

HOSPITALS, MERGERS, AND TWO-STAGE COMPETITION

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I. INTRODUCTION

Over the past several years, state and federal antitrust agencies have actively investigated, and sometimes challenged, hospital mergers and affiliations across the United States. The Antitrust Division of the U.S. Department of Justice has challenged hospital mergers in Dubuque, Iowa; Clearwater, Florida; and Long Island, New York, while the Federal Trade Commission has challenged hospital mergers in Poplar Bluff, Missouri; Grand Rapids, Michigan; and Joplin, Missouri. In addition, several state antitrust agencies have challenged hospital mergers or required them to enter into consent decrees.¹ Two key issues emerge from these cases: first, who is the relevant customer for the purpose of antitrust analysis; and second, to what extent do different hospitals compete with each other?

The DOJ and FTC (collectively, the Agencies) generally argue that health plans are the relevant customer for antitrust analyses because they are the parties contracting with hospitals. Thus, the Agencies focus on how those plans would respond to a hospital price increase. This focus on health plans often conflicts with hospitals' implicit arguments that individual patients are the relevant customer.

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¹ The author's views reflect, in part, his involvement in several of these cases. *FTC v. Tenet Healthcare Corp.*, 17 F. Supp. 2d 937 (E.D. Mo. 1988), *rev'd*, 186 F.3d 1045 (8th Cir. 1999); *FTC v. Freeman Hosp.*, 911 F. Supp. 1213 (W.D. Mo.), *aff'd on other grounds*, 69 F.3d 260 (8th Cir. 1995) (Joplin); *FTC v. Butterworth Health Corp.*, 946 F. Supp. 1285 (W.D. Mich. 1996), *aff'd in unpublished op.*, 1997-2 Trade Cas. (CCH) ¶ 71,863 (6th Cir. 1997) (Grand Rapids); *United States v. Long Island Jewish Med. Ctr.*, 983 F. Supp. 121 (E.D.N.Y. 1997) (Long Island); *United States v. Morton Plant Health Sys., Inc.*, 1994-2 Trade Cas. (CCH) ¶ 70,759 (M.D. Fla. 1994) (final consent judgment) (Clearwater); *United States v. Mercy Health Servs.*, 902 F. Supp. 968 (N.D. Iowa 1995), *vacated as moot*, 107 F.3d 632 (8th Cir. 1997) (Dubuque); *State of California v. Sutter Health*, No. C-99 3803 (N.D. Cal. Aug. 10, 1999) (complaint).

The second key issue is the extent to which hospitals compete, and how that competition depends on hospital characteristics, such as location, teaching status, patient mix, or physician staff. It is generally accepted that selective contracting, in which health plans have a choice over which hospitals to include in their provider network, creates price competition among hospitals. Protecting that price competition is one of the goals of antitrust. Yet non-price competition (e.g., advertising campaigns or hospitals' attempts to attract patients by opening outpatient clinics or purchasing physician practices) still occurs. An important question is how antitrust analysis should take into account that non-price competition.

This article provides an analytical framework for understanding hospital competition and analyzing hospital mergers. This framework offers a new perspective for addressing the questions of who is the relevant customer, and how price and non-price competition factor into the antitrust analysis. Hospital competition is modeled as a two-stage game. In the first stage, hospitals compete to be included in a plan's hospital network. In the second stage, hospitals compete for a plan's individual enrollees, with that competition affected by whether a hospital is in the plan's network. In this two-stage model, the customer in the first stage is the health plan, while the customer in the second stage is the individual patient.

This article explores the important implications of this two-stage model for antitrust analyses of hospital mergers. First, a hospital may compete with a different set of hospitals at the first stage than it does at the second stage. Thus, both product and geographic markets may differ between the first and second stages of competition. Second, the nature of competition, and the effect of a hospital merger, may differ across the two stages. Thus, evidence relating to second-stage competition may say little about first-stage competition.

Distinguishing between these different stages of competition and their different customers helps resolve several controversies between the Agencies and hospitals in recent mergers. In effect, the Agencies have focused largely on first-stage competition, while the merging hospitals often emphasize evidence more relevant to second-stage competition. This can lead each side to different conclusions about market definition and competitive effects. Moreover, *both* sides may be correct: a hospital merger could reduce first-stage competition without significantly reducing second-stage competition.

Nevertheless, even if a merger has little effect on second-stage competition, a reduction in first-stage competition is sufficient to conclude a hospital merger is anticompetitive. In other words, showing the merger

does not reduce second-stage competition is neither necessary nor sufficient to conclude that the merger is not anticompetitive. Thus, while the Agencies' focus on the first stage may not reflect the full richness of hospitals' competitive environments, it has not caused the Agencies to inappropriately challenge hospital mergers.

This article's two-stage model also helps explain several otherwise puzzling fact patterns associated with anticompetitive hospital mergers. In particular, a merger can significantly reduce first-stage price competition even when patient flow data show that multiple hospitals draw patients from the same region, when merging hospitals' documents identify many other third-party hospitals as significant competitors, and when the merging hospitals have made significant investments to attract patients from other hospitals. As elaborated upon below, while those fact patterns may suggest significant second-stage competition, they shed little light on the magnitude of first-stage competition.

II. THE TWO STAGES OF HOSPITAL COMPETITION

Nationwide, nearly 70 percent of individuals with employer-sponsored health insurance are enrolled in managed care.² These managed care plans consist primarily of preferred provider organizations (PPOs), health maintenance organizations (HMOs), and point of service plans (POSs). Most managed care plans designate a set of hospitals that comprise their hospital networks and give their enrollees incentives to use hospitals in their respective networks.

With respect to managed care, hospitals compete at two different, and sequential, stages.³ In the first stage, hospitals compete to be included in a plan's hospital network. In the second stage, hospitals compete to attract individual enrollees of a plan.⁴ In this second stage of competition, hospitals are differentiated according to whether they are in or out of the plan's network. For example, if individuals are restricted to choosing an in-network hospital (as is the case with HMOs), an in-network hospital

² HEALTH INSURANCE INSTITUTE OF AMERICA, 1996 SOURCEBOOK OF HEALTH INSURANCE DATA 21 (reporting 1995 KPMG Peat Marwick data).

