provides a measure of scope. Data were taken for each hospital in the appropriate years using the information base provided by the *AHA Guide*. The actual scope of services range in complexity from a blood bank to a burn care unit. Such services, of course, also vary in cost. No attempt was made to recognize the complexity of the services provided. The total number of services provided was used as the dependent variable. A reduction in the number of services provided should logically result in reduced levels of cost. This reduction in cost may again be less than the loss of revenue. During most of the study period it is assumed hospital administrators had an incentive to expand the number of new services to increase revenues.

*Efficiency measures.* Efficiency is measured in three ways: (1) full-time equivalent work force per patient day (FTE/PD), (2) full-time equivalent work force per admission (FTE/A), and (3) occupancy. FTE/PD data were taken from the *AHA Guide*. It is assumed that there should be clear incentives to reduce staffing levels if excess staffing patterns exist. Nationally, the number of FTE/PD has been increasing. This trend may be partially the result of expansions in services and increases in the complexity of care provided. A finding of no change in staffing for the managed hospitals might actually be an indication of improving efficiency. FTE/A is another measure of efficiency derived from data provided by the *AHA Guide*. Expectations regarding this variable are similar to the FTE/PD variable. A finding of no change during the management contract years might be a positive indication of improvement in efficiency. Occupancy as a measure of efficiency is defined as the average census divided by number of beds. Both elements in this equation were taken from the *AHA Guide*. Improvements in occupancy should benefit a hospital in two ways. First, costs should drop due to economics of scale. Second, additional revenue might also result. However, Zuckerman and Wheeler (1982) did not find any change in occupancy occurring in managed hospitals.

*Resource prices.* Payroll per FTE, defined as the ratio of payroll expenses to FTEs, was used to measure resource prices. Both of these data elements were taken from the *AHA Guide*. The value for payroll was price level-adjusted to create comparability across years, with values stated in 1984 dollars. The

hospital room rate component of the CPI was used to make the adjustment. There should be a clear incentive to reduce payroll per FTE. The effect of cost reimbursement, however, might have minimized the importance of this incentive, at least until the effects of the Medicare prospective payment system took effect in 1983.

## Analyses

Two types of analyses were used: (1) multiple regression and (2) the Duncan Multiple Range Tests (DMRTs). Regression analysis was used to determine if there was a relationship between contract management and the performance measures—controlling for the terms of the contract, duration, and firm—and contextual factors—such as year, geographic region, and bed size. The regression procedure assessed the importance of main effects and interactions for the independent variables, using each of the seven cost-related measures. In the regression analyses, the policy variable, contract management, was treated in two ways. First, the three pre- and three postcontract observations were averaged to create the before and after measures for the “dummy variable” in the regression procedure. Dummy variables were used so that nominal scale categorical information could be included as a variable in the regression equation. This provided an aggregate measure of the impact of contract management. Second, trends were determined by the pre- and postcontract performance measures with a simple regression procedure. The before and after rate-of-change indicators were then entered into the multiple regression model as the dummy variable. This analysis can determine whether cost escalation is slowed following a contract (cost continued to increase, but at a

Table 4  
Cost Performance of Contract Management

	Before	After	Significance
Volume (admissions)	4,059	4,253	ns
Length of stay (days)	6.8	7.1	ns
Scope of service (number)	13.0	16.6	$p < .10$
Efficiency			
FTE/PD	.0103	.0108	$p < .10$
FTE/A	.0681	.0736	$p < .05$
Occupancy (percent)	65.0	64.8	ns
Resource prices (Payroll/FTE)	19,010	17,259	$p < .05$

ns = not significant.

decreased rate), which would also suggest that contract management is a useful cost-containment tactic. This simple regression procedure determines if the cost proxies and the other indicators are being influenced by the aggregate and trend effects of contract management—contract duration, contract management firm, hospital bed size, geographic location of the hospital, and year of contract initiation.

Statistical interactions of the contextual factors (bed size, year, and region) and contract terms (duration and year) with the policy variable were used to qualify the impact of contract management. The DMRT was employed to isolate levels of categorical variables (e.g., contract year) that had distinctive performance differences. The DMRT is applied to compare categories of classification variables, two at a time, to determine categories that are significantly different, considering each of the dependent variables.

