**HMO Mergers: Estimating Impact On Premiums And Costs**

What do we know about the effects of HMO mergers?

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**S**ubstantial consolidation is occurring within the health maintenance organization (HMO) industry, generally involving large firms that own and manage HMOs in many different communities. Examples include the merger of U.S. Healthcare Corp. and Aetna Life and Casualty Co.; the merger of United HealthCare and MetraHealth; and the proposed acquisition of FHP International by PacifiCare Health Systems, Inc.\(^1\) Whatever the motivation for mergers of national HMO firms, they generally have had little effect on the number of HMO competitors in local markets. For instance, when United HealthCare merged with MetraHealth in 1995, MetraHealth operated twenty-nine HMOs, most with small enrollments, while United HealthCare owned or managed forty HMOs. However, both companies had HMOs in the same community in only eight cases, and antitrust concerns were raised in only one market.\(^2\)

Although the mergers of national HMO firms have created relatively few mergers of HMOs in local markets, a substantial number of such mergers have occurred for other reasons (107 HMOs disappeared from local markets between 1985 and 1994 through mergers). In this Commentary we discuss what health services research has to say about HMO mergers to date and suggest areas in which more research is needed to better inform public policy.

**What Do We Know, And How Do We Know It?**

Economists studying the effects of mergers typically are interested in two questions: Do mergers result in higher prices for consumers by allowing the remaining firm to exercise market power? And do mergers decrease costs by allowing the remaining firm to enjoy economies of scale or scope? These questions arise most often for mergers that
create or reinforce oligopolies—situations in which a few large firms dominate the industry. Unfortunately, the theoretical models of oligopoly developed by economists do not generate a definitive prediction regarding the effect of mergers on prices without making relatively restrictive assumptions about the firms’ behavior.

On the other hand, researchers have advanced numerous reasons why mergers may reduce costs. These reasons largely fall into two categories: economies of scale and economies of scope. Economies of scale refers to the reduction in average cost as output expands. The consolidation of administrative services, physical location, and technology are all possible bases of expansion economies. If HMO mergers result in economies of scale, there is the potential for lower average costs to be passed on to consumers in the form of lower premiums. Economies of scope refers to the reduction in costs when two or more products are produced by the same firm, rather than by separate firms. Certain common inputs such as managerial know-how, information systems, and provider networks may be sources of savings when multiple products are offered by HMOs.

Theoretical models. Theoretical economic models have concluded that even small cost savings may be more important to society than large price increases. This conclusion follows in part from the economists’ perspective on profits. If a firm has sufficient market power to raise price by $5 over its constant marginal cost and sells 100 units of the good, it will make a profit of $500. This profit is a transfer of resources from consumers to the firm. However, economic models do not consider such transfers to be net losses to society because the loss for one group is the gain for another (the owners of the firm). Consumer losses are constrained to the net value of reduced consumption attributable to higher prices. Therefore, this theoretical literature predicts that most mergers are not likely to raise significant public policy concerns. Recently, merger theorists have attempted to develop more realistic models of firms’ behavior and the nature of consumer demand. Nevertheless, the early theoretical models have directed much of the empirical work on the impact of mergers, which has focused on determining if mergers increase prices and/or decrease costs.

Empirical analysis. Two types of empirical analysis of merger impacts are found in the literature, and both are appropriate for analyzing the impact of HMO mergers. The first type of analysis simulates the possible effect of a merger or proposed merger using statistical relationships that link local HMO market structure to premiums and costs. This approach is typically used in antitrust proceedings to predict the possible outcomes of a specific proposed merger. The second type of analysis estimates the impact on prices
and costs of actual mergers that have occurred in the past. This approach generates information on the overall impact of mergers on the performance of an industry and is useful in assessing the desirability of public policies that encourage or impede mergers.

The Simulation Approach

A typical simulation of HMO merger impacts begins with a statistical analysis using HMO premiums or costs as the dependent variable. The independent variables include measures of HMO organization and ownership, as well as measures of market structure that may influence price or cost. The choice of an empirical measure of HMO market structure is important. For much antitrust analysis, including analyses of hospital mergers, market structure is measured by the Herfindahl-Hirschman Index (HHI), which is the sum of squared market shares of firms in the market. Other measures, such as the number or size distribution of competitors, also can be used.