³ For traditional Medicare, Medicaid, and indemnity plans that do not selectively contract, only second-stage competition is relevant. The two-stage analysis pertains to Medicare HMOs and to those states in which Medicaid recipients can choose among alternative plans that in turn selectively contract with hospitals.

⁴ See David Dranove et al., *Price and Concentration in Local Hospital Markets: The Switch from Patient-Driven to Payer-Driven Competition*, 36 J.L. & ECON. 179 (1993). The authors label these two types of competition as "payer-driven" and "patient-driven" competition. They argue, however, that managed care penetration causes payer-driven competition to displace patient-driven competition, rather than to create the *additional* level of competition described in this article.

only competes for individual patients against other in-network hospitals. Alternatively, if a plan's enrollees retain the flexibility to use an out-of-network hospital, the extent to which an in-network and an out-of-network hospital compete for a plan's enrollees depends on the strength of the incentives the plan gives its enrollees to use in-network providers.

A. FIRST-STAGE COMPETITION

First-stage competition represents competition for preferential access to a health plan's enrollees. Hospitals seek preferential access because it increases the number of patients they will capture in the ensuing second stage of competition. A critical means of gaining access to a plan's enrollees is to join the plan's hospital network.

First-stage competition requires hospitals to make themselves attractive to plans. One way hospitals might attract plans is to increase their attractiveness to plan enrollees; for example, a hospital might expand or modernize its cardiac wing. In this way, the two stages of competition are interrelated.

Alternatively, hospitals might attract plans in ways that have little relevance to enrollees. In particular, a critical aspect of first-stage competition centers on hospitals' contracting terms. Critical contract terms include not only a hospital's contract price to the plan (e.g., 80 percent of charges, or \$1200/patient day), but also factors like a willingness to enter into per-diem or per-case rates rather than charge-based contracts, or cooperating with a plan's efforts to control utilization.

In this article, I introduce an economic model to highlight the incentives a hospital has to compete at the first and second stages of competition. A hospital's incentive to compete for network inclusion depends on a number of factors. The model assumes first-stage competition is price-based, and that treatment costs are identical across patients and normalized to zero.⁵ Each hospital i submits a bid price P_i corresponding to the price the plan must pay for each enrollee the hospital treats if the hospital is selected as an in-network hospital.⁶ Alternatively, if the

⁵ The assumption that first-stage competition only depends on price highlights the distinction between the two stages of competition. More generally, however, first-stage competition also may be affected by actions that affect second-stage competition (e.g., opening a new cardiac wing may not only increase a hospital's ability to attract individual patients, it may affect the hospital's ability to compete for network inclusion). The implications of this interaction are discussed in greater detail below.

⁶ For convenience, I assume a single health plan. More generally, with competing health plans, a hospital will recognize that higher prices to one health plan will affect that plan's premiums, and thus the plan's competitive success and the number of patients the hospital can expect to see from that plan. While this means the magnitude of several of the terms in (2) may depend on the extent to which health plans compete, the more general

hospital is not selected as an in-network hospital, the hospital is instead paid full charges C_i for each plan enrollee that it treats. The model further assumes $C_i > P_i$ and that C_i is determined without regard to competition involving that plan.⁷

Denote the probability that hospital i is included in the plan's network as σ_i ; in general, σ_i will be a function of all hospitals' prices. Denote Q_i^i and Q_i^{out} as hospital i 's patient volume conditional upon being included, or excluded, from the network, respectively. Dropping the subscript i for notational simplicity, a hospital's expected profits π are shown in Equation (1).

$$(1) \quad \pi = \sigma Q^i P + (1 - \sigma) Q^{out} C.$$

Equation (2) shows the determinants of a hospital's expected profits and price.

$$(2) \quad \frac{\partial \pi}{\partial P} = \sigma Q^i + \frac{\partial \sigma}{\partial P} (P \Delta Q - D \cdot Q^{out}) + P \sigma \frac{\partial Q^i}{\partial P},$$

where:

$$\Delta Q \equiv Q^i - Q^{out} > 0, \text{ and}$$

$$D \equiv C - P.⁸$$

The expression in (2) has a simple interpretation.⁹ Focusing on the right-hand side of that expression, the first term reflects that price reductions lower a hospital's expected profit because they lower the price for

discussion below continues to apply as long as hospitals can price discriminate between plans.

⁷ Most hospitals determine a single master charge list that applies across all payers. Unless dealing with a very large managed care plan, a hospital is unlikely to make significant changes to that master charge list in an attempt to win a single managed care plan's business. More generally, however, hospitals will jointly optimize both their plan-specific bid P_i and their master charge list.

⁸ Because Q^{out} is defined as a hospital's expected patient volume conditional upon its exclusion from the plan's network, changes in the hospital's bid price (P) have no effect on that conditional volume: $\frac{\partial Q^{out}}{\partial P} = 0$.

⁹ In non-technical terms, $\frac{\partial X}{\partial Y}$ denotes the amount by which X changes in response to a small increase in Y . Thus, $\frac{\partial \pi}{\partial P}$ denotes the amount by which a hospital's expected profits change in response to a small price increase to the plan, with the terms on the right-hand side of (2) showing why those profits change. A hospital seeking to maximize its profits from a given health plan contract sets price so that $\frac{\partial \pi}{\partial P} = 0$; otherwise, the hospital could earn more money by either raising its price (if $\frac{\partial \pi}{\partial P} > 0$) or lowering its price (if $\frac{\partial \pi}{\partial P} < 0$). If the terms on the right-hand side of (2) change, the hospital will in turn change its

patients it already anticipated admitting as a network provider (equal to σQ^m) even without a price reduction.

The second term in (2) reflects that price reductions affect the likelihood that the hospital will be designated a network provider ($\frac{\partial \sigma}{\partial P}$). This, in turn, affects the hospital's expected profits in two ways. First, a network provider anticipates more patients from which to earn revenues ($P\Delta Q$). But being designated a network hospital also comes at some cost to the hospital. For all those patients the hospital expected to treat even as a non-network hospital (Q^{out}), the hospital agrees to a discount (D) off its normal charges. Thus, network membership reduces profits by $D \cdot Q^{out}$.

