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Deborah Haas-Wilson
Christopher Garmon

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Two Hospital Mergers on Chicago's North Shore: A Retrospective Study

Deborah Haas-Wilson
Smith College
Northampton, MA

Christopher Garmon[1]
Federal Trade Commission
Washington, DC

Abstract: We provide an in-depth analysis of the price effects of two hospital mergers that occurred in the north shore suburbs of Chicago in early 2000: Evanston Northwestern Healthcare's (ENH) purchase of Highland Park Hospital (HPH) and the merger of St. Therese Medical Center (STMC) and Victory Memorial Hospital (VMH). Using standard difference-in-differences methods with data from multiple sources, including health insurance data with actual transactions prices, we find that the ENH/HPH merger led to a large and statistically significant post-merger price increase. We find no evidence of a price increase after the STMC/VMH merger. These results are robust across data sources, control groups, and case mix adjustment methods.

[1] The views expressed in this paper are the authors' and not necessarily those of the Commission or any individual Commissioner. We are thankful to Michelle Kambara, who provided outstanding research support and programming assistance to this project. We are also thankful to anonymous referees for their suggestions which considerably improved the current draft over previous versions. All remaining errors are the authors' sole responsibility.

In April 2002, the Federal Trade Commission announced the Hospital Merger Retrospectives Project; an initiative to study consummated hospital mergers "to determine whether particular hospital mergers have led to higher prices."[2] As described by then-FTC Chairman Timothy Muris in a speech given in the fall of 2002, there were two objectives of the Hospital Merger Retrospectives Project: to allow the Commission to "consider bringing enforcement actions against consummated, anticompetitive hospital mergers"[3] and "to update [the Commission's] prior assumptions about the consequences of particular transactions and the nature of competitive forces in health care."[4] One motivating factor for this project was the series of six straight unsuccessful hospital merger challenges made by the FTC, the Department of Justice, and California's Attorney General in the mid to late 1990s. This string of six straight defeats led many in the health economics community to call for a renewed study of hospital competition and a different approach to hospital merger enforcement (e.g., Capps, Dranove, Greenstein, and Satterthwaite (2002)). In the Hospital Merger Retrospectives Project, a handful of consummated hospital mergers were selected for intensive study to better understand hospital competition and the effects of hospital mergers.

Two of the hospital mergers chosen for the project occurred in the north shore suburbs of Chicago in early 2000. On January 1, 2000, Evanston Northwestern Healthcare (ENH)–with a flagship teaching hospital in Evanston and a community hospital in Glenview–purchased nearby Highland Park Hospital (HPH). Exactly one month later, Provena St. Therese Medical Center (STMC) and Victory Memorial Hospital (VMH), both community hospitals located in Waukegan, combined to form Vista Health. In 2002, the FTC opened investigations of both mergers as part of the Hospital Merger Retrospectives Project. Ultimately, the investigation of the Waukegan merger was closed because the Commission found little evidence of anticompetitive effects.[5] However, the investigation of ENH's acquisition of HPH led to an administrative complaint by the FTC challenging the transaction as anticompetitive. After a trial in 2005, an administrative law judge ruled that the acquisition violated antitrust law and this

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[2]"Building a Strong Foundation: The FTC Year in Review," Federal Trade Commission, April 2002, page 9. http://www.ftc.gov/os/2002/04/ftcyearreview.pdf

[3]Ibid, page 9.

[4]"Everything Old is New Again: Health Care and Competition in the 21st Century," prepared remarks of Chairman Timothy Muris before the 7th Annual Competition in Health Care Forum, Chicago, IL, November 7, 2002, pages 19-20. http://www.ftc.gov/speeches/muris/murishealthcarespeech0211.pdf

[5]"Statement of the Federal Trade Commission, Victory Memorial Hospital/ Provena St. Therese Medical Center, File #0110225," http://www.ftc.gov/os/caselist/0110225/040630ftcstatement0110225.htm, accessed on 9/5/2008

decision was upheld by the Commission on appeal in 2007.[6] In 2008, ENH elected to forego further appeals and accept the Commission's remedy of separate contracting for ENH and HPH with binding arbitration.

In this paper, we estimate the effect of each merger on the prices the merging hospitals negotiated with managed care organizations (MCOs).[7,8] As a first step, we develop a simple theoretical model that describes how the merger of competing hospitals can lead to a price increase in the context of MCO/hospital negotiations. Then, for each merger, we estimate the post-merger price change relative to a group of control hospitals after controlling for changes in factors that may vary over time across hospitals (e.g., the severity of the hospital's patients). Unlike most of the previous literature on hospital competition and mergers, our estimates are based on multiple data sources, including data collected directly from the hospitals and MCOs. For two of the three data sources we use, the data contain the actual prices paid by the MCOs and patients to the hospitals.

For the Waukegan merger, we find mixed results: one MCO experienced a relative price increase after the merger, but three MCOs experienced relative price decreases. Overall, we find no post-merger change in price relative to controls at the combined STMC/VMH. For the ENH/HPH acquisition, we find large and statistically significant relative post-merger price increases for all but one of the MCOs for which we have data. These price increase estimates are robust to different control groups and case mix adjustments and are consistent with the price increases estimated using other data sources.

The paper is structured as follows. In section 1, we describe the negotiating process between hospitals and MCOs and explain how a hospital merger can lead to a price increase or decrease. Section 2 describes the methods and econometric model used to estimate the price changes. Section 3 describes the data. Section 4 describes the resulting estimates, including payer by payer estimates of the relative price change at each of the combined hospitals. Section 5 concludes.

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[6] Deborah Haas-Wilson served as Complaint Counsel's (i.e., FTC staff's) primary economic expert during the administrative trial.

[7] Apart from material made public in the ENH trial, we will not describe qualitative evidence (e.g., documents, testimony, etc.) gathered in the investigations due to confidentiality. Also, the effect of each merger on the quality of hospital services is beyond the scope of this paper.

[8] We use the term "managed care organizations" to refer to all companies that offer health care plans structured as managed care plans, whether the company offering the plan is bearing the risk of loss or whether the employer is bearing the risk of loss.

1. Hospital/Managed Care Organization Negotiations

Hospitals and MCOs conduct negotiations to determine the price of hospital services. "Selective contracting" is the term used to describe the contracting strategy in which MCOs negotiate prices with hospitals and select which hospitals or hospital systems to include in their networks.

The contracts negotiated between MCOs and hospitals vary across MCOs, products offered by MCOs (e.g., PPO, HMO, etc.), and hospitals. These contracts between MCOs and hospitals fulfill multiple purposes, including (1) setting the price or price mechanism that will be used to determine the price that the MCO will pay for hospital services; (2) setting forth the extent and the procedures for the MCO to monitor and control the hospital utilization of its enrollees, such as whether to pre-approve; and (3) spelling out the details of the billing arrangement between the hospital and MCO. For example, the contract may contain a clause that prohibits the hospital from "balance billing" enrollees, billing the enrollees for the difference between a hospital's list prices and its negotiated prices.

By selectively contracting, the MCO can try to negotiate prices below the hospital's charges or what can be thought of as the hospital's "list prices." Because the MCO may not contract with all the hospitals in an area, the MCO can offer a higher volume of patients to hospitals in return for lower prices from those hospitals. Selective contracting has been called "one of the major innovations of managed care that changed competitive dynamics in the hospital sector and increased plans' negotiating leverage with hospitals."[9]

Health care markets have evolved with the increased penetration of managed care insurance. Selective contracting stimulates competition among those hospitals and physicians vying for inclusion in MCOs' provider networks. Under managed care, a hospital's ability to negotiate higher prices from MCOs is directly related to the extent to which there are substitutes for that hospital. Likewise, a key factor in MCOs' ability to extract price discounts from hospitals is the MCO's ability to shift its enrollees from one hospital to another.

A hospital's bargaining power with MCOs, and thus that hospital's ability to negotiate higher prices, depends on the incremental value that hospital brings to the MCO's network. A particular hospital's incremental value depends on (1) the extent to which hospitals outside the MCO's network are good substitutes for it or (2) if the MCO's best alternative is to drop that particular hospital without replacing it, then its bargaining clout depends on the degree to which it adds value to the hospitals already in the network. The more important that particular hospital is to insurers' revenues (how that particular hospital affects the value of the hospital network offered to potential enrollees), the greater is that particular hospital's bargaining power.[10] A hospital adds substantial value to the managed care plan's network when individuals highly

[9] Devers, Casalino, et al. (2003), p.421.

[10] Town and Vistnes (2001).

value that hospital and there are no close substitutes for that hospital. Therefore, a hospital will be able to negotiate higher prices with managed care plans in proportion to the degree to which its withdrawal from the network decreases the value enrollees place on the remaining hospitals in the network, and thus enrollees' willingness to pay for insured access to the remaining hospitals in the network. If the hospital that is threatening to withdraw has a close substitute (in the minds of the enrollees) and the substitute hospital remains in the network, then its withdrawal will have a minor effect on enrollees' willingness to pay for the network. In other words, the threat of withdrawal may not lead to significantly higher negotiated prices. If, however, these hospitals merge and there is no other close substitute, then the threat of withdrawal from the network may lead to significantly higher negotiated prices for the hospital.

To illustrate, consider the following simplified model of hospital/MCO bargaining with the ENH/HPH acquisition as an example. Let $X(\rho,\Phi)$ denote the health plan's demand or total membership as a function of the per member premium ρ and hospital network Φ. An MCO's costs consist of their payments to hospitals for their members care and the general costs of claims processing, administration, etc. Thus, for a given hospital network Φ and vector of per case hospital prices $P = \{p_i\}_{i\in\Phi}$, an MCO will choose ρ to maximize its expected profits:

$$\textbf{(1)} \qquad \overline{\Pi}(\Phi, P) = Max_{\rho}\{\rho X(\rho,\Phi) - \sum_{i\in\Phi} p_i E(x_i) - c(X(\rho,\Phi))\}$$

where $E(x_i)$ is the expectation of the number of cases that will be treated by hospital i given the MCO's network Φ and membership X, and c(X) are the other administrative costs of the MCO. Let $\bar{\rho}$ be the ρ which solves (1). To ease notation, let $x_i \equiv E(x_i)$ and let R_i be defined such that:

$$\textbf{(2)}\ \overline{\Pi}(\Phi, P) = R_i(\Phi) - p_i x_i$$

In other words, R_i is the MCO's profit apart from payments to hospital i:

$$\textbf{(3)}\ R_i = \bar{\rho} X(\bar{\rho},\Phi) - \sum_{j\neq i} p_j x_j - c(X(\bar{\rho},\Phi))$$

Consider managed care organization M, hospital system ENH, and independent hospital HPH. Suppose M's current hospital network is some subset of all of the hospitals in Chicago. Let M's current hospital network be $\Phi_M = \{ENH, HPH, H_1, H_2, \ldots H_N\}$. For ease of notation, denote $\{H_1, H_2, \ldots H_N\} \equiv -EH$. If M is negotiating with ENH to determine the price paid to ENH if ENH is included in M's network, M's expected profit if an agreement is reached is:

$$\textbf{(4)}\ \Pi_M(agreement) = R(\Phi_M) - p_{ENH}x_{ENH} = R(\{ENH, HPH, -EH\}) - p_{ENH}x_{ENH}$$

And M's expected profits if no agreement is reached can be written as:

(5) $\Pi_M(noagreement) = R(\{HPH,-EH\})$

For ENH, its expected profit if an agreement is reached is:

(6) $\Pi_{ENH}(agreement) = p_{ENH}x_{ENH} - C_{ENH}(x_{ENH}) + \Pi_{ENH}(-M)$

where $C_{ENH}(x_{ENH})$ is ENH's additional expected cost of treating M's patients and $\Pi_{ENH}(-M)$ is ENH's expected profit apart from M's patients. ENH's expected profit if no agreement with M is reached is:

(7) $\Pi_{ENH}(noagreement) = \Pi_{ENH}(-M)$

Assume that M and ENH are both risk neutral and that their negotiation satisfies the axioms of Nash bargaining. Also assume that the additional expected cost of treating M's patients is linear, so that $C_i(x_i) = c_i x_i$ for all i and

(8) $R(\{ENH,HPH,-EH\}) - R(\{HPH,-EH\}) - c_{ENH}x_{ENH} > 0$

and

(9) $R(\{ENH,HPH,-EH\}) - R(\{ENH,-EH\}) - c_{HPH}x_{HPH} > 0$

so that there is a positive net benefit of including each hospital in M's network. The price resulting from the negotiation will solve the following problem:

(10) $Max_{p_{ENH}}[\Pi_M(agreement) - \Pi_M(noagreement)][\Pi_{ENH}(agreement) - \Pi_{ENH}(noagreement)]$

or

(11) $Max_{p_{ENH}}[R(\{ENH,HPH,-EH\}) - p_{ENH}x_{ENH} - R(\{HPH,-EH\})][p_{ENH}x_{ENH} - c_{ENH}x_{ENH}]$

Using the envelope theorem, the first order necessary condition for a solution to (11) is:

(12) $x_{ENH}[R(\{ENH,HPH,-EH\}) - p_{ENH}x_{ENH} - R(\{HPH,-EH\})] - x_{ENH}[p_{ENH}x_{ENH} - c_{ENH}x_{ENH}] = 0$

For ease of notation, denote ΔR_{ENH} = R({ENH,HPH,-EH})-R({HPH,-EH}) and likewise for ΔR_{HPH}. ΔR_i can be thought of as the value that hospital i adds to M's hospital network. With the simplifying assumption that all other hospital prices are fixed (e.g., the negotiation between M and ENH occurs in the context of established contracts for the other hospitals, we can solve (12) for p_{ENH}:

(13) $$\bar{p}_{ENH} = \frac{\Delta R_{ENH} + c_{ENH} x_{ENH}}{2 x_{ENH}}$$

Likewise, the pre-merger price negotiated between M and HPH (all else fixed) is:

(14) $$\bar{p}_{HPH} = \frac{\Delta R_{HPH} + c_{HPH} x_{HPH}}{2 x_{HPH}}$$

Now suppose that ENH and HPH merge. The merger may affect price in two ways. First, the merger may lower costs (e.g., through economies of scale). In this case, the price negotiated between M and the merged entity for each hospital will be lower than the pre-merger prices, all else equal. From (13) and (14), the reduction in the price will be half of the reduction in average costs, since the gain will be split evenly between M and the merged hospital under Nash bargaining.