In our estimates of the determinants of HMO premiums and costs, we used the number of firms as an empirical measure of structural competition among HMOs. In most of our analyses, we divided the number of competitors into four discrete groups, representing four quartiles of competition.

- **Premiums.** We first estimated premium equations using all HMOs operating in the United States between 1988 and 1991; later we expanded the analysis to more than 3,000 observations covering 1985 to 1993. Our analysis generated a striking result: No matter what period we analyzed, or how we entered other variables into our regressions, we found that HMO premiums for enrollees under age sixty-five are lower when there are more competitors. In group-model HMOs, premiums are 7 to 22 percent lower in top-quartile markets than they are in less competitive markets. Independent practice association (IPA) premiums were generally 2 to 11 percent lower.

To use these results to simulate the impact of a proposed HMO merger on premiums, one would (hypothetically) remove one of the (previous) competitors from a market, generating a new value for the market structure variable. For example, using our estimated equations, if a proposed merger occurred in a market that was previously classified as most competitive, and if it caused the market to drop into a lower quartile of competition, then the merger would be predicted to raise premiums. Clearly, such cases would occur infrequently in practice. In the vast majority of cases, the use of our estimated premium equations in a simulation analysis would yield a prediction that the merger would have no impact on premiums.

- **Costs.** We estimated the relationship among HMO costs, size, and market structure using 1988–1991 data. Our results suggest that
HMOs benefit from scale economies: The average cost of providing services to a non-Medicare enrollee falls as enrollment increases. However, at enrollments of more than 50,000, costs decline relatively little as enrollees are added. The effect of market structure on HMO costs is more complex; it appears that the costs of group-model HMOs are lower in markets with more competitors, but the number of competitors is not systematically related to costs in IPAs.

As with the estimated premium equations, to simulate the impact of an HMO merger on costs, one would create a new market structure variable by removing one competitor. More importantly, one would combine the enrollments of the two HMOs to create a new size measure. Our results show simulated costs would decline if the two HMOs were both small prior to a merger. However, if one or both had more than 50,000 enrollees, the predicted cost savings from a merger would be relatively limited.

Limitations. There is an intellectual narrowness to the use of simulation analysis for predicting the effects of HMO mergers. The HMO merger effect is confined to a few variables, at most, that are directly altered by the merger. Using the empirical price and cost relationships we have estimated, this would be the number of firms; in other simulations, the HHI would change. In either case, other effects are essentially ignored. This is particularly troublesome if the merger is suspected of causing the other organizational characteristics of the HMO to have smaller or larger impacts on price. For example, an analysis of hospital market structure by William Lynk interacted hospital ownership with market concentration. Lynk found that nonprofit hospitals restrained their prices in concentrated markets more than for-profit hospitals restrained theirs in equally concentrated markets. Thus, he predicted that a nonprofit hospital merger will raise price by a lesser amount than will a for-profit hospital merger that increases concentration by the same amount. Even this approach is limited, however, to detecting changes that interact with market concentration.

The Causal Approach

Analyses using data on actual mergers overcome some of the limitations of simulation analysis. These studies ask if firms that merged change their prices or costs (before or after a merger) by larger amounts than firms that do not merge. These estimated impacts can be viewed as causal effects. This approach has two limitations, both related to its dependence on historical merger data. In most industries, mergers are relatively rare events—even during infrequent periods of “merger mania.” Consequently, to observe enough mergers to have statistical confidence in the results, one must collect data
over a long period. But if the industry has changed over that period, data from the early years should not be pooled with more recent data. This problem is potentially serious in the HMO industry, which experienced a wave of market entry in the mid-1980s, followed several years later by high rates of mergers and failures as the industry underwent a “shakeout” of small firms. It is possible that the determinants of HMO premiums and costs in this earlier period may be different from those that prevail today, limiting the usefulness of the empirical results for policymakers.

It is also possible that the characteristics of HMOs involved in mergers could change over time. For example, most HMO mergers that took place during 1985–1992 involved small firms. In only two cases did an HMO with more than 100,000 members merge with another HMO of similar size. But if most future mergers involve large HMOs that combine to bargain with doctors and hospitals, then analyses of past HMO mergers will be of little use in predicting the effects of such “mega-mergers.”