The last term in (2) shows how a hospital's price affects profits if patients switch between in-network hospitals as a consequence of a price change ($\frac{\partial Q^{in}}{\partial P}$).¹⁰ I call this "within-network steering."

Each of the aforementioned terms affects a hospital's price, as discussed below.

1. *The Strength of a Plan's Threat To Exclude a Hospital from its Network: ($P\Delta Q - D \cdot Q^{out}$)*

The second term in (2) can be interpreted as the health plan's bargaining strength vis-à-vis a hospital. The term ($P\Delta Q - D \cdot Q^{out}$) corresponds to the size of the plan's threat that, if the hospital doesn't offer an acceptable price, the hospital will be omitted from the plan's network, while the term $\left| \frac{\partial \sigma}{\partial P} \right|$ corresponds to the credibility of that threat. Thus, the strength of the plan's threat increases as the revenue a hospital expects from the new patients it would get from becoming a network provider ($P\Delta Q$) grows. The strength of the threat decreases, though, as the revenue the hospital expects from patients it would have treated even as an out-of-network provider ($D \cdot Q^{out}$) becomes larger.

price until the profit-maximizing condition $\frac{\partial \pi}{\partial P} = 0$ is again satisfied. For example, an increase in σQ^m would result in $\frac{\partial \pi}{\partial P} > 0$, causing a profit-maximizing hospital to increase price (thus profits) until $\frac{\partial \pi}{\partial P}$ falls back to zero.

¹⁰ For example, within-network steering might occur if a plan makes it more difficult for physicians to get pre-admission approval when they try to admit their patients to a particular network hospital.

The strength of a plan's threat to exclude a hospital from its network depends in part on the incentives it gives its enrollees to use network providers. For example, for HMO enrollees with full coverage for network providers but no coverage for out-of-network providers, out-of-network use will be rare: $Q^{out} = 0$ and $\Delta Q \approx Q^m$. In contrast, PPO enrollees with some out-of-network coverage may continue using the hospital even if it is dropped from the plan's network: $Q^{out} > 0$ and $\Delta Q < Q^m$ (with ΔQ becoming smaller as out-of-network coverage increases).

The strength of a plan's threat also depends on the extent to which other hospitals are good substitutes from the patient's perspective. If other hospitals are good substitutes, patients are more likely to switch to one of those alternatives if hospital i is dropped from the network, thus strengthening the plan's threat. The degree to which patients view hospitals as close substitutes will vary between patients, but may depend on factors, such as whether the patient's physician admits to other hospitals (allowing the patient to switch hospitals without switching physicians), the hospitals' geographic proximity, and the reputations and scope of services of the hospitals.

The size of a plan's network also affects the strength of its threat. All else equal, the fewer the network providers, the more patients that each hospital will get. This tends to increase ΔQ . This effect may be offset, though, if plans with limited provider panels suffer from low enrollment.

Finally, the strength of a plan's threat depends on whether enrollees will remain with that plan following a network reconfiguration or redesign of benefits or instead switch to another plan that allows the enrollee to continue using the hospitals whose prices increased. For example, if employees have a choice of health plans, yet only one plan drops the more expensive hospital from its network, that hospital ultimately may lose few patients if individuals simply switch to another health plan during the employer's next open enrollment period.

2. *The Credibility of a Plan's Threat:* $\frac{\partial \sigma}{\partial P}$

The greater the importance of hospital i to the plan's enrollees (or potential enrollees), the less credible the plan's threat to drop hospital i from its network. Thus, the credibility of the plan's threat depends on the existence of acceptable alternatives to hospital i and whether those alternatives already are part of the plan's network. The credibility of the threat also may depend on many of the same factors that determine the *strength* of the threat, such as the hospital's reputation, its location, its scope of services, and the extent to which its physicians use other hospi-

tals. Finally, the credibility of the threat may depend on whether other plans also are likely to drop the hospital from their network and the extent to which employers offer their employees a choice of plans.¹¹

In assessing the impact of dropping a hospital from its network (and thus the credibility of its threat), a plan must consider both how individual employees are likely to react and how the loss might affect the employer's willingness to offer that plan to its employees. A health plan must ensure not only that employees will choose the plan if offered, but also that employers will choose to offer it.¹² In choosing among plans, employers generally try to provide all of their employees at least one attractive option. Thus, even if a restricted hospital network would remain acceptable to *many* employees, an employer might view the resulting product as a "niche-appeal" product, and for this reason not select it as one of the few plans it offers to its employees.¹³ Accordingly, since a plan must be chosen by the employer before it can attract individual enrollees, plans may try to ensure that their networks offer particular services or attributes in each geographic region where substantial numbers of the employer's employees live.

In assessing how to respond to a higher hospital price, a plan must consider the alternative of leaving the network unchanged and simply paying a higher price to hospital *i*. Because a plan's hospital costs are only one component of a plan's overall costs, the ultimate downstream price effect of paying hospital *i* a higher price may be small. With approximately 30 percent of health plans' costs attributable to inpatient hospitalization expenses, and assuming that the hospital increasing its price accounts for 10 percent of the plans' total hospitalization expenses over which it bases premiums, a 5 percent price increase by hospital *i* only would increase the plan's premium by approximately 0.15 percent. For a health plan with a monthly premium of \$200, that translates to a

¹¹ This helps explain why plans that face less competition may include fewer hospitals in their network. Without the fear of losing enrollees to a competitor, those plans can more credibly threaten to drop hospitals from their network. Not surprisingly, this heightened bargaining leverage seems to have allowed at least some "monopoly" state Medicaid programs to realize much lower contract prices than their commercial (and more competitive) counterparts.

¹² See Jessica Vistnes et al., *The Effect of Competition on Employment-Related Health Insurance Premiums* (working paper Nov. 1999, on file with author), in which the authors model and empirically test this two-stage game between plans.

¹³ Employers generally limit the number of plans with which they contract and the number of each plans' insurance products they offer to their employees: based on 1995 data, 50% of firms with over 200 employees offer only one plan to their employees, while another 24% offer only two plans. See HEALTH INSURANCE INSTITUTE OF AMERICA, *supra* note 2, at 21.

monthly premium increase of a mere 30¢.¹⁴ Hence, the plan must decide which decision will have the greater effect on enrollment: dropping hospital *i* from its network or raising its monthly premium by 30¢.