The second effect is a potential reduction in competition associated with the merger. To separate this effect from the first effect, assume that ENH's and HPH's costs of serving M's members do not change with the merger. The merger will not affect the value that ENH and HPH bring to M's hospital network. However, the merger may affect the "no agreement" points of ENH and HPH. Before the merger, if M and ENH failed to reach an agreement, ENH would lose all of M's business (see (7) above).[11] After the merger, if M and the merged entity (denote as ENH/HPH) fail to reach an agreement to include ENH in the network, ENH/HPH might not lose all of M's business. Some of the M's patients who would have gone to ENH had it been in the network, may instead go to HPH. After the merger, these patients are not lost to the combined firm, so the combined firm will be more aggressive in its negotiations to include ENH in M's network than ENH was as an independent hospital.[12]

To formalize this, let δ_{EH} be the diversion from ENH to HPH. In other words, if ENH is not in M's network, δ_{EH} is the fraction of M's patients who would have gone to ENH had it been in the network who instead go to HPH. After the merger, M and ENH/HPH will negotiate ENH's price to solve:

(15) $$Max_{p_{ENH}} \left[\Delta R_{ENH} - p_{ENH} x_{ENH}\right]\left[(p_{ENH} - c_{ENH}) x_{ENH} - (p_{HPH} - c_{HPH}) \delta_{EH} x_{ENH}\right]$$

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[11] This abstracts from M's patients who might continue to use ENH for emergency or non-covered services when ENH is not included in M's network.

[12] This argument assumes that the combined firm continues to negotiate separately to include ENH and HPH in M's network after the merger. It is also possible that the combined firm could negotiate on an "all-or-nothing" basis with M, so that if an agreement is not reached, both ENH and HPH would drop out of M's network. This could exacerbate the competitive impact of the merger.

which is the same as (12) above, except for the latter term in the second part of the Nash product reflecting the internalized diversion of patients from ENH to HPH. Likewise, M and ENH/HPH will negotiate HPH's price to solve:

(16) $$Max_{p_{HPH}}\left[\Delta R_{HPH} - p_{HPH}x_{HPH}\right]\left[(p_{HPH} - c_{HPH})x_{HPH} - (p_{ENH} - c_{ENH})\delta_{HE}x_{HPH}\right]$$

The first-order conditions for (15) and (16), respectively, can be expressed as:

(17) $$p_{ENH} = \frac{\Delta R_{ENH}}{2x_{ENH}} + \frac{c_{ENH} + (p_{HPH} - c_{HPH})\delta_{EH}}{2}$$

and

(18) $$p_{HPH} = \frac{\Delta R_{HPH}}{2x_{HPH}} + \frac{c_{HPH} + (p_{ENH} - c_{ENH})\delta_{HE}}{2}$$

Solving (17) and (18) for p_{ENH} (and expressing the result as a function of the pre-merger price for ENH given in (13)) produces:

$$p_{ENH}^{post} = \frac{\left[4\bar{p}_{ENH} + \frac{\delta_{EH}}{x_{HPH}}\left(\Delta R_{HPH} - c_{HPH}x_{HPH} - c_{ENH}\delta_{HE}x_{ENH}\right)\right]}{4 - \delta_{EH}\delta_{HE}}$$

Since $\Delta R_{HPH} - c_{HPH}x_{HPH} - c_{ENH}\delta_{HE}x_{ENH} > 0$ (because otherwise there would be no net surplus from including HPH in the network post-merger), the post-merger price for ENH will be greater than the pre-merger price for ENH, as long as $\delta_{EH} > 0$. In other words, if HPH and ENH are competitive–in the sense that some of the patients who go to ENH see HPH as ENH's closest alternative–then the merger of HPH and ENH will lead to a higher negotiated price for ENH, all else equal. The post-merger price of HPH behaves analogously.

Because a merger of competing hospitals may lead to a price increase, decrease, or no change at all, the price effect of any particular hospital merger is an empirical issue. Apart from this paper and the companion studies from the Hospital Merger Retrospectives Project (Tenn (2008), Thompson (2009)), only a small number of papers have analyzed the price effects of hospital mergers retrospectively. Vita and Sacher (2001) found that a merger of two non-profit Santa Cruz, CA hospitals led to a significant price increase. Using pricing data provided by a MCO, Capps and Dranove (2004) study a dozen mergers of competing hospitals in the late 1990s and find that three quarters of the mergers resulted in price increases greater than the median price increase in their sample. Dafny (2005) and Krishnan (2001) also retrospectively study hospital mergers and find that mergers of competing hospitals increase price on average. Of these studies, only Capps and Dranove (2004), Tenn (2008), and Thompson (2009) use actual transactions data taken from MCOs and hospitals. The other studies only use price estimates derived from publicly available list prices and financial information.

There is also a fairly large literature which analyzes the cross-sectional relationship between competition and hospital pricing. Vogt and Town (2006) survey this literature and conclude that "the great weight of the literature shows that hospital consolidation leads to price increases, although a few studies reach the opposite conclusion." Melnick and Keeler (2007) and Dranove, Lindrooth, White, and Zwanziger (2008) also find that reductions in hospital competition lead to higher prices, although the latter paper finds that this relationship has diminished slightly in recent years.

2. Methods

Typically, the Department of Justice (DOJ) or the FTC challenges a merger after it has been proposed, but before it has been consummated. These "prospective" challenges require predictions about the future competitive effects of the proposed merger. Mergers are only illegal if they are likely to substantially lessen competition. Since the prospective merger has not yet taken place, one cannot show that the merger has lessened competition. Rather, one can only predict whether it is likely to lessen competition. In prospective cases, proxies for future market power (such as changes in concentration in a well-defined market) are used to assess the likely impact of the merger on prices and other aspects of conduct and thus, consumers in the future.

In contrast, the mergers of ENH/HPH and STMC/VMH were consummated in early 2000. This permits us to take a "retrospective" look at the mergers, to look back and look for direct evidence of whether the merger lessened competition, particularly through increased negotiated prices. Therefore, instead of using structural factors, such as market shares and market concentration, to predict the effect of the merger, we seek to directly measure the competitive effects of the merger. In this retrospective analysis, the questions we address are whether the merging parties obtained or enhanced market power through their mergers, and if so, whether they exercised that market power in their negotiations with MCOs by negotiating higher post-merger prices.

To test the hypothesis that ENH/HPH and/or STMC/VMH obtained or enhanced its market power, we examine price changes, rather than price levels. In a market with differentiated products, different price levels are neither necessary, nor sufficient, to demonstrate the exercise of market power. Established models of monopolistic competition allow that differentiated products may sell at different prices at the same point in time, even in the long-run when economic profits are zero. Hospitals offer differentiated products, differentiated by type, location, and other dimensions. That Hospital A negotiates higher prices for its services than Hospital B at one point in time is not necessarily evidence of the exercise of market power by Hospital A. If it costs more for Hospital A to provide its services at its location than it costs Hospital B to provide its services at its location, Hospital A will have to have higher prices than Hospital B in equilibrium. So long as the customers of Hospital A value whatever differentiates it from Hospital B, Hospital A can price its services to cover its higher costs.

Our objective is to isolate the effect of each merger on the merging hospitals' prices. As shown above, it is possible for the merger of competing hospitals to decrease prices by lowering costs or increase prices by eroding the bargaining position of the MCO (i.e., increase prices

through an increase in the hospital's market power). To isolate the merger's effect on price, it is necessary to control for all of the other factors, unrelated to the merger, that could cause a hospital's price to change over time. The following is a discussion of these factors and a brief description of how we control for each.

1. Exogenous Change in Demand and/or Costs Across the Market

Exogenous changes in demand, hospital costs, and/or hospital regulations can cause price changes. If a demand or cost shock occurred at the same time as the merger, the effect of this shock could be misinterpreted as the effect of the merger. Therefore, it is important to control for demand or cost shocks that may have occurred around the time of the merger.

We control for demand and cost shocks by comparing the merging hospitals' price changes to those of various control groups of hospitals in the area. In particular, we calculate a difference in differences: the difference between the merged hospitals' price change and the average price change across the control group. We use multiple control groups because hospitals are highly differentiated across many characteristics, some of which are difficult to quantify. Thus, there is no hospital or group of hospitals that is identical to ENH, HPH, STMC, or VMH. Each hospital likely responds to demand and cost shocks differently. Still, if the results are robust across multiple control groups, we can be confident that the measured net price change at the merged hospitals adequately controls for demand and cost shocks in the area.

The first control group we use in the analysis of both mergers is all non-federal general acute-care hospitals in the Chicago Primary Metropolitan Statistical Area (PMSA). In other words, we exclude federal facilities (e.g., VA hospitals), non-pediatric specialty hospitals (e.g., psychiatric hospitals), and long-term care hospitals. This is the broadest possible group of hospitals that is likely to experience demand and cost shocks similar to those faced by the hospitals in question. While we believe this is an appropriate control group for all four hospitals, there are two potential problems with it that might lead to a biased measure of the merger's effect on price.

First, this control group includes hospitals that were also involved in mergers that occurred during the time period of the data. If either merger led to an increase in market power with relatively little reduction in cost and, on average, other mergers in Chicago led to similar results, using all hospitals in the Chicago PMSA as a control group would lead to an underestimate of the merger's effect on the merged hospital's price. To eliminate this bias somewhat, we also use as a control group all non-federal general acute-care hospitals in the Chicago PMSA that were not involved in mergers between 1996 and 2002.[13] The use of this control group reduces this bias, but does not completely eliminate it as it does not eliminate

[13]A merger is defined as a change in ownership for a hospital in the Chicago PMSA in which the acquiring party owns at least one other hospital in the Chicago PMSA. Merging hospitals were excluded back to 1996 even though our data begins in 1998 to eliminate potential residual effects of mergers on price.

second-order rival effects from the control group. For instance, if the ENH/HPH merger increased ENH's market power, one would expect other nearby hospitals to increase their prices in response to the general loss of competition. Thus, even with this control group, our estimate of the price increase associated with the merger will likely be too low, if the merger increased the merged hospital's market power. Alternatively, one could use non-merging hospitals from outside the Chicago area as controls to avoid the bias from rival effects. In this case, we believe that using controls from outside Chicago is inferior because there are no healthcare markets in downstate Illinois that even approximately resemble Chicago. Further, some of the MCOs operating in Chicago have a limited presence downstate, so available data is limited for downstate hospitals if used as controls.

The second problem associated with using all non-federal general acute-care hospitals in the Chicago PMSA as a control group is that some of the hospitals included may be quite different from the merging hospitals and may not respond to demand and supply shocks in the same way. In particular, teaching hospitals have different cost structures than non-teaching hospitals. ENH is a system with a teaching hospital, so we employ two control groups of teaching hospitals in the ENH/HPH analysis to account for the cost shocks teaching hospitals faced in this time period. The first teaching control group is the non-federal general acute-care hospitals in the Chicago PMSA that had residency programs at the time of the merger. We also use a second teaching control group that consists of all of the non-federal general acute-care hospitals in the Chicago PMSA that had more than 0.25 residents and interns per staffed bed between 1998 and 2002. The threshold of 0.25 residents and interns per staffed bed is the threshold set by MEDPAC to identify hospitals with extensive teaching programs, like the teaching program at ENH.

Likewise, STMC and VMH are community hospitals without teaching programs, so including teaching hospitals in the group of controls used to analyze STMC/VMH may bias the estimated relative price change. In addition to all of the hospitals in the Chicago PMSA and all of the non-merging hospitals in the Chicago PMSA, we also use all of the non-teaching non-federal general acute-care hospitals (i.e., "community hospitals") in the Chicago PMSA as a control group for the STMC/VMH price change estimates.

2. Change in the Mix of Patients

If we were to observe that the post-merger average payment per case is greater than the pre-merger average payment per case at one of the merging hospitals and this change in price is greater than that across the control groups, we could not conclude that the hospital's price had increased, even relative to other hospitals, because this price increase might have been caused by a random change in the mix of patients seen by the hospital. For instance, open heart surgery usually costs more than a normal birth because more hospital resources are used for the open heart surgery than for the normal birth. If the percentage of a hospital's patients receiving open heart surgery increased faster than at the controls and the percentage of the hospital's patients having normal deliveries decreased faster than at the controls, we would measure a change in the average payment per case even if there was no change in the relative prices of those services. Thus, to measure price changes and relative price changes accurately, we must adequately

control for the mix of patients or, as it is referred to in the industry and the literature, the case mix.

To control for changes in case mix, we use three methods. First, we use each patient's Diagnosis Related Group (DRG) relative weight as an independent variable. The DRG classification system consists of roughly 500 groups of diagnoses. These groups are defined so that, within each group, the resources used to treat patients are similar. This classification system is the basis for Medicare's reimbursement to hospitals for inpatient services. In particular, each year the Center for Medicare and Mediciad Services (CMS) publishes a relative weight for each DRG representing the cost of treating a case in that DRG relative to the cost of treating the average case. For example, in fiscal year 2003, the DRG relative weight for a bone marrow transplant (DRG 481) was 7.13, meaning that a bone marrow transplant used over 7 times the resources of the average inpatient case.[14] We also use a DRG fixed effects model as an alternative to the DRG weight case mix adjustment.

As a third case mix adjustment method, we use a fixed effects model with dummies for each APRDRG/SOI pairing. The DRG classification system has two potential drawbacks. First, since it is designed as the basis for Medicare payments, some have argued that it is not accurate for diagnoses Medicare beneficiaries rarely have (e.g., obstetric or pediatric diagnoses). Second, others have argued that the DRG system does not fully capture differences in severity within each diagnostic category.[15] 3M Health Information Systems created an alternate classification system to address these weaknesses. This classification system is made up of roughly 300 All Patient Refined Diagnosis Related Groups (APRDRGs). Within each APRDRG, each case is ranked from 1 to 4 based on its severity of illness (SOI), with 4 being most severe. The SOI ranking was developed to mirror resource use.

We also include the patient's length of stay in days as another independent variable in some alternate specifications as another control for severity. Length of stay is not in our primary models because it is endogenous (i.e., since many hospital/MCO contracts specify per day payments, hospitals can increase their price per case by increasing a patient's length of stay, unless there are protections against this in the contract). It is also highly correlated with case mix measures such as DRG weights.

3. Changes in the Payer Mix

Some have argued that hospitals "cost-shift" by subsidizing the care given to Medicare,

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[14]In 1999, the relative weight for a bone marrow transplant was 10.21. This highlights another advantage of using DRG relative weights to case mix adjust prices: technological advances that make certain diagnoses relatively less resource intensive to treat are captured by using the DRG relative weights.

[15] In fact, CMS responded to these criticisms by recently reworking the DRG system to better capture patient severity with the new MS-DRGs.