## Discussion of Results

The results are summarized in Tables 4 and 5. These data suggest that contract management may have had an impact on cost control. Actions were taken that resulted in increases in service scope, declines in efficiency, and a reduction in resource prices. No significant changes in volume, LOS, and occupancy were observed after a contract was initiated. The changes observed were consistent

Table 5  
Trends in Performance

	Three Before	Two Before	One Before	One After	Two After	Three After	Significance
Volume							
Admissions	3,918	4,092	4,168	4,101	4,261	4,379	ns
Length of stay (days)	6.7	6.9	6.9	7.1	7.2	6.9	ns
Service scope							
Number	12.4	13.2	13.6	16.0	16.7	17.0	( $p < .05$ )
Efficiency							
FTE/PD	.0100	.0105	.0105	.0102	.0110	.0113	( $p < .05$ )
FTE/ADM	.0647	.0697	.0698	.0693	.0769	.0743	( $p < .05$ )
Occupancy	64.1	64.8	66.0	64.4	65.6	64.2	ns
Resource prices							
Payroll/FTE	19,585	18,801	18,643	18,083	17,020	16,775	( $p < .05$ )
Bed size	111	114	117	122	124	117	ns

ns = not significant.

throughout the study period and not just in 1983, when significant cost-reduction initiatives were mounted by federal policymakers.

The average number of services in these hospitals was increased from 13.0 to 16.6, an increase of nearly 28 percent. FTE/PD increased as did FTE/A. This suggests that the contract-management firms increased their work force. At the same time, however, contract managers lowered resource prices. Payroll per FTE was cut to \$17,259 from \$19,010, a reduction of 15 percent.

Trends, as shown in Table 5, substantiate the before and after averages. The number of services was found to rise abruptly following the initiation of a contract. Apparently, lengthy contracts are not needed to make rapid changes in service offerings. There was no corresponding increase in bed size. This suggests that the scope of services, and not capacity, was increased. These changes in services offered can lead to increased costs.

In contrast, efficiency measures (FTE/A and FTE/PD) had a general upward trend, and resource prices (payroll/FTE) a general downward trend over the seven-year period of data collection for each hospital. Taken together these changes suggest that the size of the work force was increased, but some form of substitution was used that lowered the net cost of service provision. Coupled with increases in services, noted above, these findings suggest that cost control was exercised as increases in service capacity and staffing occurred.

Another indication of cost control stems from occupancy, LOS, and volume changes. Neither LOS nor volume showed statistically significant increases, suggesting that stays were not lengthened and admissions were not increased to enhance revenue as costs were being cut. Occupancy, however, did remain constant, suggesting that opportunities for cost control due to improving economies of scale may have been missed.

These findings can be qualified by interactions with the terms of the contract and exogenous factors. First, all differences in firms were attributed to Hyatt because this firm managed all the larger hospitals in the data base. When size was controlled no significant differences were found in the performances of the three firms.

The interaction of contract and duration ( $p < .05$ ) suggests a somewhat different picture. The data show that shorter duration contracts had greater impact. Resource prices were not significantly reduced until after the second year of operation, suggesting that three years were needed to make resource substitutions that cut costs. Additional data for the fourth and fifth contract year were collected for hospitals with longer contracts. The fourth and fifth contract years produced no further payroll reductions. Similarly, the number of services and staffing changed abruptly and then remained constant over the remaining contract years. The three-way interaction involving contract, duration, and hospital size was not significant, indicating these differences are not



scale-related. In other words, large hospitals did not take the short-duration contracts and small hospitals were not forced to adopt the longer contracts. This finding suggests that long-duration contracts are not needed and may not be desirable.

The other factors were treated as controls. As with contract terms, exogenous factors (bed size, geographic region, and year of contract initiation) can be important as interactions, but not as main effects. The impact of management contracting does not appear to be influenced by any of these factors. This suggests that the study findings have considerable external validity, generalizing to all hospitals considered in the study. Contract management was found to have worked equally well in all geographic regions of the United States, for all years of initiation that were examined, and for all size hospitals in the study (see Table 2).

## Limitations of Study

One limitation of this study is the nature of the data that were available. Although the sources that report hospital-related information were used, such sources have several shortcomings limiting the categories that can be studied for this type of research. Primary data collection would be better for research purposes.

Another limitation of the study is that the information base used does not include outpatient data. This information could clarify some of the unexplained variance and help to substantiate claims made. The study is also limited in that it is only a “snapshot” of the impact of contract management on hospitals. Future studies using longitudinal data incorporating information such as outpatient data could be revealing.

## Conclusions

The results of this study generally support the use of hospital contract management as a vehicle to promote cost control. Although other factors have captured the attention of hospital administrators and trustees when contract management was initiated, the influence of contract management on cost control may be a powerful future consideration. Contracts were found to influence cost-related factors during an era when government policy ignored cost control. With appropriate incentives to control costs, hospital contracts may seem a useful way to manage some hospitals, particularly the small isolated hospitals, in the 1990s. However, until more experience is obtained in managing the larger urban institutions, little can be said about the value of contracts for this type of hospital.

Long contract durations seem unwise. More decisive impacts were noted for short-duration contracts (two to three years) than contracts of longer duration (four to five years). It appears that trustees and policymakers may be wise to advocate shorter contracts, calling on the management organization to demonstrate what it can do before making long-term commitments.

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