3. *Within-Network Steering Effects: $P\sigma \frac{\partial Q^m}{\partial P}$*

Now consider the last term in (2): $P\sigma \frac{\partial Q^m}{\partial P}$. Broken down by component, the $\frac{\partial Q^m}{\partial P}$ term reflects the sensitivity of a hospital's in-network admissions to price, holding the hospital's network status constant. This corresponds to within-network steering. The importance of within-network steering to the hospital depends on the price the hospital receives for network patients (*P*) and the likelihood the hospital is chosen as a network hospital (σ).

Within-network steering will occur if patients are sensitive to the negotiated price between hospitals and plans, if physicians (who play a large role in determining the hospital to which their patients are admitted) are sensitive to that negotiated price, or if plans shift patients between hospitals through means other than simply designating the hospital as an in-network or out-of-network provider. Each of these options is considered below.

First consider whether patients are likely to be sensitive to a hospital's bid *P*. Patients generally are not only uninformed about hospital charges, they are even less informed about the privately negotiated (and normally highly confidential) price *P*. Moreover, even if these bids were observable to patients, patient sensitivity to those bids would be limited because co-payments and deductibles typically depend on hospital charges rather than privately negotiated rates between the hospital and the payer. Finally, even if patients could observe the negotiated price *P* and were responsible for some portion of that price, patients usually are unaware of precisely what services they require before being admitted to the hospital; this makes it difficult for patients to "shop around" for the best price. All of this suggests that patients' sensitivity to *P* will not have a significant impact on within-network steering (i.e., will not cause $\frac{\partial Q^m}{\partial P}$ to be large).

¹⁴ This is calculated as $\$200 \times 30\% \times 10\% \times 5\% = 30\text{¢}$. This result is clearly sensitive to the underlying assumptions. It should be kept in mind, though, that while the ultimate effect of the hospital price increase on insurance premiums may seem small, that price

Within-network steering may arise, however, if physicians' admitting patterns are sensitive to negotiated hospital prices. This may occur if physicians enter into risk-sharing contracts in which they bear some of the cost of using a more expensive hospital. A hospital price increase might then reduce physician referrals, so that $\frac{\partial Q^m}{\partial P} < 0$. The more important physicians' sensitivity to hospital prices, the lower will be the hospital's price. The magnitude of any such within-network steering, however, will also depend on factors, such as the closeness of substitution between hospitals, the degree of cost sharing borne by the physicians, and the willingness of those physicians to use an alternative hospital.¹⁵ If other hospitals are not convenient to physicians, or otherwise fail to meet their needs, physicians are less likely to modify their referral patterns in response to a price change. Similarly, the less attractive the alternative hospital is in the eyes of the physicians' patients, the less likely that physicians will try to steer their patients to that hospital.

The strength of the financial linkage between a hospital's negotiated price P and the physician's own income is also important: the weaker that linkage, the less likely that admitting patterns will depend on P . Physicians' sensitivity to hospital prices also will be limited if their risk is capped (whether explicitly in the contract with the payer or because of reinsurance) or if they are only at risk for a limited set of hospital services. Finally, the less information physicians have about privately negotiated rates between the payer and the hospital, the less likely that physicians will be sensitive to changes in those rates. Given that most plans treat negotiated prices as confidential, physicians' sensitivity to those rates may be significantly limited.¹⁶

Finally, $\frac{\partial Q^m}{\partial P}$ may differ from zero if health plans respond to a price increase by more actively steering patients between network hospitals.¹⁷ For example, plans might try to direct their enrollees to particular hospi-

increase is borne by a large population, many of whom are not even patients of the hospital that raises price.

¹⁵ Although physicians' willingness to use alternative hospitals is likely related to the frequency with which they *already* practice at those hospitals, one must also consider the likelihood that physicians would change their admitting patterns.

¹⁶ Large physician groups that assume all risk and contract directly with hospitals will not suffer from this information shortfall. Alternatively, health plans may identify the high-cost or low-cost hospitals to physicians without revealing specific contract prices.

¹⁷ Even if plans already engage in some within-network steering prior to a price increase, that says little about $\frac{\partial Q^m}{\partial P}$. The question is, how much *additional* steering would occur if prices increased?

tals by touting them in advertising campaigns, by encouraging physicians during pre-admission certification phone calls to admit to certain hospitals, or by creating a physician network composed of physicians who typically admit to the favored hospitals. Plans also might create new financial incentives for their enrollees to use one hospital over another, for example, by waiving deductibles at certain favored hospitals or by increasing co-payments at disfavored hospitals. This practice, in essence, creates additional classes of network hospitals. While the actual use of such strategies appears to be relatively rare, despite significant variance in hospital prices, the likelihood that plans would employ such strategies in response to increased hospital prices, and the magnitude of any resulting steering, should be assessed on a market-specific basis.

While within-market steering likely is a less effective means of steering patients than simply dropping a hospital from a plan's network, it nevertheless provides plans with a potential mechanism to foster competition among "must-have" hospitals. As a result, even if a plan feels compelled for marketing reasons to include particular hospitals in its network, a plan's ability to use within-network steering may engender some first-stage competition between those hospitals. The magnitude of that competition will depend on the plan's willingness and ability to effectively steer enrollees. The preceding discussion suggests that within-network steering is more likely when the hospitals at issue are close substitutes from the perspectives of both physicians and patients. This often will be the case if hospitals are located close to each other, offer a comparable scope of services, share similar reputations, and are used by many of the same physicians.

B. SECOND-STAGE COMPETITION

Now consider the second stage of competition where individual patients choose between alternative hospitals. At this stage, patients typically face one expected out-of-pocket price for all in-network providers, and another (higher) expected price for all out-of-network providers.¹⁸ The greater that price difference (or other incentives the plan uses to direct patients to network hospitals), the weaker the second-stage

¹⁸ A patient ultimately may pay different prices, even across in-network or across out-of-network hospitals, if the patient is responsible for a percentage of the hospital's charges. As argued above, though, these price differences generally are unobservable to patients at the time they are choosing a hospital, so that *expected* prices across in-network, or across out-of-network, hospitals generally will be similar. Moreover, even though an individual may expect charges to be higher at the university teaching hospital than the local community hospital, patients' limited co-payments, in conjunction with out-of-pocket maximums, may minimize patients' expected price differences across in-network, and across out-of-network, hospitals.

competition between those two classes of hospitals will be. If the price difference is large enough (e.g., for HMOs which offer no out-of-network coverage), second-stage competition between in-network and out-of-network providers may be largely eliminated.