Medicaid, and indigent patients by charging commercially insured patients more than the cost to treat them, particularly when (or if) public programs like Medicare and Medicaid do not cover the full cost of treating their members. Thus another possible reason for a price change to commercial patients could be a change in the distribution of insurance coverage of a hospital's patients. For instance, if a hospital suddenly sees an increase in the proportion of its patients using Medicare and Medicaid, it may increase its price to commercial insurers to cover its costs or forgone revenues. To control for this possibility, we include Medicare share plus Medicaid share as an independent variable.

4. Change in Teaching Intensity

As mentioned before, it is generally recognized that teaching hospitals have higher costs than non-teaching hospitals. Since teaching hospitals may be affected by demand and cost shocks differently than non-teaching hospitals, we employ two teaching based control groups in the ENH/HPH analysis. We also include residents and interns per staffed bed as an independent variable to capture potential increases in teaching intensity over time that might cause price changes.

There are two other factors that might explain price changes that cannot be incorporated into our econometric model: changes in quality, and adjustments to equilibrium.

5. Changes in Quality

A change in the price negotiated between a hospital and an MCO may reflect a change in the quality of the services offered by the hospital. There are many aspects of hospital quality and no standard measure that encompasses all aspects. Further, it is beyond the scope of this paper to describe the various quality metrics and report their relative changes at the merged hospitals. However, substantial quality evidence was presented at the ENH/HPH trial and the judge and the Commission concluded that "ENH failed to show that quality improved across the combined ENH system and relative to other hospitals."[16]

6. Adjustment to Equilibrium

Models designed to estimate the effect of a structural change, such as a merger, typically assume that the market is in equilibrium before and after the structural change, but this may not always be true. If the market is not in equilibrium before the structural change, but is in equilibrium after the structural change, part of the effect that is measured is the adjustment to the equilibrium. In the administrative trial following the FTC's complaint, ENH argued that the price increase that occurred after the merger was unrelated to the merger and instead due to an

[16] http://www.ftc.gov/os/adjpro/d9315/070806opinion.pdf page 83 (accessed on 9/8/08)

adjustment to equilibrium.[17] In other words, ENH was pricing sub-optimally before the merger and optimally after the merger. How likely is it that such an adjustment to equilibrium could bias our price change estimates? In this case, there are a number of general factors that suggest that we cannot immediately rule this out:

1. Most quasi-experiments similar to the empirical analysis of this paper have a "treatment" group and a "control" group. In a case in which the treatment group has many members, it would be unlikely that all or even most members would behave sub-optimally pre-treatment and optimally post-treatment. However, in this case, our treatment group is a singleton. It is possible that we selected a merger in which at least one of the hospitals was not behaving optimally pre-merger.

2. The usual argument against the likelihood of sub-optimal behavior by a firm is that capital markets tend to discipline such behavior. For instance, if a firm with market power is not minimizing its costs, there is a strong incentive for the owners (or other owners purchasing the firm) to install better management. In this case, the hospitals are not investor-owned, so there are no investors that could reap benefits by purchasing the firm and installing better management.

3. Closely related to (2), if a firm that is behaving sub-optimally is involved in a merger that increases its market power, it has more to lose by continuing its old behavior. So it is not completely implausible to think that a merger and an adjustment to an equilibrium could occur at the same time.

Given our data, it is impossible to rule out an adjustment to equilibrium as a potential bias in our price measurement with the data alone.[18] We have seen no evidence to suggest that ENH was behaving sub-optimally pre-merger.[19] Also, ENH was the most profitable hospital in the state of Illinois in 1999, the year before the merger.[20] While it is possible they simply had

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[17] For instance, see http://www.ftc.gov/os/adjpro/d9315/050527respposttrialbrief.pdf page 40.

[18] One way potentially to test for pre-merger sub-optimal behavior would be to look at the pre-merger price growth rate at ENH and compare this to the pre-merger price growth rate at control hospitals to see if it was less. Our data only goes back to 1998, two years before the merger, so we cannot investigate this.

[19] The ALJ's public decision (http://www.ftc.gov/os/adjpro/d9315/051021idtextversion.pdf) and the Commission's public decision (http://www.ftc.gov/os/adjpro/d9315/070806opinion.pdf) list qualitative evidence that ENH was not behaving sub-optimally pre-merger. (Links accessed 9/8/08)

[20] Illinois Health Facilities Planning Board, "Hospital Capital Expenditure and Financial Information Report for 1999," March 2001, http://www.idph.state.il.us/pdf/capexpendrept.pdf (Link accessed 9/8/08)

more market power than they were aware of in 1999, this suggests that they were not poorly managed. ENH's management also did not change after the merger. For these reasons, we do not believe the ENH/HPH results reflect an adjustment to equilibrium.

Empirical Model

The econometric model we estimate is the following:

(20) $$Price_i = \alpha + \beta_1 Post_i + \beta_2 (Post_i)(D_{MH}) + \beta_3 Casemix_i + \beta_4 Public_h + \beta_5 Teach_h + \beta_6 \cdot D + \beta_7 \cdot Plan_i + \beta_8 \cdot T + e_i$$

where i indexes episodes of inpatient care (i.e., cases) and h indexes hospitals.
The variables are defined as follows:

$Price_i$ ≡the total allowed amount for case i (expressed in log form)

$Post_i$ ≡ a dummy variable equal to 1 in the post-merger period. In the MCO data, Post is defined specific to each MCO using the effective date of the first post-merger contract (or the merger date if no post-merger contract was signed by 12/31/2002). In the state data, Post = 1 for 2001 and 2002, with year 2000 treated as a transition year and excluded from the data set.

$Casemix_i$ ≡ the measure of case mix; either the DRG weight of the case i (expressed in log form), the set of DRG dummies, or the set of APRDRG/SOI dummies. As an alternate specification, length of stay (LOS) is also paired with each case mix measure, producing six methods of controlling for case mix variation.

$Public_h$ ≡ Medicare share + Medicaid share of hospital h (from the Medicare Cost Reports) (expressed in log form), where the public share is matched to the case based on the discharge date.

$Teach_h$ ≡ residents and interns per bed at hospital h (from the Medicare Cost Reports) (expressed in log form), where the teaching intensity is matched to the case based on the discharge date.

D ≡vector of hospital dummy variables. (D_{MH} is the dummy variable for the merging hospital in question.[21])

$Plan_i$ ≡ vector of dummy variables indicating the patient's plan (PPO, HMO, or Indemnity). (Only included in the MCO data analysis.)

T ≡ vector of year dummy variables

The model parameters are estimated using ordinary least squares. The standard errors are estimated using clustered robust Huber/White estimates of variance to address the possibility of

[21] ENH and HPH data are pooled pre and post-merger since ENH and HPH observations in the MCO and cost report data cannot be distinguished post-merger. STMC and VMH data are pooled pre and post-merger to conceal the identity of the MCOs.

cross-hospital heteroskedasticity and within-hospital autocorrelation.[22] In other words, cases from the same hospital may not be independent and the observations from different hospitals, while likely independent, may have error terms which are not identically distributed. We are primarily interested in the estimate of β_2; roughly speaking, the estimate of the difference between the price change at the merging hospital and the average price change across the controls. These estimates are reported in the results below.[23]

3. Data

To study the pricing behavior of ENH, HPH, STMC, VMH, and other Chicago area hospitals, we employ three distinct sources of data and price measurement methods. Our primary data are claims data from 5 of the largest MCOs in the Chicago area representing more than 50% of the insured managed care members in the Chicago area.[24] In this data, each record is a claim, which roughly corresponds to a procedure or a service (e.g., MRI, pharmacy, surgical procedure, etc.). Each record contains demographic information about the patient (e.g., age, gender, marital status, etc.), diagnostic and procedural information about the episode of care (e.g., dates of service, diagnosis codes, procedure codes, discharge status, etc.), and payment information. The payment information includes the billed amount (i.e., the list price of the service or "billed charges") and the allowed amount (i.e., the total amount that the MCO and the patient together owe the hospital for that service; usually this is less than the billed amount if the MCO has a contract with the hospital). The allowed amount is often broken up into the amount paid by the MCO and the amounts (i.e., co-pays, deductibles, etc.) paid by the patient. Some data sets also indicate if the patient has secondary health insurance that has paid part of the claim.

Our measure of price in this data is the allowed amount per inpatient episode of care (e.g., inpatient admission).[25] We will refer to this as the allowed amount per case. We do not use the allowed amount per procedure because procedures are too heterogeneous and there is no accepted method to compare them. Further, a hospital can increase revenues by increasing the number of procedures while keeping the per procedure price constant. In order to calculate the

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[22] In Stata terminology, we specify cluster(hospital).

[23] Actually, what is reported is $e^{\beta 2}$-1 in percentage form.

[24] To protect the identity of the MCOs, their names are masked when reporting the results. Also, we do not report sample sizes or overall results in the MCO data analysis to avoid indirectly identifying the MCOs.

[25] Our measure of price does not include outpatient revenues due to the difficulty of adjusting outpatient visits for changes in case mix. Attempts to include outpatient price changes into the estimation of ENH/HPH's relative price change during the ENH/HPH trial resulted in price increase estimates that were very similar to the inpatient-only price increase estimates. See Opinion of the Commission in the Matter of Evanston Northwestern Healthcare Corporation, page 38 http://www.ftc.gov/os/adjpro/d9315/070806opinion.pdf (Accessed on 9/15/08).

allowed amount per case, the payment information in the claim-level data has to be aggregated up to each case. In this data, cases are identified using the patient's member identification number and the dates of service. For each member ID, each group of records with strictly overlapping dates of service (e.g., the beginning date of service for one record is before the end date of service for another record) is defined as a case.

The amount paid per case is the standard measure of price for inpatient services used in the hospital competition literature. However, using this price measure with the MCO's data introduces problems because the MCO's data is not organized by case and MCO's do not typically pay hospitals on an case-by-case basis. For instance, the standard classifications systems used to group inpatient cases according to resource use (Diagnosis Related Groups (DRGs) and All Patient Refined Diagnosis Related Groups (APRDRGs)) were not used as the basis for payments between MCOs and hospitals in the Chicago area for most services around the time of the mergers, with the exception of obstetric cases and occasionally cardiovascular cases. Contracts between MCOs and hospitals in the Chicago area usually specified a per day payment for a class of service (e.g., $1,000/day for a medical/surgical bed and $1,500/day for an intensive care unit bed) or a simple discount off of list price for all or most services. Therefore, the MCOs data either does not have any standard classification system (e.g., DRGs) in its data or, if it is included, it may be incomplete.

We use the demographic and diagnostic information in the claims data to group cases into DRGs and APRDRGs.[26] In doing so, we encounter a number of challenges. In order to classify a case into a DRG or APRDRG, usually one needs the age and gender of the patient and the correct diagnostic and procedure codes for the patient's stay. If, within the records associated with a case, some of this information is internally inconsistent (e.g., some records indicate a male while others indicate a female; all of the records indicate a male, but the diagnosis is an obstetrics diagnosis; etc.), then classifying the case into a DRG or APRDRG is impossible. These internal inconsistencies occur in a relatively large fraction of the data, as illustrated in Appendix A (Description of Inpatient MCO Data). For instance, 11% of the observations from Chicago PMSA hospitals are from internally inconsistent cases. Of the remaining cases without internal inconsistencies, almost 27% have some other type of coding error. These problems are most likely due to coding errors that do not impact the payments between the MCO and the hospital. However, since the presence of these inconsistencies makes it difficult to classify some cases, we have discarded the problematic cases from our sample. It is possible that the non-random exclusion of these problematic observations and cases could bias our results. If a bias exists, it most likely would lead to an underestimate of the relative price increase at ENH/HPH. Unlike the data overall, the observations (i.e., claims) thrown out because of internally inconsistent information show a general price decrease, but a larger price decrease at the control hospitals (-71%) than at ENH/HPH (-59%). Of the remaining cases, those thrown out due to other coding errors show a relatively large price increase for ENH/HPH (40%) and a price decrease for the control hospitals (-16%).

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[26] In particular, we use 3M Health Information Systems' Core Grouping software to group cases into DRGs and APRDRGs.

Given the issues with our primary source of data, we feel it is useful to analyze price with other sources of data as a check on our primary results. The second data source we use is the Illinois Department of Public Health's Universal Dataset. This data set contains all of the inpatient hospital discharges in the state of Illinois. It is similar to the MCO's data in that it contains demographic, diagnostic/procedural, and billing information for each inpatient case. Unlike the MCO's data, each record in the Universal Dataset is a case and the IDPH audits the information received from the hospital before including it. The data also contains DRGs, the most commonly used inpatient classification system. Thus, the Universal Dataset does not suffer from the aggregation and consistency problems of the MCO's data. However, the Universal Dataset does not contain actual payment information. It only contains the total billed amount (i.e., list price) for each case.

In order to approximate the amount actually received by the hospital for each case, we combine the billing information in the Universal Dataset with revenue information taken from Medicare's Hospital Cost Reporting Information System (aka, the Medicare Cost Reports). The Cost Reports include a hospital's total billed charges (i.e., total list price revenue, called Gross Revenue) and the hospital's total actual revenues after contractual discounts (called Net Revenue). For each inpatient case in the Universal Dataset, we multiply the billed amount by the ratio of Net Revenue to Gross Revenue from the Cost Report associated with that case's hospital and discharge date. In other words, we use cost report information to approximate the amount of each case's list price that the hospital actually received. Other recent articles examining hospital competition have used this approach to measure prices (e.g., Gaynor and Vogt (2003)).

The primary shortcoming of this approximation of price originates from the Net and Gross revenue figures taken from the Cost Reports. These revenues are for all of the services a hospital offers (e.g., they include both inpatient and outpatient revenue) while the Universal Dataset only lists inpatient cases.[27] Thus, it is possible that the use of this Net/Gross ratio from the Cost Reports could bias our price change estimates and relative price change estimates. Using confidential information on ENH/HPH's pre and post-merger net and gross inpatient and outpatient revenues, public information on gross inpatient and outpatient revenues from the Illinois Hospital Association and public information on net inpatient and outpatient revenues for the Midwest region from AHRQ's Medical Expenditure Panel Survey, we believe the bias introduced by the use of the Net/Gross ratio from the cost reports is small and, if anything, results in a slight underestimate of all hospitals' price changes and the ENH/HPH price change relative to the average control price change.[28]

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[27] The Net and Gross revenues from the Cost Reports also include revenues from all patients, not just commercially insured patients. To investigate whether this introduces a bias, we also measure price using all cases in the Universal Dataset, in addition to cases for commercially insured patients.