### Mergers and HMO premiums

To explore directly the impact of mergers on HMO premiums, we analyzed data on HMO mergers that occurred between 1985 and 1993. Using econometric models, we examined whether HMO mergers increased premiums for private enrollees under age sixty-five, and whether the impact of mergers on premiums differed according to HMO market structure. We did not find that HMO mergers during this period affected premiums in any but the most competitive markets, where HMOs that merged had premiums that were 14 percent higher than HMOs that did not merge. However, after the first postmerger year, premiums returned to their prior levels, thereby providing no evidence of long-term premium increases resulting from mergers. (There has been no similar analysis of the effect of mergers on prices in the Medicare HMO market.) Conversely, our analysis provided no evidence that if HMOs became more efficient because of a merger, these efficiencies were passed on to consumers in the form of lower premiums. However, it did confirm an important finding of our previous study of HMO premiums for enrollees under age sixty-five—that HMOs operating in markets with more HMOs had lower premiums.

The lack of a causal relationship between HMO mergers and subsequent premiums is relatively easy to understand. For an HMO merger to lead to higher prices for consumers, it would have to result in an increase in market power for the combined firm. This could occur if there were relatively few HMOs in the market before the merger, so that the merger greatly reduced the number of HMO choices for consumers. During 1985–1994 only fourteen HMO mergers occurred in markets where there were four or fewer HMOs.
“Most HMO mergers appear to have had no effect on HMO costs other than through economies of size.”

before the merger. In these fourteen markets the market share (defined as the percentage of enrollment in all HMOs) of the largest HMO involved in the merger increased from 27 percent, on average, before the merger to 43 percent for the combined entity after the merger. Even in the relatively few instances in which the number of HMO competitors remaining after a merger was small and the merger created a firm with a substantial share of HMO enrollees in a metropolitan statistical area (MSA), the new firm’s ability to raise prices may have been constrained by other considerations. To the extent that purchasers regard other types of health plans (such as preferred provider organizations [PPOs]) as substitutes for HMOs, counting the remaining HMOs underestimates the number of actual competitors faced by the merged entity. Similarly, calculating the new HMO’s market share using only HMO enrollees in the denominator may give a misleading picture of its potential market dominance.

Another constraint on the merged firm’s ability to raise premiums is the possibility that premium increases could draw new HMOs into the market. Where there are few barriers to market entry, the threat of entry can constrain the ability of existing HMOs to raise premiums beyond competitive levels.

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**Mergers and HMO costs.** In an unpublished analysis, we examined the effects of mergers on HMO costs. The first goal of this analysis was to compare the surviving HMO’s average costs before and after the merger to see if the merger was associated with scale economies. The second goal was to determine if the cost structure of the HMO was improved by the merger. In other words, could we detect a reduction in the HMO’s costs at a given level of output? With respect to the first question, we found that “returns to scale” decreased for all HMOs during 1985–1994; that is, the average HMO was operating at a more efficient size at the end of the period. Also, HMOs that merged were slightly further away from the most efficient size (before merger) than were HMOs that did not merge. Thus, there appear to be some benefits from merging in terms of pooling HMO enrollments to create an HMO with a more efficient size. With respect to the second question, we found few significant coefficients for the merger variables, other than those that operate through large size. Thus, most HMO mergers appear to have had no effect on HMO costs other than through economies of size.

These results are less predictable than the findings related to the
impact of HMO mergers on premiums. On average, mergers in 1988—the year in which the most HMO mergers occurred—did not appear to fit the pattern of large firm/small firm combinations. The average merged entity was significantly larger. Thus, there was the potential for efficiency gains through merger. During 1985–1994 relatively few mergers (only sixteen) involved HMOs that had more than 50,000 members each (where there is much more limited potential for reducing costs by exploiting economies of scale).

**Health Services Research And Public Policy**

Public policy can have an effect on HMO mergers in two ways. The most visible and controversial is through application of the antitrust laws to challenge specific mergers. In these cases, health services research findings on the determinants of HMO premiums and costs could be used to simulate merger impacts. The intent would be to predict whether premium increases or cost savings would result from the merger and whether consumers would benefit overall. Public policy also can affect HMO mergers in much less visible ways, through legislation or regulations that either discourage or encourage HMO merger activity. Here we discuss several areas in which increased attention by health services researchers could improve public policy making related to HMO mergers.