Because patients are likely to be largely insensitive to hospitals' negotiated price P , second-stage competition takes place primarily over non-price dimensions.¹⁹ For example, hospitals may compete for individual patients by providing private rooms, offering labor-delivery-recovery rooms for maternity care, advertising the friendliness of their nursing staff, or improving the physical appearance of the hospital. Second-stage competition also can encompass advertising directed towards potential patients and efforts to strengthen physician affiliations as a way of attracting physician referrals.

The intensity of second-stage competition across network hospitals will be greater when there are many comparable network hospitals from which patients can choose and when hospitals' profits from treating those patients are high. Since a hospital's willingness to accept a lower price P from a plan depends on the hospital's perceived benefit of being included in the plan's network, a plan that limits second-stage competition by restricting the number of hospitals in its network may induce those hospitals to compete more aggressively in the first stage by offering lower contract prices.²⁰

The proposition that hospitals will offer lower contract prices when they perceive large benefits from being included in a plan's network may underlie many plans' efforts to prohibit network hospitals from waiving patient co-payments or deductibles as a means of attracting additional patients. A hospital's reward from being included in a plan's network is reduced if second-stage competition is intense.²¹ Thus, restricting second-stage competition makes hospitals more willing to accept lower contract prices P from the plan.²² In essence, limiting second-stage

¹⁹ In some cases, however, hospitals may introduce price competition into the second stage of competition by waiving co-payments or deductibles in an effort to attract individual patients. For reasons discussed below, plans often attempt to prohibit such behavior. See *infra* text accompanying notes 22-23.

²⁰ That incentive may be lower if reducing the size of the network reduces the plan's attractiveness.

²¹ In terms of equation (2), the "reduced reward" corresponds to an effective increase in $D = C - P$.

²² This linkage between second-stage competition and contract prices suggests why within-network steering may have a limited ability to foster first-stage competition. If within-network steering reduces a hospital's reward from being designated a network hospital, hospitals' incentive to set low prices falls. Thus, plans' use of within-network steering as a means of controlling hospital prices could be counterproductive. More generally, the

competition increases the value of becoming a network provider, thus increasing first-stage competition for network inclusion. While such prohibitions on second-stage competition may benefit the plan, they may harm (at least in the short run) the plan's enrollees.²³

Up to this point, the discussion has assumed that all first-stage competition is price-based and that contract prices do not affect second-stage competition. That assumption, which effectively means that a hospital's action could only affect one stage of competition, was a useful tool in the previous section for distinguishing between the two stages of competition. In reality, though, the two stages of competition are related and some hospital actions may affect both stages. For example, opening a new cardiac center may not only make a hospital more attractive to cardiac patients, it may also make it more attractive to a plan. Thus, a new cardiac center might affect both stages of competition. Similarly, running a series of ads not only may induce some patients to choose that hospital over other network hospitals, it also may make the hospital a more attractive network member if they have a long-term effect on patients' perceptions of that hospital.

Yet, while a particular action may affect both stages of competition, second-stage competition may allow greater targeting of specific patient populations. For example, although opening a new cardiac wing may affect both stages of competition, the additional admissions stemming from inclusion in the plan's network may reflect a more diverse patient population than the patient population attracted by the new cardiac wing.

The intensity of competition also may differ greatly across the two stages. For example, if "Suburban Hospital" in the suburbs opens a new cardiac center, many suburban patients may switch to it rather than going downtown to "University Hospital" for cardiac care. Thus, opening a cardiac center could significantly increase second-stage competition

premerger price likely already reflects the plan's ability to steer patients between network hospitals. Thus, the merger and any attendant loss in the plan's bargaining leverage vis-à-vis the merging hospitals likely will lead to a price increase.

²³ In a competitive health plan market, at least part of the savings attributable to prohibiting network hospitals from waiving co-payments or deductibles would be passed back to enrollees in the form of lower premiums. With intense first-stage competition, plans might choose to restrict second-stage competition in this manner if demand was more sensitive to premiums than to patients' realized out-of-pocket payments. This may also help explain why plans often base co-payments on hospital charges rather than negotiated prices; although plan competition may ultimately mean that the savings the plan realizes by basing patients' co-payments on charges (causing patients to pay more to the hospital and creating incentives for the hospital to charge a lower contract price to the plan) are largely passed back to the enrollee in the form of lower premiums, plans may find that demand for their product is more sensitive to premiums than to whether they base patients' co-payments on negotiated prices rather than charges.

between Suburban Hospital and University Hospital for cardiac patients. At the same time, however, that new cardiac wing may not significantly affect a plan's ability to replace University Hospital with Suburban Hospital in its hospital network (i.e., the increase in $\frac{\partial \sigma}{\partial P}$ may be very small) for two reasons.²⁴ First, if University Hospital remains the only hospital offering services, such as tertiary-level pediatrics or oncology, plans still may need University Hospital in their networks. Second, if Suburban Hospital was not an acceptable substitute for many University Hospital patients, Suburban Hospital's cardiac wing may have little effect on the ability of a plan to replace University Hospital with Suburban Hospital in its network. This could be the case, for example, if many of the plan's enrollees lived downtown and would disenroll if their plan required them to use Suburban Hospital.

III. IMPLICATIONS FOR ANTITRUST ANALYSIS

The distinction between first- and second-stage competition has never been made in previously litigated hospital mergers. As a result, the litigants often have only implicitly focused on the merger's effects on different stages of competition, with the Agencies implicitly arguing that the merger will reduce first-stage competition, and the hospitals implicitly arguing that the merger will not affect second-stage competition. For example, the Agencies often claim that a proposed merger will constrain plans' ability to put together alternative hospital networks, thus weakening the plans' threat to drop the merging hospitals from their network. If significant within-network steering is unlikely, the Agencies reason, the merger reduces plans' bargaining power and leads to a post-merger price increase. In contrast, the merging hospitals generally submit evidence that patients choose from a wide variety of hospitals and that some patients travel long distances for hospitalization. The hospitals also often submit documents showing their historical concern with attracting patients from a wide geographic region as well as documenting the hospitals with which they compete for those patients. The hospitals also may argue that they are actively advertising for patients over a wide geographic region, or engaging in "outreach" programs directed at increasing their patient draw from a certain region.