[28]This approach also implicitly assumes that the variance in actual payments is proportional to the variance in list prices. This is likely a reasonable assumption since Medicare payments are based in part on DRG relative weights, meant to reflect relative resource use, that

Finally, as a second check on our primary results, we also report unadjusted price changes from the data submitted by the hospitals to the FTC and compare these changes to published healthcare inflation measures. These price changes do not control for case mix and other changes and are not measured relative to a control group, but they provide useful background and context for the primary results based on the MCO's data.

To summarize, we use three distinct, yet complementary data sources to investigate the price change at the hospitals in question following the merger. The advantage of the MCO data is that it contains actual transaction prices. The disadvantage is that a relatively large portion of the data is unusable because of aggregation and consistency issues. The Universal Dataset has none of these issues, but it does not contain actual prices, so prices must be approximated using Cost Report information. As seen in the following section, both of these sets of price change estimates are consistent with the raw price changes calculated from data taken directly from the hospitals.

4. Results:

Table 1 below lists the payer-by payer change in net revenue per case at ENH/HPH, and STMC/VMH between 1999 and 2002. At ENH and HPH, most MCOs experienced a raw price increase in excess of 50 percent and, for some MCOs, their net revenue per case at ENH and HPH doubled between 1999 and 2002. Overall, across all managed care plans[29], ENH/HPH's net revenue per case increased almost 50 percent between 1999 and 2002, greatly exceeding the increase in the national hospital inflation measures and the local medical care CPI. At STMC and VMH, some MCOs experienced large increases in net revenue per case, but others experienced decreases, so that overall, prices increased 4 percent between 1999 and 2002.

While suggestive, these raw price changes and their comparison to inflation measures, on their own, cannot form the basis of any conclusions about the actual effects of these mergers. For instance, it is possible that ENH/HPH's large price increases may have resulted from a "bad draw" of severe patients in 2002, or from increased costs associated with an expanding teaching program, or from a localized cost shock affecting teaching hospitals in the Chicago area (which may not be fully reflected in the national hospital inflation indices or even the Chicago area medical care index, which includes non-hospital medical prices).

As described in section 2, we estimated a difference-in-differences model to control for these and other factors which are unrelated to changes in market power. The model's post-merger price increase estimates, based on the MCO data, at ENH and HPH overall are presented

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are calculated using charges. Thus it is generally assumed that list prices reflect relative resource use even if they are not actual prices.

[29] Including those not listed in Table 1.

in Table 2.[30] Each of the four sections of the table contains the estimated price increases relative to the listed control group. The rows of the table list the MCOs (i.e., payers)[31] from which we received usable data and the columns list the six case mix adjustment methods we employed.

Even after controlling for factors unrelated to the merger that may affect raw price increase estimates, we find that four of the five MCOs experienced large and statistically significant relative price increases at ENH/HPH after the merger in excess of the mean price increase they experienced with other hospitals. The only MCO that did not experience a relative price increase at ENH/HPH was Payer C. The other MCOs received price increases at least ten percentage points greater than other Chicago area hospitals on average, with Payer D experiencing the largest relative price increase, in excess of 50 percentage points. These results are highly robust to different control groups and case mix adjustment methods.

In contrast, the relative post-merger price changes at STMC/VMH were mixed, as seen in Table 3. After controlling for changes in case mix and other factors, the estimated relative price changes indicate that three MCOs (Payers B, C, and E) experienced a relative price decrease at STMC/VMH after the merger. Only one MCO (Payer D) experienced a price increase at STMC/VMH significantly greater than at other hospitals. Payer A's post-merger price increase at STMC/VMH was higher than it experienced at non-merging Chicago-area hospitals on average, but not materially different from the average price change at community hospitals in the Chicago area.[32]

One interesting aspect of the price change estimates from the MCO data is their variance across MCOs, suggesting that some MCOs may be more vulnerable to hospital mergers than others. For instance, Payer D was the only MCO to experience a relative price increase at STMC/VMH and experienced the largest price increase (both raw and adjusted) after the ENH/HPH merger. On the other hand, Payer C was the only MCO that avoided a price increase at ENH/HPH and had a relatively modest 5-9 percentage price decrease at STMC/VMH.[33]

The results using the alternate IDPH/Cost Report data are consistent with the estimated price increases from the MCO data. As seen in Table 4, the post-merger price increase at

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[30] After the merger, ENH eliminated HPH's independent tax identification, so patients at HPH cannot be distinguished from patients at the legacy ENH hospitals, preventing the estimation of case mix adjusted price increases separately at ENH and HPH.

[31] While the payer names are masked, the payers listed in Tables 2 and 3 are the same as the first five payers in Table 1.

[32] The complete coefficient estimates from the model on which these price changes are based are listed in Appendix B.

[33] To protect the identity of the MCOs, we cannot discuss the MCO characteristics that may have led to this variance.

ENH/HPH was 10 to 17 percentage points greater than the average control price increase according to the IDPH/Cost Report data. This difference is statistically significant and robust to all of the control groups, case mix adjustment methods, and patient populations. Table 5 lists the relative post-merger price change estimates at STMC/VMH according to the IDPH/Cost Report data. These are negative and generally modest and not statistically significant for all control groups. In particular, the price decrease relative to community hospitals is between 2 and 5 percentage points and is not statistically significant for privately insured patients, corroborating the mixed, slightly negative price change estimates from the MCO data.

5. Conclusion:

Overall, the estimates from the MCO data show large and statistically significant post-merger price increases at ENH/HPH for all but one MCO that cannot be explained by changes in market conditions unrelated to the merger. These results are highly robust to various control groups, case mix adjustment methods, and alternative data sources. This strongly suggests that ENH/HPH increased its market power with the merger, giving it the ability to negotiate higher prices with most MCOs. This is consistent with the majority of non-econometric evidence presented in the ENH trial. Indeed, ENH executives, in documents written shortly after the merger, claimed that the price increases were due to the merger and the increased market power of the combined entity:

> Some $24 million of revenue enhancements have been achieved - mostly via managed care renegotiations [and] none of this could have been achieved by either Evanston or Highland Park alone. The 'fighting unit' of our three hospitals and 1600 physicians was instrumental in achieving these ends.[34]

However, the results for STMC/VMH, if anything, show the opposite effect with three MCOs receiving relative price decreases and only one MCO receiving a significant relative price increase post-merger. The overall results from the IDPH/Cost Report data suggest no change in price or a slight reduction in price post-merger. Overall, we find no empirical evidence that the merger between STMC and VMH led to higher prices.

[34] Commission's public decision, page 17. http://www.ftc.gov/os/adjpro/d9315/070806opinion.pdf (Accessed 11/3/08)

Table 1: Percentage Change in Inpatient Net Revenue per Case, FY99 to FY02

Payer	ENH/HPH	STMC/VMH
A	88.7%	38.2%
B	57.9%	
C	6.8%	-6.3%
D	130.9%	45.4%
E	81.4%	
F	77.3%	
G	80.1%	-9.2%
H	137.2%	
I	62.3%	0.1%
J	43.6%	
K	99.4%	
L	20.9%	
M	79.9%	13.8%
N	80.3%	
Overall Managed Care	**49.0%**	**4.0%**

Source: Hospital Data

Inflation Measures:

Hospital CPI	27.8%
Hospital PPI (private patients)	14.9%
Chicago Medical Care CPI	13.8%

Table 2: Estimated Post-Merger Percentage Price Increase at Evanston Northwestern Healthcare/Highland Park Hospital

Source: MCO data Significance level: *** = 1%; ** = 5%; * = 10%

Case Mix =	APRDRGSOI	APRDRGSOI w/LOS	DRG	DRG w/LOS	Weights	Weights w/LOS
Control = Chicago PMSA Hospitals						
Payer A	23.1***	25.6***	21.0***	25.0***	22.3***	26.0***
Payer B	17.2***	24.0***	18.1***	24.9***	21.3***	25.1***
Payer C	-0.8	-0.9	0.0	-1.0	0.4	-1.4
Payer D	55.7***	62.5***	56.2***	62.7***	58.6***	64.7***
Payer E	11.0***	12.1***	12.3***	14.0***	15.4***	16.0***
Control = Non-Merging Chicago PMSA Hospitals						
Payer A	35.1***	34.4***	32.7***	33.7***	33.1***	32.7***
Payer B	26.5***	29.2***	30.2***	33.0***	30.1***	30.6***
Payer C	3.8*	1.8	4.3*	1.6	5.5**	1.5
Payer D	64.9***	74.5***	65.5***	74.8***	68.9***	79.9***
Payer E	20.1***	20.5***	21.9***	23.1***	28.0***	28.4***
Control = Chicago PMSA Teaching Hospitals						
Payer A	24.9***	26.3***	22.7***	25.9***	24.0***	26.9***
Payer B	16.3***	23.9***	17.3***	24.8***	20.2***	24.3***
Payer C	-0.8	-1.4	0.1	-1.4	0.3	-1.8
Payer D	50.1***	56.3***	49.4***	56.1***	51.2***	57.4***
Payer E	12.2***	13.0***	12.9***	14.3***	13.9***	14.4***
Control = Chicago PMSA Major Teaching Hospitals						
Payer A	30.4***	29.6***	28.5***	29.7***	29.0***	29.9***
Payer B	17.8***	25.8***	18.6***	26.6***	20.2***	24.1***
Payer C	0.2	-2.1	1.1	-2.1	1.4	-2.5
Payer D	48.7***	55.7***	46.7***	54.0***	48.0***	56.2***
Payer E	15.2*	15.1*	16.1*	16.6*	14.5	14.3

Table 3: Estimated Post-Merger Percentage Price Increase at St. Therese Medical Center/Victory Memorial Hospital

Source: MCO data Significance level: *** = 1%; ** = 5%; * = 10%

Case Mix =	APRDRGSOI	APRDRGSOI w/LOS	DRG	DRG w/LOS	Weights	Weights w/LOS
Control = Chicago PMSA Hospitals						
Payer A	6.1**	4.0	6.1**	4.4*	6.6***	3.8
Payer B	-15.6***	-20.8***	-14.3***	-20.0***	-13.1***	-19.2***
Payer C	-6.7***	-6.2***	-6.9***	-6.1***	-6.4***	-7.7***
Payer D	18.9***	17.3***	18.8***	19.9***	21.6***	19.8***
Payer E	-21.7***	-22.5***	-21.1***	-21.9***	-18.0***	-18.2***
Control = Non-Merging Chicago PMSA Hospitals						
Payer A	10.7***	8.7***	10.9***	9.5***	10.3***	7.0***
Payer B	-11.6***	-16.9***	-8.8***	-14.9***	-7.6***	-13.7***
Payer C	-5.4***	-5.3***	-5.6***	-5.3***	-5.0***	-7.0***
Payer D	28.4***	25.0***	25.7***	26.9***	28.1***	26.8***
Payer E	-19.7***	-20.6***	-19.9***	-20.8***	-16.7***	-17.1***
Control = Chicago PMSA Community Hospitals						
Payer A	4.3	3.6	4.4	3.9	4.3	2.6
Payer B	-16.0***	-19.4***	-14.6***	-18.3***	-11.5**	-15.5***
Payer C	-8.1***	-7.1***	-8.2***	-7.0***	-7.6***	-8.8***
Payer D	26.9***	23.6***	23.2***	26.1***	28.9***	26.9***
Payer E	-20.8***	-21.2***	-22.7***	-22.8***	-17.8***	-17.7***

Table 4: Estimated Post-Merger Percentage Price Increase at Evanston Northwestern Healthcare/Highland Park Hospital

Source: IDPH and Cost Report data Significance level: *** = 1%; ** = 5%; * = 10%

Case Mix =	APRDRGSOI	APRDRGSOI w/LOS	DRG	DRG w/LOS	Weights	Weights w/LOS
Control = Chicago PMSA Hospitals						
All Patients	15.5***	16.6***	15.0***	16.5***	14.2***	16.8***
Private Pay Patients	15.2***	15.7***	15.3***	15.6***	13.7***	14.1***
Control = Non-Merging Chicago PMSA Hospitals						
All Patients	15.1***	15.9***	15.4***	16.0***	14.2***	16.3***
Private Pay Patients	16.9***	16.4***	17.3***	16.3***	14.7***	13.6***
Control = Chicago PMSA Teaching Hospitals						
All Patients	14.2***	15.0***	13.9***	15.0***	13.1***	15.5***
Private Pay Patients	13.3***	13.5***	13.7***	13.6***	11.9***	12.0***
Control = Chicago PMSA Major Teaching Hospitals						
All Patients	16.7***	16.0***	16.4***	15.9***	15.7***	16.2***
Private Pay Patients	13.3***	12.1***	14.0***	12.2***	12.0***	10.6***

Table 5: Estimated Post-Merger Percentage Price Increase at St. Therese Medical Center/Victory Memorial Hospital

Source: IDPH and Cost Report data Significance level: *** = 1%; ** = 5%; * = 10%

Case Mix =	APRDRGSOI	APRDRGSOI w/LOS	DRG	DRG w/LOS	Weights	Weights w/LOS
Control = Chicago PMSA Hospitals						
All Patients	-6.8***	-7.5***	-7.2***	-7.4***	-7.3***	-7.5***
Private Pay Patients	-5.5***	-6.3***	-5.6***	-6.3***	-5.5***	-6.3***
Control = Non-Merging Chicago PMSA Hospitals						
All Patients	-6.6***	-7.2***	-6.9***	-7.1***	-7.1***	-7.0***
Private Pay Patients	-3.7**	-4.7***	-3.9**	-4.7***	-3.9**	-5.0***
Control = Chicago PMSA Community Hospitals						
All Patients	-4.0*	-3.9*	-4.8**	-4.0**	-5.4*	-4.8**
Private Pay Patients	-2.0	-2.2	-2.6	-2.3	-2.6	-2.7

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Appendix A: Description of Inpatient MCO Data (All MCOs)

All ambiguous hospital names are excluded

Observation = row of unprocessed data

Admissions are groups of observations with a common member ID and strictly overlapping dates of service (i.e., the periods defined by the admission date and discharge date strictly overlap).

Internally inconsistent admissions are admissions with conflicting age, gender, hospital, product, primary diagnosis, and/or primary procedure information.

