



Do hospital mergers reduce costs?☆



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ABSTRACT

Proponents of hospital consolidation claim that mergers lead to significant cost savings, but there is little systematic evidence backing these claims. For a large sample of hospital mergers between 2000 and 2010, I estimate difference-in-differences models that compare cost trends at acquired hospitals to cost trends at hospitals whose ownership did not change. I find evidence of economically and statistically significant cost reductions at acquired hospitals. On average, acquired hospitals realize cost savings between 4 and 7 percent in the years following the acquisition. These results are robust to a variety of different control strategies, and do not appear to be easily explained by post-merger changes in service and/or patient mix. I then explore several extensions of the results to examine (a) whether the acquiring hospital/system realizes cost savings post-merger and (b) if cost savings depend on the size of the acquirer and/or the geographic overlap of the merging hospitals.

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1. Introduction

According to the healthcare market intelligence firm Irving Levin, there were nearly 900 announced hospital mergers and acquisitions¹ (M&A) between 2000 and 2012. As shown in Fig. 1, after a decline in activity at the beginning of the millennium, hospital mergers remained relatively flat between 2002 and 2009 with around 50–60 transactions per year.² Concurrent with the Affordable Care Act, which was signed into law in early 2010, there has been a sharp uptick in hospital mergers, with the number of deals essentially doubling within three years. The merger wave continued in 2013, including the “mega-mergers” of Community Health Systems with Health Management Associates and Tenet Healthcare with Vanguard Health Systems.

For antitrust authorities such as the Federal Trade Commission (FTC), consolidation of competing hospitals is often a major concern. Prior to the merger of two hospitals A and B, one factor that disciplines the pricing of each hospital is that higher prices will

cause insurers and their enrollees to substitute to the competing hospital. After the merger, substitution between A and B is ineffective in restraining prices since the owner of the combined entity receives the profits from both hospitals.³ Merger simulation models often predict substantial price increases from mergers (e.g., Capps et al., 2003; Gowrisankaran et al., 2015), and empirical studies of consummated mergers have documented sizable price increases as well (e.g., Dafny, 2009; Haas-Wilson and Garmon, 2009). Drawing on this work, antitrust authorities actively investigate and challenge hospital mergers that they believe will meaningfully reduce competition – “Hospitals that face less competition charge substantially higher prices” (Martin Gaynor, former Director of the FTC’s Bureau of Economics).⁴

Merging hospitals, on the other hand, typically claim that the merger will yield reductions in cost and improve the quality of care. Common arguments are that administrative functions can be consolidated, duplicative services can be eliminated, and that there are economies of scale in things like purchasing hospital supplies and in effectively utilizing electronic medical record systems. Whether these claims of cost savings are legitimate (and to what degree) is of crucial importance for antitrust authorities, since cost reductions can offset or overturn the incentives for hospitals to increase

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¹ Throughout the paper, the terms “merger” and “acquisition” are used interchangeably.

² Source: AHA Trendwatch Chartbook 2014, Organizational Trends, Chart 2.9. Irving Levin Associates, Inc., *The Health Care Acquisition Report*, Twentieth Edition, 2014.

³ There are also theories under which mergers between hospitals that are not directly substitutable with one another can increase prices. See recent work by Vistnes and Sarafidis (2013), Dafny et al. (2016), and Lewis and Pflum (2016).

⁴ Pear, R. (2014, September 17). F.T.C. Wary of Mergers by Hospitals. *The New York Times*.

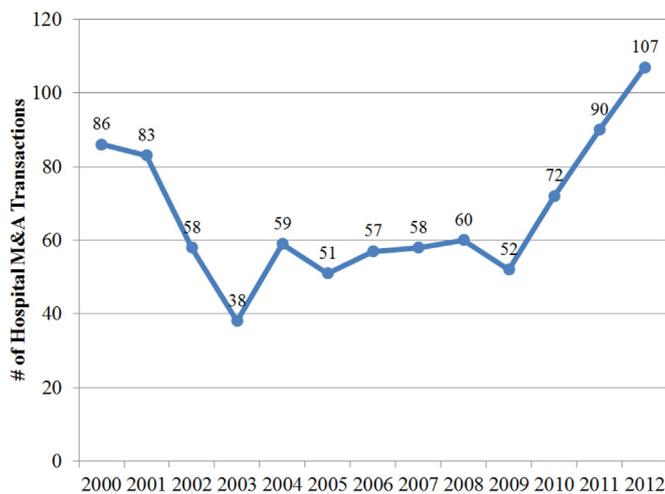


Fig. 1. Hospital M&A trends, 2000–2012.

prices after the merger. Beyond antitrust questions, there is also a general policy interest in promoting the delivery of cost-effective care. Given the clear policy relevance of the question, several past academic studies have examined whether hospital mergers have indeed triggered cost reductions; for example: Alexander et al. (1996), Connor et al. (1998), Spang et al. (2001), Dranove and Lindrooth (2003), Spang et al. (2009), and Harrison (2011). On balance, the evidence thus far fails to support strong claims of systematic cost savings from mergers; while these articles typically find cost savings for at least some subset of studied mergers, overall the evidence is mixed.⁵