The difference in emphases between the Agencies and the hospitals leaves courts in a difficult position. They must hear evidence supporting

²⁴ Opening a cardiac wing could still affect first-stage competition, though, if plans engaged in within-network steering to divert cardiac patients from University Hospital to Suburban Hospital.

both sides' arguments, without having a clear analytical framework in which to evaluate those competing arguments. The courts' dilemma may be even greater when both the Agencies and the hospitals are correct: a merger might significantly reduce first-stage competition while having little effect on second-stage competition. Without an analytical framework distinguishing the two stages of competition, the court may believe it has to choose between competing theories of harm, one based on first-stage competition, the other based on second-stage competition. As discussed below, however, the two-stage model shows that the two arguments are not only consistent, they are in fact complementary.

Analytically, a merger's effects on first- and second-stage competition need to be distinguished from each other. A merger does not have to reduce competition at *both* stages to cause higher prices: absent offsetting benefits or efficiencies, a reduction in competition at *either* stage of competition can harm consumers.²⁵ Thus, the Agencies' focus on first-stage competition is generally appropriate; a net anticompetitive effect in the first stage is a sufficient (but not necessary) condition to conclude that the merger will cause harm.²⁶ In contrast, even if a merger will not significantly reduce second-stage competition, the merging hospitals *still* must rebut the government's argument that the merger reduces first-stage competition.

A. MARKET DEFINITION AND IDENTIFYING MARKET PARTICIPANTS

The effect of a merger can be analyzed separately for each of the two stages of hospital competition.²⁷ With respect to each stage, a relevant market can be defined by answering the basic geographic and product market questions: where would alternative hospitals have to be located in order to prevent a post-merger price increase, and what kind of attributes would those alternative hospitals have to have?

For first-stage competition, the market definition question focuses on assessing the willingness of plans to use alternative hospitals. Thus, if two hospitals merged and raised price, would a plan respond in a way that

²⁵ The question of how to balance any efficiencies attributable to second-stage competition with any harm to first-stage competition is an interesting one, but beyond the scope of this article.

²⁶ This is no different in principle than any other merger of multiproduct firms in which the merger only reduces competition in one product market.

²⁷ If hospitals price discriminate across customers, it also may be appropriate to define separate relevant markets across different customers or aggregated classes of customers with similar demand characteristics (e.g., Medicare HMOs versus PPOs).

caused enough patients to switch hospitals to defeat the price increase? Answering this question means looking at issues, such as whether the plan's enrollees could instead use other equally attractive hospitals in the area; do the two hospitals' physicians also tend to practice at other local hospitals; and are these two hospitals particularly important to the plan's ability to market its network to employers? It is also important to evaluate the cost and effectiveness of any incentives the plan likely would create to divert its enrollees away from the merged hospitals to other hospitals. For example, even if diversion were feasible, it might not be a sensible business decision to divert patients to another hospital that already was more expensive (on a quality-adjusted basis) than the merged hospitals. Similarly, while a plan may be able to divert patients by offering to waive the hospital deductible for patients using another hospital, unless the plan can distinguish those patients who otherwise would have used the merging hospitals, the plan may be forced to waive the deductible for *all* of its enrollees, with the resulting cost easily overwhelming any benefits the plan might realize from diverting patients away from the merged hospitals.

As long as employers limit the number of plans they offer their employees, they will likely only choose plans that are attractive to a diverse employee population. This may limit a plan's ability to drop the merged hospitals from its network or otherwise divert significant numbers of patients away from them. In assessing the profitability of a post-merger price increase, one cannot conclude that the merged hospitals would not increase price simply because a significant number of their patients would be willing to switch hospitals. Instead, a key question is whether the number of patients at the merging hospitals who would resist switching hospitals, or who would be willing to make higher out-of-pocket payments so that they could continue using the merging hospitals, is sufficiently small that the employer would offer a plan that diverted patients away from those merging hospitals. Thus, even if a plan could divert a significant number of patients away from the merging hospitals, as long as a vocal minority of enrollees resist that diversion, and if the plan cannot divert the indifferent enrollees without simultaneously upsetting those who resist diversion, the plan might be unwilling to try to divert *any* enrollees.

The notion that employers prefer health plans that are acceptable to most of their employees and may resist changes that upset even a minority of their employees is consistent with recent arguments by the DOJ that both geographic and product markets in hospital mergers can be quite narrow. For example, in its 1994 challenge of the proposed merger of

two hospitals in the urban area of Clearwater, Florida,²⁸ the DOJ argued that the geographic market consisted of the northern portion of Pinellas County, a region extending approximately five miles in radius from the merging hospitals. Similarly, in its 1997 merger challenge to two hospitals in Long Island, New York,²⁹ the DOJ also argued that the geographic market could be as small as a radius of five miles around the merging hospitals. The DOJ also argued in the Long Island case that the appropriate product market consisted solely of "anchor hospitals," which the government described as follows:

Anchor hospitals serve two specific functions for managed care plans. First, they allow the plan to offer its enrollees the option of inpatient treatment at a hospital that has a broad array of sophisticated services, a similarly broad and high quality medical staff, and a prestigious reputation. Second, and related, inclusion of the anchor hospital signals the overall quality of the plan to group purchasers and individuals and families. Together, these two functions substantially enhance the marketability of these plans.³⁰

In essence, the DOJ argued that hospitals such as community hospitals, specialty hospitals (e.g., cardiac specialty hospitals), and public hospitals were sufficiently different from plans' perspectives that there was insufficient first-stage competition between anchor hospitals and those other hospitals to warrant their inclusion in the same market as anchor hospitals.³¹ The court, however, while recognizing that hospitals are differentiated, was not persuaded that anchor hospitals constituted a separate product market.