1	# of inpatient observations	11,099,118		
2	Observations not associated with providers in the Chicago PMSA	2,272,451		
3	Observations only identified at the system level	405,097		
4	Observations with ambiguous hospital names	455,678		
5	Observations from Chicago PMSA hospitals (=1-2-3-4)	7,965,892	72%	Percentage of 1
6	Observations w/o member ids, admission dates, or discharge dates	407		
7	Observations from internally inconsistent admissions	874,861	11%	Percentage of 5
8	Remaining observations (=5-6-7)	7,090,624		
9	Admissions associated with these observations	1,620,746		
10	Admissions w/ COB	29,387		
11	Admissions w/ admit dates before 1/1/1998 or after 12/31/2002	284,327		
12	Admissions where product is ambiguous	8,047		
13	Denied admissions	195,717	12%	Percentage of 9
14	Admissions with LOS <= 0	146,686	9%	Percentage of 9
15	Net Admissions (NA)*	1,022,264	63%	Percentage of 9
	DRG = 470 (Ungroupable)	168,921	17%	Percentage of 15
	DRG = 469 (Principal diagnosis invalid as discharge diagnosis)	176	0%	Percentage of 15
	Principal Diagnosis Problems:			
	Invalid diagnosis code	6,510	1%	Percentage of 15
	Sex conflict	7,092	0%	Percentage of 15
	Age conflict	2,314	0%	Percentage of 15
	E-code as principal diagnosis	23	0%	Percentage of 15
	Non-specific principal diagnosis	25,405	2%	Percentage of 15
	Manifestation as principal diagnosis	50	0%	Percentage of 15
	Questionable admission	789	0%	Percentage of 15
	Unacceptable principal diagnosis	3,569	0%	Percentage of 15
	Secondary Diagnosis Problems:			
	Invalid diagnosis code	7,529	1%	Percentage of 15
	Sex conflict	7,221	1%	Percentage of 15
	Age conflict	8,135	1%	Percentage of 15
	No secondary diagnosis when one is required	522	0%	Percentage of 15
	Procedure Problems:			
	Invalid procedure code	58,529	6%	Percentage of 15
	Sex conflict	2,893	0%	Percentage of 15
16	Remaining Admissions*	764,408	75%	Percentage of 15
	APRDRG = 956 (Ungroupable) or 955 (Principal diagnosis invalid as discharge diagnosis)	13,410	1%	Percentage of 15
	No HCRIS data available for this admission	3,723	0%	Percentage of 15
	Remaining Admissions	**747,275**	**73%**	Percentage of 15

* Does not reflect the sum or difference of the preceding lines since an admission can have more than one problem

Appendix B: Coefficient Estimates and Standard Errors
DV = (log) Allowed
Hospital, plan, year, and case mix dummy coefficients (where applicable) are not shown
Standard errors in parentheses
* p<0.1, ** p<0.05, *** p<0.01

Evanston Northwestern Healthcare/Highland Park

Payer A
Chicago PMSA hospitals

	APRDRGSOI	APRDRGSOI/los	DRG	DRG/los	weights	weights/los
post	-0.0368	-0.0215	-0.0351	-0.0200	-0.0489	-0.0288
	(0.0297)	(0.0310)	(0.0302)	(0.0320)	(0.0314)	(0.0330)
post*ENHHP	0.2075***	0.2275***	0.1906***	0.2232***	0.2010***	0.2309***
	(0.0212)	(0.0209)	(0.0208)	(0.0213)	(0.0223)	(0.0227)
public	-0.0424**	-0.0318*	-0.0257	-0.0205	-0.0364	-0.0261
	(0.0179)	(0.0184)	(0.0172)	(0.0190)	(0.0247)	(0.0213)
teach	0.0882	0.1658**	0.0839	0.1708**	0.0832	0.1819**
	(0.1051)	(0.0786)	(0.0997)	(0.0737)	(0.1002)	(0.0733)
los		0.6933***		0.7084***		0.6452***
		(0.0175)		(0.0174)		(0.0179)
case mix					0.6148***	0.3126***
					(0.0177)	(0.0173)

Non-merging Chicago PMSA hospitals

	APRDRGSOI	APRDRGSOI/los	DRG	DRG/los	weights	weights/los
post	-0.0595	-0.0327	-0.0547	-0.0284	-0.0723	-0.0368
	(0.0500)	(0.0523)	(0.0486)	(0.0524)	(0.0509)	(0.0541)
post*ENHHP	0.3007***	0.2956***	0.2827***	0.2903***	0.2856***	0.2827***
	(0.0295)	(0.0286)	(0.0284)	(0.0296)	(0.0329)	(0.0369)
public	-0.0529***	-0.0330*	-0.0295	-0.0161	-0.0447**	-0.0290*
	(0.0162)	(0.0173)	(0.0177)	(0.0189)	(0.0169)	(0.0156)
teach	-1.9142***	-1.2001*	-1.8729**	-1.1322	-1.7205**	-0.8135
	(0.6551)	(0.6659)	(0.6967)	(0.6990)	(0.7600)	(0.8206)
los		0.6857***		0.7042***		0.6542***
		(0.0222)		(0.0226)		(0.0243)
case mix					0.6048***	0.2999***
					(0.0227)	(0.0197)

Chicago PMSA major teaching hospitals

	APRDRGSOI	APRDRGSOI/los	DRG	DRG/los	weights	weights/los
post	-0.0560	-0.0272	-0.0582	-0.0265	-0.0783	-0.0390
	(0.0510)	(0.0544)	(0.0522)	(0.0570)	(0.0535)	(0.0588)
post*ENHHP	0.2655***	0.2590***	0.2504***	0.2599***	0.2544***	0.2618***
	(0.0484)	(0.0435)	(0.0465)	(0.0425)	(0.0482)	(0.0450)
public	-0.0483***	-0.0304**	-0.0345***	-0.0183	-0.0489***	-0.0334***
	(0.0138)	(0.0142)	(0.0114)	(0.0127)	(0.0112)	(0.0100)
teach	-0.3317	-0.0665	-0.3375	-0.0874	-0.3563	-0.0015
	(0.8017)	(0.6286)	(0.7499)	(0.5806)	(0.7439)	(0.6013)
los		0.7310***		0.7493***		0.6778***
		(0.0307)		(0.0314)		(0.0322)
case mix					0.6131***	0.3177***

					(0.0262)	(0.0253)
Chicago PMSA teaching hospitals						
	APRDRGSOI	APRDRGSOI/los	DRG	DRG/los	weights	weights/los
post	-0.0247	-0.0037	-0.0243	-0.0041	-0.0407	-0.0138
	(0.0346)	(0.0364)	(0.0359)	(0.0385)	(0.0375)	(0.0404)
post*ENHHP	0.2222***	0.2336***	0.2046***	0.2305***	0.2148***	0.2386***
	(0.0292)	(0.0288)	(0.0279)	(0.0286)	(0.0287)	(0.0291)
public	-0.0503***	-0.0334*	-0.0315*	-0.0200	-0.0507***	-0.0370**
	(0.0156)	(0.0184)	(0.0159)	(0.0192)	(0.0159)	(0.0159)
teach	0.0770	0.1588**	0.0826	0.1718**	0.0822	0.1856**
	(0.0988)	(0.0765)	(0.0909)	(0.0696)	(0.0927)	(0.0723)
los		0.7165***		0.7302***		0.6709***
		(0.0217)		(0.0225)		(0.0233)
case mix					0.6169***	0.3097***
					(0.0237)	(0.0229)

Payer B

Chicago PMSA hospitals

	APRDRGSOI	APRDRGSOI/los	DRG	DRG/los	weights	weights/los
post	-0.0385	-0.0333	-0.2058***	-0.2065***	-0.0781	-0.0409
	(0.0724)	(0.0803)	(0.0379)	(0.0350)	(0.0731)	(0.0847)
post*ENHHP	0.1588***	0.2153***	0.1662***	0.2224***	0.1931***	0.2240***
	(0.0207)	(0.0198)	(0.0215)	(0.0206)	(0.0216)	(0.0218)
public	-0.0127	-0.0161	0.0013	-0.0054	-0.0070	-0.0080
	(0.0733)	(0.0613)	(0.0706)	(0.0634)	(0.0540)	(0.0515)
teach	-0.0358	0.0025	-0.0538	-0.0077	-0.0728	-0.0132
	(0.1122)	(0.1159)	(0.1125)	(0.1164)	(0.1163)	(0.1277)
los		0.6689***		0.6886***		0.6503***
		(0.0577)		(0.0583)		(0.0652)
case mix					0.6485***	0.3529***
					(0.0603)	(0.0407)

Non-merging Chicago PMSA hospitals

	APRDRGSOI	APRDRGSOI/los	DRG	DRG/los	weights	weights/los
post	-0.1629	-0.1806	-0.1805	-0.1921	-0.3749***	-0.3813***
	(0.1163)	(0.1148)	(0.1204)	(0.1158)	(0.1326)	(0.1248)
post*ENHHP	0.2351***	0.2565***	0.2640***	0.2848***	0.2631***	0.2673***
	(0.0551)	(0.0501)	(0.0558)	(0.0499)	(0.0676)	(0.0616)
public	-0.0887*	-0.0687	-0.0554	-0.0503	-0.0330	-0.0226
	(0.0487)	(0.0449)	(0.0509)	(0.0446)	(0.0566)	(0.0554)
teach	-0.8167	-0.5840	-1.0525	-0.7553	-0.6700	-0.2977
	(1.0176)	(0.9188)	(1.0338)	(0.9206)	(1.2635)	(1.1635)
los		0.5536***		0.5764***		0.5179***
		(0.0449)		(0.0454)		(0.0508)

case mix					0.5425***	0.3027***
					(0.0300)	(0.0371)

Chicago PMSA major teaching hospitals

	APRDRGSOI	APRDRGSOI/los	DRG	DRG/los	weights	weights/los
post	0.1329	0.1416	0.1376	0.1411	-0.1885**	-0.1502***
	(0.0765)	(0.0825)	(0.0833)	(0.0907)	(0.0773)	(0.0477)
post*ENHHP	0.1642***	0.2297***	0.1703***	0.2356***	0.1839***	0.2157***
	(0.0354)	(0.0348)	(0.0371)	(0.0355)	(0.0416)	(0.0334)
public	-0.1342**	-0.0999*	-0.1061**	-0.0842	-0.0785	-0.0572
	(0.0490)	(0.0513)	(0.0488)	(0.0563)	(0.0473)	(0.0488)
teach	-0.7379	-0.8422	-0.7669	-0.8634	-0.8025	-0.8460
	(0.7570)	(0.7338)	(0.7416)	(0.7319)	(0.7816)	(0.7473)
los		0.8030***		0.8249***		0.7987***
		(0.0747)		(0.0736)		(0.0722)
case mix					0.7480***	0.4099***
					(0.0649)	(0.0414)

Chicago PMSA teaching hospitals

	APRDRGSOI	APRDRGSOI/los	DRG	DRG/los	weights	weights/los
post	0.0085	0.0132	-0.1964***	-0.1925***	-0.0371	0.0064
	(0.0783)	(0.0857)	(0.0425)	(0.0335)	(0.0775)	(0.0900)
post*ENHHP	0.1513***	0.2139***	0.1599***	0.2213***	0.1840***	0.2174***
	(0.0208)	(0.0217)	(0.0221)	(0.0231)	(0.0226)	(0.0242)
public	-0.0676	-0.0540	-0.0547	-0.0465	-0.0604	-0.0531
	(0.0639)	(0.0542)	(0.0615)	(0.0573)	(0.0447)	(0.0423)
teach	-0.0269	0.0148	-0.0564	-0.0031	-0.0677	0.0006
	(0.1275)	(0.1352)	(0.1293)	(0.1390)	(0.1324)	(0.1481)
los		0.7473***		0.7658***		0.7405***
		(0.0610)		(0.0611)		(0.0636)

case mix					0.6910***	0.3607***
					(0.0650)	(0.0470)

Payer C

Chicago PMSA hospitals

	APRDRGSOI	APRDRGSOI/los	DRG	DRG/los	weights	weights/los
post	-0.0055	0.0024	-0.0045	0.0027	-0.0034	0.0040
	(0.0076)	(0.0065)	(0.0081)	(0.0065)	(0.0087)	(0.0071)
post*ENHHP	-0.0078	-0.0094	-0.0003	-0.0097	0.0035	-0.0140
	(0.0124)	(0.0106)	(0.0122)	(0.0104)	(0.0124)	(0.0107)
public	0.0009	0.0012	0.0068	0.0030	0.0114	0.0021
	(0.0209)	(0.0182)	(0.0205)	(0.0177)	(0.0206)	(0.0188)
teach	-0.0504	-0.0277	-0.0441	-0.0265	-0.0407	-0.0273
	(0.0721)	(0.0571)	(0.0715)	(0.0569)	(0.0755)	(0.0600)
los		0.9263***		0.9374***		0.8849***
		(0.0108)		(0.0106)		(0.0123)
case mix					0.5635***	0.1504***
					(0.0215)	(0.0179)

Non-merging Chicago PMSA hospitals

	APRDRGSOI	APRDRGSOI/los	DRG	DRG/los	weights	weights/los
post	0.0046	0.0103	0.0052	0.0114	0.0048	0.0127
	(0.0117)	(0.0087)	(0.0126)	(0.0087)	(0.0133)	(0.0099)
post*ENHHP	0.0369*	0.0178	0.0421*	0.0157	0.0539**	0.0149
	(0.0214)	(0.0122)	(0.0225)	(0.0120)	(0.0244)	(0.0115)
public	0.0170	0.0160	0.0243	0.0189	0.0301	0.0160
	(0.0306)	(0.0254)	(0.0313)	(0.0244)	(0.0307)	(0.0218)
teach	-1.0554***	-0.6576***	-1.0761***	-0.6483***	-1.2077**	-0.7450***
	(0.3635)	(0.1685)	(0.3918)	(0.1746)	(0.4515)	(0.2423)

los		0.9041***		0.9161***		0.8712***
		(0.0185)		(0.0179)		(0.0203)
case mix					0.5782***	0.1740***
					(0.0316)	(0.0299)

Chicago PMSA major teaching hospitals

	APRDRGSOI	APRDRGSOI/los	DRG	DRG/los	weights	weights/los
post	-0.0130	-0.0036	-0.0149	-0.0035	-0.0130	0.0001
	(0.0160)	(0.0138)	(0.0164)	(0.0137)	(0.0176)	(0.0152)
post*ENHHP	0.0021	-0.0208	0.0111	-0.0209	0.0142	-0.0253
	(0.0236)	(0.0166)	(0.0236)	(0.0164)	(0.0265)	(0.0168)
public	-0.0378	-0.0363	-0.0327	-0.0342	-0.0259	-0.0342
	(0.0225)	(0.0223)	(0.0218)	(0.0231)	(0.0237)	(0.0259)
teach	-0.4524*	-0.2807**	-0.4570*	-0.2842**	-0.4765	-0.3358*
	(0.2454)	(0.1143)	(0.2505)	(0.1153)	(0.2961)	(0.1618)
los		0.9585***		0.9699***		0.9208***
		(0.0125)		(0.0121)		(0.0181)
case mix					0.5365***	0.1331***
					(0.0399)	(0.0315)