The results from prior research are difficult to generalize to today for at least two reasons. First, the latest year of mergers in the studies cited above is 1997; technology in healthcare is continually evolving, and the ways in which hospitals can realize cost savings may be very different from decade to decade or even year to year. Second, the hospital consolidation examined in prior studies was mostly (a) between two hospitals and (b) local. Harrison (2011) reports that over 80 percent of mergers in her data are between two hospitals, and many of the papers cited above restrict their analysis to exclusively these types of mergers. Several of the cited papers also restrict their analysis to mergers within the same market area (e.g. MSA), and a comparison of merger counts across the studies indicates that these mergers characterize the majority of the available sample. Most hospital acquisitions today and throughout the 2000s are by multihospital systems, and many of these acquisitions occur across geographic markets (see Section 2.2 for more descriptive details).⁶ There are several ways in which acquisitions by multihospital systems could be meaningfully different. Economies of scale in purchasing and/or managing inputs, for example, may be much more salient for hospitals joining large systems than for those merely joining a single neighbor. Alternatively, multihospital systems may be more skilled in identifying

poorly managed hospitals across the country, acquiring them, and then implementing efficiency-improving operational changes.

The goal of this paper is to evaluate whether mergers between general acute care hospitals that occurred between 2000 and 2010 have generated cost savings. Using cost data from the Centers for Medicare & Medicaid Services (CMS) linked to M&A data from the American Hospital Association (AHA) and the healthcare market intelligence firm Irving Levin, I estimate difference-in-differences models that compare cost trends at acquired hospitals (hereafter, “target” hospitals) to cost trends at several different groups of control hospitals whose ownership did not change during the period. Pre-merger, the two groups of hospitals appear to share common cost trends. Post-merger, target hospitals experience slower cost growth than control hospitals. The estimates indicate that target hospitals experience cost reductions of 4–7 percent in the years following the acquisition (on average).

One major question in interpreting these cost reductions is to what extent they might have been generated by simple changes in service and/or patient mix, as opposed to true efficiency improvements. While the main results control for the effect of contemporaneous changes in several observable measures like the percentage of inpatient discharges accounted for by Medicare, these measures may not fully control for the effect of possible changes in service and patient mix. To explore the likelihood of meaningful changes at target hospitals, I examine the effect of acquisition on several other measures besides costs. On balance, the results indicate that the observed cost reductions are not easily explained by simple changes in service and/or patient mix.

In addition to target hospitals, consolidation could also affect costs at the *acquiring* hospital/system (“acquirer” hospitals). If mergers are capable of generating system-wide cost reductions, then consolidation has the potential for much larger aggregate cost effects. In contrast to the results for target hospitals, however, difference-in-differences models examining cost trends at acquirer hospitals fail to reject the null hypothesis of no effect. That said, for reasons related to the representativeness of the hospitals on which this result is based (see Section 5.1 for details), I view this finding more tentatively than the main results for target hospitals.

To see if average cost savings differ by the size of the acquirer, I estimate separate effects for independent acquirers and multi-hospital systems of varying size (2–10, 11–50, and 51 or more hospitals). Target hospitals that were acquired by multihospital systems in all three size groups experience statistically significant reductions in cost, while hospitals acquired by independent hospitals do not. That said, it is unclear whether this difference is due to any inherent advantage of multihospital systems to achieve cost savings, or due to selection. In particular, acquisitions by independent hospitals are much more likely to occur in the same market than acquisitions by multihospital systems. These in-market acquisitions may be more likely to be driven by market power rather than cost saving motives, and I find evidence consistent with this hypothesis; after controlling for in-market vs. out-of-market acquisitions, both the magnitude and statistical significance of differences in cost savings by acquirer size shrink.

Moreover, the result that out-of-market acquisitions appear more likely to generate cost savings than in-market acquisitions implies caution when applying the main results of the paper – 4–7 percent cost reductions for target hospitals – to antitrust questions, which predominantly (though not exclusively) pertain to in-market acquisitions. Except when utilizing an extremely large market definition (state), I do not find statistically significant evidence of post-merger cost savings from in-market mergers. In addition, while the main results indicate potential for cost savings from mergers, they do not speak to the question of whether merger is necessary to achieve them. Since I am unable to precisely identify the source of the observed post-merger cost savings, it is possible

⁵ In an Amicus Brief to the Supreme Court in *FTC v. Phoebe Putney Health System* (concerning Phoebe Putney’s acquisition of rival Palmyra Medical Center in Albany, Georgia), a group of academic economists write: “the empirical evidence on whether hospital consolidation leads to cost savings is mixed at best.” Brief of Amici Curiae Economics Professors in Support of Petitioner in *FTC v. Phoebe Putney Health System*, No. 11-1160.

⁶ It is not entirely clear whether multihospital and out-of-market acquisitions were uncommon in earlier time periods, or if they simply did not show up in available data (usually, American Hospital Association data). For instance, the Hospital Corporation of America (HCA) acquired many hospitals across the U.S. during the 1970s and 1980s, but these acquisitions may not have been tracked by the AHA data.

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