Markets for second-stage competition are defined using a similar methodology. In principle, however, there may be different second-stage markets corresponding to competition for different classes of patients. For example, a hospital might target cardiac patients by opening a new cardiac wing, or target maternity patients by offering a free second night for newborns and their mothers. If so, the geographic market for second-

²⁸ United States v. Morton Plant Health Sys., Inc., 1994-2 Trade Cas. (CCH) ¶ 70,759 (M.D. Fla. 1994) (consent decree).

²⁹ United States v. Long Island Jewish Med. Ctr., 983 F. Supp. 121, 140 (E.D.N.Y. 1997).

³⁰ DOJ's Verified Complaint at ¶ 3, United States v. Long Island Jewish Med. Ctr., No. 97-3412 (E.D.N.Y. 1997) (complaint).

³¹ See David Dranove & William White, *Specialization, Option Demand, and the Pricing of Medical Specialists*, 5 J. ECON. & MGMT. STRATEGY 277 (1996); David Dranove, *Emerging Issues in the Antitrust Definition of Healthcare Markets*, 1 ELECTRONIC HEALTH ECON. LETTERS 10 (Nov. 1997). These authors also raise the possibility of narrowly defined relevant markets, at least in part because of what they refer to as individuals' "option demand" for localized or specialized hospital care.

stage competition directed at cardiac patients might be larger than the market for second-stage competition directed at maternity patients.

In general, markets corresponding to first- and second-stage competition may differ. Geographic markets for second-stage competition might be larger since first-stage competition focuses on a plan's ability to form an alternative hospital network that would be attractive to a general population, while second-stage competition can involve hospitals targeting subsets of patients who may be willing to change hospitals. For example, two hospitals in cities fifty miles apart may compete for some patients (e.g., individuals who live in one of the cities but work in the other city). In that case, there may be significant second-stage competition, but unless plans would substitute the hospitals in their networks or divert a significant number of patients between the two cities, there may be no real first-stage competition. The Agencies would then appropriately focus on the narrower first-stage market, even though merging hospitals might legitimately argue that the second-stage market is much larger.

Product markets also may be larger for second-stage competition than for first-stage. For example, a 100-bed rural hospital may compete for some patients with the nearby 400-bed urban hospital, even though no plan could realistically substitute the rural hospital for the urban hospital in the plan's provider network or successfully divert a significant number of patients from the urban hospital to the rural hospital. Accordingly, while the rural and the urban hospital might not compete in the first stage of competition, they might still compete at the second stage for individual patients who could be appropriately treated at either the rural or the urban hospital. Thus, the relevant product market for second-stage competition may be more broadly defined than the market for first-stage competition.

The dual nature of hospital competition may go a long way in explaining why internal hospital documents often identify hospitals outside the Agencies' claimed relevant market as competitors: those documents may be identifying other hospitals more as second-stage competitors, while the Agencies base their market definition on first-stage competition. This interpretation would be more likely if, for example, the document described how a new advertising campaign might lure patients away from competing hospitals, how opening a new labor-delivery-recovery ward might draw expectant mothers away from competing hospitals, or how hiring physicians with offices in the primary service area of a competing hospital might attract new patients. In each case, those events may increase second-stage competition for individual patients, but are likely to have much less impact on first-stage competition.

B. THE USE OF PATIENT FLOW DATA IN A TWO-STAGE MODEL

The two-stage model has important implications for the use of patient flow data to define markets and analyze the effect of mergers.³² Geographic markets are often defined using patient flow data to perform variants of an "Elzinga-Hogarty" test. The basic premise of this test is that, in a well-defined antitrust market, there should be few imports or exports. The Elzinga-Hogarty methodology has two components: the little-in-from-outside (LIFO) test and the little-out-from-inside (LOFI) test. In the context of hospitals, the LIFO test requires that no more than a given percentage of patients (often chosen as either 75 percent or 90 percent) living inside the market use any hospital located outside the market. To satisfy the LOFI test, no more than a given percentage (again, often 75 percent or 90 percent) of the patients treated at hospitals within the market can live outside the market. Thus, the Elzinga-Hogarty test mandates little patient inflow or outflow from the market. If either patient inflow or outflow is too high, the size of the market must be expanded to encompass that inflow or outflow.³³

Using patient flow data in this manner can lead to inappropriately defined markets with respect to both first- and second-stage competition.³⁴ With respect to second-stage competition, this test implicitly assumes that if two individuals, Jones and Smith, live in the same region, they have fundamentally the same preferences. Thus, each is assumed willing to switch to the hospital that the other prefers following a small hospital price increase. Yet, while residential location plays some role in an individual's hospital choice, that choice is also likely to depend on many other factors that differ between Smith and Jones. For example,

³² Patient flow data includes information on the Zip Codes in which hospitals' patients live.

³³ For more detail on the Elzinga-Hogarty approach, see, e.g., Kenneth G. Elzinga & Thomas F. Hogarty, *The Problem of Geographic Market Delineation in Antimerger Suits*, 18 ANTITRUST BULL. 45 (1973); Kenneth G. Elzinga & Thomas F. Hogarty, *The Problem of Geographic Market Delineation Revisited: The Case of Coal*, 23 ANTITRUST BULL. 1 (1978); Michael G. Vita et al., *Economic Analysis in Health Care Antitrust*, 47 J. CONTEMP. HEALTH L. & POL'Y 73 (1991). Zwanziger and Melnick propose a variant of the Elzinga-Hogarty approach that also rests on the notion that, if different patients living in the same Zip Code choose different hospitals, those hospitals compete. Jack Zwanziger & Glenn Melnick, *The Effects of Hospital Competition and the Medicare PPS Program on Hospital Cost Behavior in California*, 7 J. HEALTH ECON. 301 (1988). The courts have also been asked to adopt another variant of that test in which individual Zip Codes are labeled "contestible" or "competitive" if at least 20% (or some other threshold) of patients living in that Zip Code choose hospitals other than the merging (or in some circumstances the market) hospitals.