Chicago PMSA teaching hospitals

	APRDRGSOI	APRDRGSOI/los	DRG	DRG/los	weights	weights/los
post	-0.0015	0.0050	-0.0011	0.0054	0.0017	0.0063
	(0.0091)	(0.0076)	(0.0095)	(0.0076)	(0.0098)	(0.0082)
post*ENHHP	-0.0079	-0.0137	0.0010	-0.0140	0.0026	-0.0185
	(0.0160)	(0.0137)	(0.0157)	(0.0135)	(0.0167)	(0.0139)
public	-0.0222	-0.0223	-0.0162	-0.0204	-0.0125	-0.0231
	(0.0165)	(0.0156)	(0.0164)	(0.0159)	(0.0167)	(0.0181)
teach	-0.0523	-0.0279	-0.0450	-0.0265	-0.0419	-0.0277
	(0.0692)	(0.0567)	(0.0691)	(0.0566)	(0.0741)	(0.0595)

los		0.9422***		0.9540***		0.9013***
		(0.0099)		(0.0096)		(0.0131)
case mix					0.5763***	0.1550***
					(0.0278)	(0.0227)

Payer D

Chicago PMSA hospitals

	APRDRGSOI	APRDRGSOI/los	DRG	DRG/los	weights	weights/los
post	0.0579	0.0430	0.0672	0.0803*	0.0903*	0.0963**
	(0.0403)	(0.0379)	(0.0519)	(0.0459)	(0.0494)	(0.0457)
post*ENHHP	0.4430***	0.4857***	0.4460***	0.4869***	0.4613***	0.4990***
	(0.0442)	(0.0407)	(0.0453)	(0.0418)	(0.0442)	(0.0411)
public	0.0107	-0.0277	0.0238	-0.0209	-0.0011	-0.0250
	(0.0494)	(0.0467)	(0.0561)	(0.0499)	(0.0540)	(0.0474)
teach	0.0982	0.0629	0.1335	0.0857	0.1213	0.0762
	(0.1544)	(0.1140)	(0.1602)	(0.1276)	(0.1600)	(0.1210)
los		0.7955***		0.7977***		0.7098***
		(0.0198)		(0.0207)		(0.0233)
case mix					0.6812***	0.3659***
					(0.0265)	(0.0285)

Non-merging Chicago PMSA hospitals

	APRDRGSOI	APRDRGSOI/los	DRG	DRG/los	weights	weights/los
post	0.0305	0.0225	0.0257	0.0040	0.0247	0.0350
	(0.0266)	(0.0256)	(0.0269)	(0.0255)	(0.0329)	(0.0272)
post*ENHHP	0.5003***	0.5567***	0.5040***	0.5587***	0.5243***	0.5870***
	(0.0577)	(0.0517)	(0.0549)	(0.0485)	(0.0562)	(0.0473)
public	-0.0168	-0.0296	0.0294	-0.0019	-0.0167	-0.0102
	(0.0742)	(0.0643)	(0.0722)	(0.0577)	(0.0616)	(0.0516)

teach	0.2986	-0.3932	0.2524	-0.4464	0.0589	-0.7831
	(1.0485)	(0.8860)	(0.8884)	(0.7507)	(0.8884)	(0.7702)
los		0.7944***		0.7934***		0.6983***
		(0.0339)		(0.0373)		(0.0419)
case mix					0.6870***	0.3850***
					(0.0439)	(0.0437)

Chicago PMSA major teaching hospitals

	APRDRGSOI	APRDRGSOI/los	DRG	DRG/los	weights	weights/los
post	0.0844	0.0892	0.0867	0.0814	0.0904	0.0479
	(0.1685)	(0.1454)	(0.1696)	(0.1475)	(0.1258)	(0.1217)
post*ENHHP	0.3967***	0.4428***	0.3835***	0.4317***	0.3923***	0.4457***
	(0.1199)	(0.1114)	(0.1240)	(0.1151)	(0.1181)	(0.1113)
public	-0.0143	-0.0044	0.0298	0.0152	-0.0153	-0.0065
	(0.0835)	(0.0689)	(0.0915)	(0.0650)	(0.0818)	(0.0669)
teach	0.7397**	0.4141*	0.8232***	0.5798**	0.8283***	0.5594**
	(0.2697)	(0.2271)	(0.2469)	(0.2185)	(0.2326)	(0.2362)
los		0.8557***		0.8685***		0.7653***
		(0.0317)		(0.0317)		(0.0343)
case mix					0.7208***	0.4030***
					(0.0630)	(0.0526)

Chicago PMSA teaching hospitals

	APRDRGSOI	APRDRGSOI/los	DRG	DRG/los	weights	weights/los
post	0.1122	0.1228	0.1104	0.1185	0.1213*	0.0878
	(0.0934)	(0.0816)	(0.0941)	(0.0836)	(0.0717)	(0.0685)
post*ENHHP	0.4059***	0.4468***	0.4012***	0.4451***	0.4136***	0.4539***
	(0.0772)	(0.0698)	(0.0769)	(0.0708)	(0.0726)	(0.0682)
public	0.0141	-0.0130	0.0379	0.0019	-0.0011	-0.0079
	(0.0584)	(0.0537)	(0.0677)	(0.0570)	(0.0609)	(0.0539)

teach	0.1273	0.0768	0.1505	0.0949	0.1487	0.1004
	(0.1443)	(0.1047)	(0.1566)	(0.1204)	(0.1559)	(0.1152)
los		0.8352***		0.8384***		0.7523***
		(0.0209)		(0.0218)		(0.0222)
case mix					0.7098***	0.3766***
					(0.0404)	(0.0379)

Payer E

Chicago PMSA hospitals

	APRDRGSOI	APRDRGSOI/los	DRG	DRG/los	weights	weights/los
post	0.0328*	0.0443**	0.0310	0.0442**	0.0161	0.0198
	(0.0184)	(0.0184)	(0.0197)	(0.0195)	(0.0213)	(0.0216)
post*ENHHP	0.1043***	0.1139***	0.1163***	0.1312***	0.1428***	0.1482***
	(0.0286)	(0.0283)	(0.0308)	(0.0307)	(0.0309)	(0.0316)
public	-0.0697***	-0.0820***	-0.0769***	-0.0918***	-0.0835***	-0.0879***
	(0.0212)	(0.0227)	(0.0208)	(0.0208)	(0.0203)	(0.0203)
teach	-0.0510	-0.0159	-0.0373	-0.0015	-0.0194	-0.0062
	(0.0653)	(0.0658)	(0.0668)	(0.0676)	(0.0684)	(0.0677)
los		0.2408***		0.2416***		0.0792**
		(0.0259)		(0.0257)		(0.0309)
case mix					0.4928***	0.4520***
					(0.0407)	(0.0377)

Non-merging Chicago PMSA hospitals

	APRDRGSOI	APRDRGSOI/los	DRG	DRG/los	weights	weights/los
post	0.0146	0.0281	0.0175	0.0333	-0.0042	0.0010
	(0.0291)	(0.0295)	(0.0303)	(0.0301)	(0.0376)	(0.0388)
post*ENHHP	0.1827***	0.1867***	0.1983***	0.2075***	0.2471***	0.2498***
	(0.0495)	(0.0482)	(0.0522)	(0.0514)	(0.0507)	(0.0515)

public	-0.0632***	-0.0699***	-0.0733***	-0.0832***	-0.0710***	-0.0736***
	(0.0192)	(0.0198)	(0.0165)	(0.0169)	(0.0156)	(0.0146)
teach	-1.7452*	-1.4693	-1.6606	-1.3855	-2.2105**	-2.1269**
	(0.9486)	(0.9185)	(1.0015)	(0.9685)	(1.0312)	(1.0111)
los		0.2543***		0.2553***		0.0812*
		(0.0393)		(0.0383)		(0.0456)
case mix					0.5033***	0.4644***
					(0.0468)	(0.0419)

Chicago PMSA major teaching hospitals

	APRDRGSOI	APRDRGSOI/los	DRG	DRG/los	weights	weights/los
post	-0.0301	-0.0091	-0.0208	0.0053	-0.0261	-0.0165
	(0.0381)	(0.0342)	(0.0384)	(0.0374)	(0.0519)	(0.0539)
post*ENHHP	0.1412*	0.1406*	0.1492*	0.1539*	0.1352	0.1338
	(0.0789)	(0.0787)	(0.0837)	(0.0850)	(0.1047)	(0.1064)
public	-0.0551***	-0.0646***	-0.0735***	-0.0866***	-0.0776***	-0.0834***
	(0.0155)	(0.0175)	(0.0155)	(0.0177)	(0.0260)	(0.0258)
teach	0.8795	1.0038	0.9626	1.0937	0.4423	0.4677
	(0.9801)	(0.9449)	(0.9565)	(0.9445)	(1.1073)	(1.1033)
los		0.2808***		0.2901***		0.1117
		(0.0677)		(0.0677)		(0.0727)
case mix					0.6033***	0.5636***
					(0.0701)	(0.0599)

Chicago PMSA teaching hospitals

	APRDRGSOI	APRDRGSOI/los	DRG	DRG/los	weights	weights/los
post	0.0331	0.0482**	0.0346	0.0515**	0.0194	0.0251
	(0.0218)	(0.0219)	(0.0223)	(0.0224)	(0.0267)	(0.0281)
post*ENHHP	0.1150***	0.1224***	0.1217***	0.1340***	0.1303***	0.1345***
	(0.0390)	(0.0392)	(0.0430)	(0.0435)	(0.0484)	(0.0497)

public	-0.0684***	-0.0755***	-0.0857***	-0.0965***	-0.0861***	-0.0900***
	(0.0176)	(0.0197)	(0.0173)	(0.0194)	(0.0226)	(0.0230)
teach	-0.0492	-0.0122	-0.0356	0.0038	-0.0125	0.0060
	(0.0663)	(0.0662)	(0.0658)	(0.0662)	(0.0720)	(0.0710)
los		0.2537***		0.2574***		0.1049**
		(0.0381)		(0.0378)		(0.0467)
case mix					0.5217***	0.4726***
					(0.0596)	(0.0547)

St. Therese Medical Center/Victory Memorial Hospital

Payer A
Chicago PMSA hospitals

	APRDRGSOI	APRDRGSOI/los	DRG	DRG/los	weights	weights/los
post	-0.0284	-0.0093	-0.0291	-0.0095	-0.0381	-0.0139
	(0.0302)	(0.0326)	(0.0306)	(0.0334)	(0.0303)	(0.0330)
post*STMCVMH	0.0589**	0.0389	0.0589**	0.0430*	0.0637***	0.0369
	(0.0240)	(0.0258)	(0.0231)	(0.0257)	(0.0232)	(0.0251)
public	-0.0361	-0.0244	-0.0204	-0.0134	-0.0272	-0.0126
	(0.0233)	(0.0218)	(0.0217)	(0.0222)	(0.0322)	(0.0300)
teach	0.1374	0.2195**	0.1292	0.2236***	0.1309	0.2364***
	(0.0968)	(0.0849)	(0.0930)	(0.0817)	(0.0923)	(0.0837)
los		0.6930***		0.7079***		0.6449***
		(0.0178)		(0.0178)		(0.0182)
case mix					0.6155***	0.3134***
					(0.0176)	(0.0173)

Non-merging Chicago PMSA hospitals

	APRDRGSOI	APRDRGSOI/los	DRG	DRG/los	weights	weights/los
post	-0.0230	0.0019	-0.0220	0.0025	-0.0357	-0.0026
	(0.0481)	(0.0518)	(0.0476)	(0.0525)	(0.0482)	(0.0527)
post*STMCVMH	0.1014***	0.0830***	0.1039***	0.0906***	0.0978***	0.0679***
	(0.0212)	(0.0225)	(0.0223)	(0.0228)	(0.0230)	(0.0236)
public	-0.0539***	-0.0349*	-0.0302	-0.0187	-0.0422**	-0.0242
	(0.0172)	(0.0187)	(0.0191)	(0.0210)	(0.0170)	(0.0156)
teach	-2.2749***	-1.4173*	-2.2928***	-1.4054*	-2.0590**	-0.9886
	(0.6471)	(0.7418)	(0.7212)	(0.7982)	(0.8323)	(0.9733)
los		0.6912***		0.7100***		0.6584***
		(0.0206)		(0.0205)		(0.0232)
case mix					0.6140***	0.2999***
					(0.0233)	(0.0210)

Chicago PMSA community hospitals

	APRDRGSOI	APRDRGSOI/los	DRG	DRG/los	weights	weights/los
post	-0.0514	-0.0404	-0.0616	-0.0521	-0.0728	-0.0606
	(0.0689)	(0.0737)	(0.0687)	(0.0725)	(0.0669)	(0.0706)
post*STMCVMH	0.0425	0.0355	0.0426	0.0378	0.0421	0.0257
	(0.0264)	(0.0307)	(0.0311)	(0.0338)	(0.0304)	(0.0339)
public	-0.0122	-0.0240	-0.0059	-0.0238	0.1107	0.1253
	(0.1016)	(0.1040)	(0.1110)	(0.1152)	(0.0969)	(0.0891)
teach	0.4666	0.0623	-0.4713	-0.8245	-0.6230	-1.2225
	(0.7653)	(0.7718)	(0.5815)	(0.6182)	(0.7380)	(0.7745)
los		0.6531***		0.6690***		0.5943***
		(0.0197)		(0.0191)		(0.0174)
case mix					0.6111***	0.3185***

					(0.0217)	(0.0224)

Payer B
Chicago PMSA hospitals

	APRDRGSOI	APRDRGSOI/los	DRG	DRG/los	weights	weights/los
post	-0.0002	0.0184	-0.0018	0.0143	-0.0135	0.0084
	(0.0161)	(0.0136)	(0.0171)	(0.0138)	(0.0166)	(0.0139)
post*STMCVMH	-0.1698***	-0.2337***	-0.1540***	-0.2231***	-0.1407***	-0.2129***
	(0.0206)	(0.0225)	(0.0216)	(0.0224)	(0.0212)	(0.0236)
public	-0.0083	-0.0118	0.0051	-0.0016	-0.0033	-0.0060
	(0.0745)	(0.0643)	(0.0720)	(0.0666)	(0.0561)	(0.0552)
teach	-0.0178	0.0261	-0.0350	0.0165	-0.0504	0.0114
	(0.1071)	(0.1092)	(0.1068)	(0.1091)	(0.1106)	(0.1198)
los		0.6686***		0.6883***		0.6501***
		(0.0578)		(0.0584)		(0.0652)
case mix					0.6486***	0.3533***
					(0.0603)	(0.0407)