- **Antitrust policy.** In markets where there are few barriers to entry, the threat of new competitors can discipline prices even if the number of firms is small. Although this line of reasoning is becoming more widely accepted as an antitrust defense, our research findings are inconclusive concerning its application to HMO mergers. Our estimated cost models show that an HMO does not need to be large to be efficient. This finding suggests that the most common form of barriers to entry—scale economies—may not be a significant factor for HMOs. However, our pricing models show that HMO premiums are higher in markets with fewer competitors. This finding seems to refute the notion of easy entry.

  It is possible that small HMOs can operate efficiently, yet there can be barriers to entry arising from the demand side of the market. Large employers may prefer to offer HMOs that can serve employees who live throughout dispersed metropolitan areas; large HMOs are better able to offer broad geographic coverage. Large size may also signify high-quality or good customer service.

  Health services researchers could address the “ease-of-entry” issue by studying markets with few competitors and high prices at the beginning of a time period. Controlling for other factors that influence the attractiveness of market entry, do these “prime-target”
markets attract new HMOs over the following three years, or five years?

A second important issue concerns identification of the relevant competitors when projecting the impact of an HMO merger on market structure and, ultimately, prices and costs. Current legal and economic opinions on this question are mixed, with the Seventh U.S. Circuit Court of Appeals recently ruling that there is not a separate product market for HMOs. According to this doctrine, all health insurance products compete in a single market that includes HMOs, PPOs, and indemnity insurers. This opinion is not consistent with our finding that having fewer HMOs in a market is associated with higher premiums. However, our research has not included explicit measures of competition from other types of health plans, and therefore it is not known whether the presence of non-HMO competitors also serves to discipline HMO premiums.

A third issue concerns a possible limitation of past research for simulating cost savings from HMO mergers. In this research, the prices that HMOs pay for health services are assumed to be unaffected by size. However, if the HMO created by a merger is large, it may be able to achieve cost savings by negotiating lower reimbursement levels with providers. Models that estimate HMO costs would be more useful for antitrust policy if they incorporated this possible effect, since antitrust enforcement agencies are likely to be particularly concerned about mergers that create large HMOs.

**HMO legislation and regulation.** The large number of HMO mergers in 1988 probably represents a shakeout after the industry’s rapid expansion in the mid-1980s. This shakeout also included many HMO failures and brought about an increase in the scope and intensity of state legislation and regulatory activity directed at the HMO industry. Recently, InterStudy noted: “From January 1995 through January 1996, 63 new HMOs obtained their licenses to operate. The HMO ‘class of 1995’ is the largest group of newly licensed HMOs since 1985.” If history repeats itself, we may see an upswing in the late 1990s of HMO mergers and failures. However, intervening state legislation could alter this pattern.

States may regulate mergers by requiring HMOs to report changes in ownership, change in ownership interest/control, or plans to acquire a medical facility. We found that states with more antitakeover regulations had far fewer mergers and more HMO failures. Passage of one additional antitakeover regulation decreased the probability of an HMO’s merging and surviving by 34 percent; the probability of merging into another plan decreased by 24 percent; and the probability of failure increased by 11 percent. Since mergers do not raise HMO premiums, on average, state laws that
make the average merger more difficult to consummate may not be necessary. In fact, they appear to have the counterproductive effect of increasing HMO failures, which reduces both the number of competitors and the public’s access to HMO services. The relationship between state HMO regulations of all types and HMO mergers and failures needs to be examined much more closely, especially in light of our results suggesting that most mergers historically have had little effect on market structure and HMO premiums.

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NOTES


2. Given, “Ensuring Competition,” in Competitive Managed Care.


4. Regressions of price or cost on HMO characteristics and market structure are known as “reduced-form” equations. A much less common version of simulation analysis is based on “structural” demand equations, which use the HMO’s enrollment as the dependent variable and treat prices charged by this HMO and by its competitors as the independent variables. For an example, see R. Feldman, “The Welfare Economics of a Health Plan Merger,” Journal of Law and Economics 6 (1994): 67–86.


6. Ibid.


14. Christianson et al., “State Responses to HMO Failures.”