³⁴ For further discussion about the problems of using patient flow data to define geographic markets, see, e.g., Gregory Werden, *The Limited Relevance of Patient Migration Data in Market Delineation for Hospital Merger Cases*, 8 J. HEALTH ECON. 363 (1989); Vita et al., *supra* note 33; Gregory Vistnes, *Hospital Mergers and Antitrust Enforcement*, 20 J. HEALTH

Jones may see a physician who works in the North and only admits to Northern Hospital, while Smith may see a physician who works in the South and only admits to Southern Hospital. Similarly, because Jones and Smith may work in different areas, they may have different familiarity with the hospitals. Given all the factors that may play a role in Jones's and Smith's hospital choices, Jones's hospital preferences may say very little about Smith's preferences. This raises serious concerns about the conceptual underpinnings of Elzinga-Hogarty-style tests in the context of hospital mergers.

Defining markets using a variant of an Elzinga-Hogarty analysis raises even greater potential problems with respect to first-stage competition. Patient flow data say little about key market definition questions: how would a plan induce patients to switch hospitals; and how would diverting patients between hospitals affect the plan's marketability? For example, patient flow data provide no direct information about whether a plan that dropped a hospital from its network would be at a significant marketing disadvantage, nor do they speak to whether the benefits of implementing a within-network steering strategy would exceed the costs.³⁵ Thus, the true market with respect to first-stage competition might well be one in which there are high levels of patient inflow and outflow.³⁶

Using patient flow data to perform variants of an Elzinga-Hogarty test may also be misleading if individuals realize an "option value" if their health plan covers particular hospitals, as noted by Dranove and White.³⁷ According to those authors, if an individual's future hospital needs are unknown when they choose a health plan, they may prefer a plan that offers a wide selection of options. For example, even if an individual expects to use her local community hospital if she needs hospital care

POL. POT.'Y & L. 175 (1995); Gregory S. Vistnes, *Defining Geographic Markets for Hospital Mergers*, ANTITRUST, Spring 1999, at 28.

³⁵ As mentioned earlier, the costs of diversion could exceed the benefits if diversion were to hospitals with higher prices. Those costs could also be high if implementing a steering mechanism would antagonize many of the plan's enrollees. For example, although it has sometimes been suggested that plans could steer enrollees between network hospitals by having their physician suggest (but not require) that they use an alternative hospital, many plans seem wary of such tactics, especially given the increasing public perception that health plans care only about profits and not about their enrollees' health.

³⁶ In the DOJ's 1994 Clearwater, Florida, case, the inflow into the government's alleged geographic market was approximately 28%, while the outflow was approximately 14%. *United States v. Morton Plant Health Sys., Inc.*, 1994-2 Trade Cas. (CCH) ¶ 70,759 (M.D. Fla. 1994) (consent decree). Patient inflow and outflow from the government's proposed geographic market were also high in the DOJ's 1997 Long Island hospital case. *United States v. Long Island Jewish Med. Ctr.*, 983 F. Supp. 121 (E.D.N.Y. 1997).

³⁷ Dranove, *supra* note 31; Dranove & White, *supra* note 31.

in the coming year, she may still want guaranteed access to a local teaching hospital in case she contracts a rare illness or needs specialized care. This means that patient flow data showing individuals' actual hospital choices may not tell much about how a plan's choice of network hospitals will affect individuals' demand for that plan. Accordingly, even if only 10 percent of a plan's enrollees end up using a particular hospital (or set of hospitals), virtually all of its enrollees may want the plan to include that hospital in its network to insure against the possibility that they will end up in the 10 percent enrollee population who someday seek access to that hospital.³⁸ Thus, whatever relevance patient flow data may have with respect to second-stage competition for patients in need of hospitalization, if plans recognize individuals' option demands for hospitals, patient flow patterns may say little about first-stage competition. In that case, both product and geographic markets may be smaller than an Elzinga-Hogarty-type test would suggest.

The preceding discussion is not meant to suggest, however, that patient flow data convey no valuable information; that suggestion would be at odds with the observation that hospitals regularly collect and analyze such data. Although patient flow data may provide little information about individuals' willingness to switch between hospitals in response to price changes, they can provide hospitals with valuable information about the sensitivity of patient volume to strategic actions, such as changes in hospital service capabilities or physician affiliations. For example, the observation that the hospital attracts few maternity cases from a particular Zip Code may suggest the hospital needs to build up its ties with the obstetricians in that area. While a hospital might label other hospitals drawing maternity patients from those Zip Codes as "competitors," that does not mean the hospitals are first-stage competitors. Nor, as discussed earlier, does it mean that they currently are second-stage competitors, although it may reflect the hospital's belief that if they take certain actions (such as affiliating with local obstetricians or updating their facilities), they could become second-stage competitors.³⁹ Hospitals also may analyze patient flow data to evaluate the effectiveness of certain forms of second-stage competition. For example, if a downtown hospital directed an ad campaign at suburban residents, the hospital might want to check for increased admissions from the suburbs.

³⁸ Of course, even if a hospital's value makes it a critical member in a plan's network, the hospital may still face first-stage competition if the plan can effectively engage in within-network steering.

³⁹ Creating second-stage competition through physician affiliations or updating facilities does not mean, however, that changes in hospital prices would similarly affect second-stage competition.

Furthermore, this discussion is not meant to suggest that patient flow data have no potential probative value for analyzing hospital mergers. For example, patient flow data for a particular plan's enrollees might contain valuable information about how hospital choices changed when the plan reconfigured its hospital network. Observing, for example, that expansion of a plan's suburban hospital network had little effect on downtown residents' hospital choices might indicate only limited competition between downtown and suburban hospitals; plans still might need to include a downtown hospital to appeal to downtown residents, even if suburban residents are indifferent between the two types of hospitals.

IV. CONCLUSION

Hospitals compete at two different levels: competition to be included in a payer's network, and competition for individual patients given the payer's choice of network hospitals. The distinction between the two levels of competition is critical for understanding the environment in which hospitals compete and the means by which they do so, as well as putting evidence commonly relied upon in hospital merger litigation into the appropriate context. In particular, evidence cited by merging hospitals often goes to the merger's likely impact on second-stage competition, while the Agencies typically focus on evidence relating to the first stage of competition. The Agencies focus on first-stage competition, which normally is sufficient to decide whether enjoining a hospital merger is warranted. Evidence regarding second-stage competition is of limited relevance because, even if a merger will not significantly reduce second-stage competition, it still may lead to higher prices if the merger reduces first-stage competition.