Non-merging Chicago PMSA hospitals

	APRDRGSOI	APRDRGSOI/los	DRG	DRG/los	weights	weights/los
post	-0.0043	0.0169	-0.0096	0.0110	-0.0199	0.0094
	(0.0262)	(0.0258)	(0.0251)	(0.0247)	(0.0267)	(0.0255)
post*STMCVMH	-0.1233***	-0.1852***	-0.0920***	-0.1608***	-0.0793***	-0.1470***
	(0.0217)	(0.0186)	(0.0203)	(0.0156)	(0.0187)	(0.0187)
public	-0.1090**	-0.0989**	-0.0832	-0.0855*	-0.0713	-0.0699
	(0.0470)	(0.0463)	(0.0501)	(0.0493)	(0.0631)	(0.0688)
teach	-0.9633	-0.6910	-1.2190	-0.8844	-0.8951	-0.4816
	(1.0320)	(0.9548)	(1.0535)	(0.9536)	(1.2586)	(1.1790)
los		0.5708***		0.5920***		0.5358***
		(0.0417)		(0.0430)		(0.0483)
case mix					0.5378***	0.2858***
					(0.0319)	(0.0368)

Chicago PMSA community hospitals

	APRDRGSOI	APRDRGSOI/los	DRG	DRG/los	weights	weights/los
post	0.0189	0.0363	0.0075	0.0230	0.0066	0.0218
	(0.0321)	(0.0295)	(0.0301)	(0.0288)	(0.0320)	(0.0314)
post*STMCVMH	-0.1747***	-0.2156***	-0.1580***	-0.2025***	-0.1219***	-0.1684***
	(0.0312)	(0.0296)	(0.0315)	(0.0300)	(0.0336)	(0.0329)
public	0.1263*	0.0810	0.1219	0.0758	0.0741	0.0485
	(0.0637)	(0.0711)	(0.0730)	(0.0832)	(0.0824)	(0.0938)
teach	3.6310**	2.0813	3.5706*	1.8684	5.6472***	4.1765**
	(1.5351)	(1.5482)	(1.8924)	(1.8493)	(2.0124)	(2.0115)
los		0.5017***		0.5194***		0.4504***
		(0.0411)		(0.0422)		(0.0493)
case mix					0.5851***	0.3712***

					(0.0651)	(0.0667)

Payer C
Chicago PMSA hospitals

	APRDRGSOI	APRDRGSOI/los	DRG	DRG/los	weights	weights/los
post	-0.0100	-0.0006	-0.0097	-0.0005	-0.0051	0.0035
	(0.0082)	(0.0067)	(0.0089)	(0.0067)	(0.0092)	(0.0071)
post*STMCVMH	-0.0693***	-0.0641***	-0.0711***	-0.0631***	-0.0657***	-0.0803***
	(0.0117)	(0.0099)	(0.0117)	(0.0097)	(0.0119)	(0.0102)
public	0.0045	0.0038	0.0109	0.0056	0.0157	0.0073
	(0.0222)	(0.0190)	(0.0220)	(0.0185)	(0.0220)	(0.0204)
teach	-0.0515	-0.0289	-0.0446	-0.0277	-0.0407	-0.0291
	(0.0726)	(0.0578)	(0.0717)	(0.0576)	(0.0755)	(0.0613)
los		0.9263***		0.9374***		0.8848***
		(0.0108)		(0.0106)		(0.0122)
case mix					0.5634***	0.1502***
					(0.0215)	(0.0179)

Non-merging Chicago PMSA hospitals

	APRDRGSOI	APRDRGSOI/los	DRG	DRG/los	weights	weights/los
post	0.0002	0.0072	0.0010	0.0080	0.0056	0.0136
	(0.0151)	(0.0110)	(0.0163)	(0.0109)	(0.0160)	(0.0121)
post*STMCVMH	-0.0552***	-0.0542***	-0.0580***	-0.0549***	-0.0516***	-0.0729***
	(0.0193)	(0.0160)	(0.0190)	(0.0156)	(0.0181)	(0.0160)
public	0.0267	0.0221	0.0344	0.0250	0.0417	0.0254
	(0.0366)	(0.0296)	(0.0379)	(0.0286)	(0.0379)	(0.0288)
teach	-1.1213***	-0.6854***	-1.1571***	-0.6732***	-1.3033***	-0.7716***
	(0.3917)	(0.1806)	(0.4215)	(0.1863)	(0.4778)	(0.2623)
los		0.8968***		0.9096***		0.8606***
		(0.0184)		(0.0182)		(0.0195)
case mix					0.5946***	0.1877***
					(0.0297)	(0.0275)

Chicago PMSA community hospitals

	APRDRGSOI	APRDRGSOI/los	DRG	DRG/los	weights	weights/los
post	-0.0195	-0.0021	-0.0212	-0.0021	-0.0172	0.0046
	(0.0207)	(0.0172)	(0.0223)	(0.0173)	(0.0224)	(0.0179)
post*STMCVMH	-0.0844***	-0.0731***	-0.0858***	-0.0722***	-0.0791***	-0.0921***
	(0.0234)	(0.0204)	(0.0238)	(0.0199)	(0.0213)	(0.0193)
public	0.1393**	0.1381**	0.1407**	0.1369**	0.1527**	0.1705**
	(0.0651)	(0.0586)	(0.0683)	(0.0583)	(0.0677)	(0.0639)
teach	1.6241***	1.4408***	2.0844***	1.4342***	2.1107***	1.2588***
	(0.3462)	(0.3339)	(0.3720)	(0.3487)	(0.2680)	(0.3056)
los		0.8910***		0.9012***		0.8449***
		(0.0246)		(0.0244)		(0.0255)
case mix					0.5488***	0.1507***

					(0.0331)	(0.0292)

Payer D

Chicago PMSA hospitals

	APRDRGSOI	APRDRGSOI/los	DRG	DRG/los	weights	weights/los
post	0.0576*	0.0719***	0.0706*	0.0727**	0.0545	0.0765**
	(0.0324)	(0.0271)	(0.0373)	(0.0284)	(0.0362)	(0.0310)
post*STMCVMH	0.1732***	0.1599***	0.1724***	0.1813***	0.1956***	0.1806***
	(0.0422)	(0.0400)	(0.0367)	(0.0359)	(0.0366)	(0.0358)
public	0.0332	-0.0027	0.0463	0.0031	0.0212	0.0014
	(0.0494)	(0.0497)	(0.0546)	(0.0527)	(0.0526)	(0.0500)
teach	0.1671	0.1389	0.2027	0.1611	0.1916	0.1528
	(0.1959)	(0.1625)	(0.1998)	(0.1736)	(0.2015)	(0.1689)
los		0.7951***		0.7973***		0.7094***
		(0.0198)		(0.0207)		(0.0233)
case mix					0.6810***	0.3658***
					(0.0267)	(0.0287)

Non-merging Chicago PMSA hospitals

	APRDRGSOI	APRDRGSOI/los	DRG	DRG/los	weights	weights/los
post	0.0287	0.0353	0.0389	0.0209	0.0189	0.0194
	(0.0488)	(0.0322)	(0.0564)	(0.0307)	(0.0506)	(0.0311)
post*STMCVMH	0.2504***	0.2230***	0.2287***	0.2384***	0.2474***	0.2374***
	(0.0190)	(0.0187)	(0.0238)	(0.0223)	(0.0189)	(0.0183)
public	0.0070	-0.0219	0.0460	-0.0045	0.0027	-0.0009
	(0.0691)	(0.0663)	(0.0686)	(0.0614)	(0.0552)	(0.0503)
teach	-0.0944	-0.7682	-0.0450	-0.7124	-0.3242	-1.1301*
	(0.9448)	(0.7404)	(0.8142)	(0.6324)	(0.8117)	(0.6331)
los		0.7999***		0.7976***		0.7022***
		(0.0363)		(0.0404)		(0.0459)
case mix					0.7041***	0.3944***
					(0.0414)	(0.0445)

Chicago PMSA community hospitals

	APRDRGSOI	APRDRGSOI/los	DRG	DRG/los	weights	weights/los
post	-0.0228	0.0114	-0.0346	-0.0039	-0.0486	-0.0081
	(0.0434)	(0.0306)	(0.0415)	(0.0305)	(0.0398)	(0.0292)
post*STMCVMH	0.2385***	0.2122***	0.2087***	0.2315***	0.2536***	0.2384***
	(0.0202)	(0.0182)	(0.0298)	(0.0257)	(0.0207)	(0.0211)
public	-0.0031	-0.0660	-0.0209	-0.0907*	-0.0169	-0.0830
	(0.0865)	(0.0625)	(0.0817)	(0.0522)	(0.1014)	(0.0614)
teach	5.0704***	4.3258***	6.5042***	4.5570***	6.9350***	3.6845***
	(1.0075)	(0.7977)	(0.8885)	(0.7291)	(0.5510)	(0.6304)
los		0.7299***		0.7279***		0.6385***
		(0.0309)		(0.0339)		(0.0414)
case mix					0.6474***	0.3616***

					(0.0222)	(0.0428)

Payer E
Chicago PMSA hospitals

	APRDRGSOI	APRDRGSOI/los	DRG	DRG/los	weights	weights/los
post	0.0382	0.0550**	0.0220	0.0401**	0.0124	0.0181
	(0.0235)	(0.0211)	(0.0216)	(0.0193)	(0.0194)	(0.0186)
post*STMCVMH	-0.2450***	-0.2552***	-0.2371***	-0.2470***	-0.1982***	-0.2011***
	(0.0319)	(0.0329)	(0.0241)	(0.0247)	(0.0245)	(0.0248)
public	-0.0558***	-0.0674***	-0.0621***	-0.0760***	-0.0674***	-0.0713***
	(0.0202)	(0.0195)	(0.0224)	(0.0208)	(0.0202)	(0.0202)
teach	-0.0320	0.0048	-0.0160	0.0224	0.0068	0.0209
	(0.0686)	(0.0713)	(0.0706)	(0.0743)	(0.0732)	(0.0728)
los		0.2406***		0.2413***		0.0788**
		(0.0260)		(0.0258)		(0.0310)
case mix					0.4928***	0.4522***
					(0.0406)	(0.0377)

Non-merging Chicago PMSA hospitals

	APRDRGSOI	APRDRGSOI/los	DRG	DRG/los	weights	weights/los
post	0.0315	0.0462*	0.0136	0.0296	0.0051	0.0124
	(0.0288)	(0.0272)	(0.0288)	(0.0263)	(0.0272)	(0.0259)
post*STMCVMH	-0.2199***	-0.2302***	-0.2218***	-0.2330***	-0.1828***	-0.1871***
	(0.0429)	(0.0457)	(0.0308)	(0.0308)	(0.0264)	(0.0264)
public	-0.0506***	-0.0567***	-0.0607***	-0.0705***	-0.0550***	-0.0579***
	(0.0168)	(0.0167)	(0.0153)	(0.0148)	(0.0146)	(0.0144)
teach	-2.2976**	-2.0755**	-2.2804**	-2.0380**	-2.9806***	-2.8954***
	(0.8906)	(0.8355)	(0.9551)	(0.8922)	(0.8369)	(0.8115)
los		0.2897***		0.2890***		0.1217***
		(0.0318)		(0.0322)		(0.0404)
case mix					0.5178***	0.4553***
					(0.0485)	(0.0470)

Chicago PMSA community hospitals

	APRDRGSOI	APRDRGSOI/los	DRG	DRG/los	weights	weights/los
post	0.0363	0.0470	0.0179	0.0287	-0.0036	-0.0020
	(0.0366)	(0.0361)	(0.0325)	(0.0316)	(0.0309)	(0.0300)
post*STMCVMH	-0.2338***	-0.2385***	-0.2577***	-0.2594***	-0.1958***	-0.1948***
	(0.0543)	(0.0577)	(0.0326)	(0.0332)	(0.0278)	(0.0276)
public	-0.0304	-0.0813	0.0178	-0.0329	-0.0125	-0.0216
	(0.0995)	(0.0997)	(0.0933)	(0.0938)	(0.0778)	(0.0755)
teach	-1.7625	-2.2392**	-3.0962**	-3.6244***	-2.6442***	-2.7422***
	(1.1401)	(1.0906)	(1.1981)	(1.1753)	(0.9003)	(0.8833)
los		0.2359***		0.2320***		0.0463
		(0.0355)		(0.0349)		(0.0403)
case mix					0.4563***	0.4283***

					(0.0389)	(0.0381)

Evanston Northwestern Healthcare/Highland Park: IDPH/Cost Report Data

All Patients
Chicago PMSA hospitals

	APRDRGSOI	APRDRGSOI/los	DRG	DRG/los	weights	weights/los
post	0.1209***	0.1402***	0.1442***	0.1467***	0.0893***	0.1023***
	(0.0137)	(0.0133)	(0.0135)	(0.0133)	(0.0124)	(0.0115)
post*ENHHP	0.1437***	0.1535***	0.1401***	0.1530***	0.1329***	0.1549***
	(0.0134)	(0.0121)	(0.0126)	(0.0118)	(0.0130)	(0.0123)
public	0.0004	0.0075	0.0003	0.0078	-0.0039	0.0032
	(0.0235)	(0.0173)	(0.0237)	(0.0168)	(0.0273)	(0.0200)
teach	-0.0846**	-0.0601	-0.0908**	-0.0612	-0.0770*	-0.0625
	(0.0411)	(0.0385)	(0.0415)	(0.0385)	(0.0426)	(0.0411)
los		0.6964***		0.7409***		0.6162***
		(0.0092)		(0.0096)		(0.0118)
case mix					0.9671***	0.6707***
					(0.0098)	(0.0147)
Observations	4260561	4260561	4260561	4260561	4260561	4260561

Non-merging Chicago PMSA hospitals

	APRDRGSOI	APRDRGSOI/los	DRG	DRG/los	weights	weights/los
post	0.1342***	0.1518***	0.0888***	0.0994***	0.0940***	0.1084***
	(0.0225)	(0.0217)	(0.0187)	(0.0178)	(0.0192)	(0.0185)
post*ENHHP	0.1409***	0.1479***	0.1429***	0.1483***	0.1324***	0.1509***
	(0.0273)	(0.0186)	(0.0285)	(0.0188)	(0.0292)	(0.0181)
public	-0.0098	-0.0040	-0.0090	-0.0034	-0.0134	-0.0114
	(0.0230)	(0.0145)	(0.0228)	(0.0137)	(0.0277)	(0.0162)
teach	-0.0904	0.0029	-0.1813	-0.0225	-0.0927	0.0079
	(0.4377)	(0.3346)	(0.4710)	(0.3429)	(0.4822)	(0.3484)
los		0.7018***		0.7454***		0.6389***
		(0.0164)		(0.0167)		(0.0196)
case mix					0.9489***	0.6467***
					(0.0163)	(0.0239)
Observations	2227246	2227246	2227246	2227246	2227246	2227246

Chicago PMSA major teaching hospitals

	APRDRGSOI	APRDRGSOI/los	DRG	DRG/los	weights	weights/los
post	0.1097***	0.1345***	0.2120***	0.2184***	0.2214***	0.2378***
	(0.0223)	(0.0197)	(0.0292)	(0.0274)	(0.0274)	(0.0253)
post*ENHHP	0.1542***	0.1485***	0.1521***	0.1473***	0.1461***	0.1498***
	(0.0413)	(0.0371)	(0.0386)	(0.0361)	(0.0385)	(0.0367)
public	-0.0322*	-0.0114	-0.0359**	-0.0111	-0.0447**	-0.0230
	(0.0169)	(0.0164)	(0.0160)	(0.0159)	(0.0163)	(0.0165)
teach	-0.8151	-0.6652	-0.8369	-0.6734	-0.8083	-0.6465
	(0.4799)	(0.4570)	(0.4886)	(0.4601)	(0.4877)	(0.4644)
los		0.7284***		0.7811***		0.6507***
		(0.0206)		(0.0191)		(0.0274)
case mix					0.9741***	0.6707***
					(0.0180)	(0.0335)
Observations	1478923	1478923	1478923	1478923	1478923	1478923

Chicago PMSA teaching hospitals

	APRDRGSOI	APRDRGSOI/los	DRG	DRG/los	weights	weights/los
post	0.1316***	0.1544***	0.0946***	0.1075***	0.1679***	0.1760***
	(0.0168)	(0.0158)	(0.0159)	(0.0137)	(0.0158)	(0.0154)
post*ENHHP	0.1326***	0.1400***	0.1301***	0.1398***	0.1234***	0.1439***
	(0.0171)	(0.0149)	(0.0159)	(0.0146)	(0.0162)	(0.0150)
public	0.0037	0.0126	0.0023	0.0129	-0.0032	0.0060
	(0.0256)	(0.0195)	(0.0258)	(0.0191)	(0.0291)	(0.0217)
teach	-0.0868**	-0.0625*	-0.0925**	-0.0633*	-0.0788*	-0.0645*
	(0.0403)	(0.0357)	(0.0407)	(0.0357)	(0.0419)	(0.0381)
los		0.7112***		0.7580***		0.6280***
		(0.0118)		(0.0117)		(0.0156)
case mix					0.9728***	0.6685***
					(0.0127)	(0.0204)
Observations	2887017	2887017	2887017	2887017	2887017	2887017

Private Pay Patients
Chicago PMSA hospitals

	APRDRGSOI	APRDRGSOI/los	DRG	DRG/los	weights	weights/los
post	0.0665***	0.0756***	0.1353***	0.1352***	0.0853***	0.0981***
	(0.0122)	(0.0118)	(0.0140)	(0.0143)	(0.0123)	(0.0121)
post*ENHHP	0.1418***	0.1455***	0.1426***	0.1453***	0.1282***	0.1315***
	(0.0111)	(0.0110)	(0.0110)	(0.0108)	(0.0110)	(0.0108)
public	-0.0082	0.0072	-0.0078	0.0089	-0.0147	0.0019
	(0.0193)	(0.0165)	(0.0198)	(0.0165)	(0.0221)	(0.0199)
teach	-0.0790**	-0.0511	-0.0886**	-0.0539	-0.0681*	-0.0392
	(0.0331)	(0.0356)	(0.0341)	(0.0356)	(0.0367)	(0.0385)
los		0.6866***		0.7364***		0.5982***
		(0.0094)		(0.0097)		(0.0124)
case mix					0.9192***	0.6940***
					(0.0124)	(0.0159)
Observations	1891630	1891630	1891630	1891630	1891630	1891630

Non-merging Chicago PMSA hospitals

	APRDRGSOI	APRDRGSOI/los	DRG	DRG/los	weights	weights/los
post	0.1167***	0.1306***	0.0656***	0.1372***	0.0763***	0.0947***
	(0.0214)	(0.0220)	(0.0180)	(0.0219)	(0.0200)	(0.0196)
post*ENHHP	0.1559***	0.1515***	0.1594***	0.1508***	0.1372***	0.1278***
	(0.0256)	(0.0185)	(0.0273)	(0.0186)	(0.0284)	(0.0198)
public	-0.0186	-0.0045	-0.0168	-0.0034	-0.0222	-0.0111
	(0.0168)	(0.0138)	(0.0167)	(0.0134)	(0.0208)	(0.0171)
teach	-0.1146	0.0250	-0.1913	0.0063	-0.0289	0.1826
	(0.4459)	(0.3452)	(0.4801)	(0.3527)	(0.4860)	(0.3387)
los		0.6960***		0.7461***		0.6224***
		(0.0169)		(0.0166)		(0.0217)
case mix					0.9014***	0.6716***
					(0.0211)	(0.0272)
Observations	969836	969836	969836	969836	969836	969836

Chicago PMSA major teaching hospitals

	APRDRGSOI	APRDRGSOI/los	DRG	DRG/los	weights	weights/los
post	0.0936***	0.1119***	0.1937***	0.2026***	0.1134***	0.1371***
	(0.0196)	(0.0177)	(0.0256)	(0.0263)	(0.0185)	(0.0177)
post*ENHHP	0.1253***	0.1139***	0.1306***	0.1147***	0.1134***	0.1006***
	(0.0263)	(0.0227)	(0.0273)	(0.0227)	(0.0245)	(0.0196)
public	-0.0282*	-0.0084	-0.0304**	-0.0085	-0.0402***	-0.0216
	(0.0142)	(0.0132)	(0.0138)	(0.0128)	(0.0136)	(0.0135)
teach	-0.4101	-0.2653	-0.4347	-0.2872	-0.3983	-0.2191
	(0.2680)	(0.2474)	(0.2829)	(0.2511)	(0.2692)	(0.2271)
los		0.7234***		0.7807***		0.6280***
		(0.0196)		(0.0174)		(0.0270)
case mix					0.9524***	0.7080***
					(0.0188)	(0.0332)
Observations	701663	701663	701663	701663	701663	701663

Chicago PMSA teaching hospitals

	APRDRGSOI	APRDRGSOI/los	DRG	DRG/los	weights	weights/los
post	0.0794***	0.0929***	0.0886***	0.0962***	0.1695***	0.1835***
	(0.0160)	(0.0149)	(0.0163)	(0.0147)	(0.0170)	(0.0175)
post*ENHHP	0.1250***	0.1267***	0.1284***	0.1275***	0.1121***	0.1133***
	(0.0137)	(0.0132)	(0.0139)	(0.0132)	(0.0132)	(0.0120)
public	-0.0059	0.0117	-0.0071	0.0131	-0.0156	0.0041
	(0.0211)	(0.0189)	(0.0213)	(0.0191)	(0.0231)	(0.0220)
teach	-0.0793***	-0.0508*	-0.0882***	-0.0530*	-0.0676**	-0.0380
	(0.0295)	(0.0298)	(0.0312)	(0.0300)	(0.0332)	(0.0330)
los		0.7014***		0.7529***		0.6124***
		(0.0124)		(0.0119)		(0.0169)
case mix					0.9367***	0.6968***
					(0.0139)	(0.0223)
Observations	1243497	1243497	1243497	1243497	1243497	1243497

St. Therese Medical Center/Victory Memorial Hospital: IDPH/Cost Report Data

All Patients

Chicago PMSA hospitals

	APRDRGSOI	APRDRGSOI/los	DRG	DRG/los	weights	weights/los
post	0.1265***	0.1462***	0.1497***	0.1527***	0.0950***	0.1087***
	(0.0152)	(0.0148)	(0.0149)	(0.0148)	(0.0119)	(0.0114)
post*STMCVMH	-0.0706***	-0.0774***	-0.0751***	-0.0769***	-0.0760***	-0.0774***
	(0.0130)	(0.0123)	(0.0122)	(0.0120)	(0.0126)	(0.0123)
public	0.0051	0.0121	0.0052	0.0124	0.0010	0.0092
	(0.0241)	(0.0177)	(0.0247)	(0.0173)	(0.0283)	(0.0212)
teach	-0.0674	-0.0417	-0.0741	-0.0428	-0.0612	-0.0441
	(0.0474)	(0.0480)	(0.0479)	(0.0482)	(0.0484)	(0.0507)
los		0.6964***		0.7408***		0.6161***
		(0.0092)		(0.0096)		(0.0118)
case mix					0.9673***	0.6709***
					(0.0098)	(0.0148)
Observations	4260561	4260561	4260561	4260561	4260561	4260561

Non-merging Chicago PMSA hospitals

	APRDRGSOI	APRDRGSOI/los	DRG	DRG/los	weights	weights/los
post	0.0863***	0.1018***	0.1482***	0.1525***	0.1627***	0.1693***
	(0.0189)	(0.0174)	(0.0212)	(0.0215)	(0.0211)	(0.0213)
post*STMCVMH	-0.0682***	-0.0743***	-0.0719***	-0.0738***	-0.0732***	-0.0731***
	(0.0167)	(0.0157)	(0.0156)	(0.0154)	(0.0164)	(0.0160)
public	-0.0027	0.0018	-0.0019	0.0022	-0.0060	-0.0039
	(0.0242)	(0.0142)	(0.0245)	(0.0136)	(0.0299)	(0.0168)
teach	-0.1364	-0.0383	-0.2272	-0.0617	-0.1390	-0.0369
	(0.4472)	(0.3436)	(0.4819)	(0.3521)	(0.4913)	(0.3561)
los		0.7029***		0.7463***		0.6433***
		(0.0168)		(0.0171)		(0.0195)
case mix					0.9476***	0.6383***
					(0.0171)	(0.0243)
Observations	2143928	2143928	2143928	2143928	2143928	2143928

Chicago PMSA community hospitals

	APRDRGSOI	APRDRGSOI/los	DRG	DRG/los	weights	weights/los
post	0.0570***	0.0673***	0.1218***	0.1198***	0.1379***	0.1388***
	(0.0204)	(0.0213)	(0.0236)	(0.0249)	(0.0243)	(0.0257)
post*STMCVMH	-0.0409*	-0.0400*	-0.0489**	-0.0406**	-0.0551**	-0.0495**
	(0.0212)	(0.0201)	(0.0203)	(0.0197)	(0.0225)	(0.0214)
public	-0.0215	-0.0335	0.0012	-0.0281	0.0238	0.0160
	(0.0723)	(0.0638)	(0.0702)	(0.0629)	(0.0754)	(0.0682)
teach	-0.5557*	-0.3605	0.0187	-0.3188	-0.2537	-0.8013**
	(0.3205)	(0.3372)	(0.3082)	(0.3330)	(0.3211)	(0.3580)
los		0.6611***		0.6982***		0.5811***
		(0.0073)		(0.0082)		(0.0125)
case mix					0.9594***	0.6827***
					(0.0140)	(0.0163)
Observations	1353576	1353576	1353576	1353576	1353576	1353576

Private Pay Patients
Chicago PMSA hospitals

	APRDRGSOI	APRDRGSOI/los	DRG	DRG/los	weights	weights/los
post	0.0737***	0.0832***	0.1423***	0.1424***	0.0918***	0.1049***
	(0.0119)	(0.0118)	(0.0168)	(0.0169)	(0.0117)	(0.0118)
post*STMCVMH	-0.0563***	-0.0653***	-0.0580***	-0.0647***	-0.0561***	-0.0646***
	(0.0122)	(0.0123)	(0.0121)	(0.0123)	(0.0117)	(0.0118)
public	-0.0032	0.0120	-0.0026	0.0137	-0.0094	0.0075
	(0.0200)	(0.0170)	(0.0207)	(0.0172)	(0.0231)	(0.0212)
teach	-0.0633	-0.0350	-0.0728	-0.0378	-0.0540	-0.0248
	(0.0444)	(0.0477)	(0.0452)	(0.0476)	(0.0465)	(0.0492)
los		0.6865***		0.7364***		0.5982***
		(0.0094)		(0.0097)		(0.0124)
case mix					0.9193***	0.6941***
					(0.0124)	(0.0160)
Observations	1891630	1891630	1891630	1891630	1891630	1891630

Non-merging Chicago PMSA hospitals

	APRDRGSOI	APRDRGSOI/los	DRG	DRG/los	weights	weights/los
post	0.0659***	0.0760***	0.0738***	0.0800***	0.0849***	0.1014***
	(0.0169)	(0.0164)	(0.0165)	(0.0163)	(0.0184)	(0.0186)
post*STMCVMH	-0.0380**	-0.0483***	-0.0396**	-0.0479***	-0.0395**	-0.0513***
	(0.0164)	(0.0166)	(0.0159)	(0.0166)	(0.0175)	(0.0178)
public	-0.0102	0.0028	-0.0082	0.0037	-0.0129	-0.0024
	(0.0172)	(0.0127)	(0.0180)	(0.0125)	(0.0232)	(0.0182)
teach	-0.1758	-0.0301	-0.2551	-0.0481	-0.0882	0.1294
	(0.4567)	(0.3532)	(0.4929)	(0.3610)	(0.4942)	(0.3425)
los		0.6964***		0.7461***		0.6297***
		(0.0177)		(0.0175)		(0.0211)
case mix					0.8993***	0.6607***
					(0.0231)	(0.0288)
Observations	909478	909478	909478	909478	909478	909478

Chicago PMSA community hospitals

	APRDRGSOI	APRDRGSOI/los	DRG	DRG/los	weights	weights/los
post	0.0949***	0.1026***	0.0549***	0.0544***	0.0587***	0.0674***
	(0.0222)	(0.0238)	(0.0163)	(0.0190)	(0.0185)	(0.0222)
post*STMCVMH	-0.0204	-0.0224	-0.0264	-0.0229	-0.0266	-0.0275
	(0.0180)	(0.0184)	(0.0171)	(0.0181)	(0.0197)	(0.0206)
public	-0.0233	-0.0366	-0.0034	-0.0293	0.0236	0.0110
	(0.0570)	(0.0619)	(0.0518)	(0.0603)	(0.0545)	(0.0608)
teach	0.0867	-0.0501	0.4642*	-0.0275	0.4739	-0.1811
	(0.3067)	(0.3371)	(0.2716)	(0.3280)	(0.3132)	(0.3860)
los		0.6517***		0.6951***		0.5583***
		(0.0055)		(0.0076)		(0.0130)
case mix					0.8902***	0.6965***
					(0.0192)	(0.0172)
Observations	643159	643159	643159	643159	643159	643159