

**Comments on the 2018 Update to “The Price Ain’t Right”
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In 2015, the original version of “The Price Ain’t Right? Hospital Prices and Health Spending on the Privately Insured” (hereafter, “The Price Ain’t Right”) was released as a working paper and received widespread attention in the media. A revised version of this paper was recently released.² The revised version has added two new analyses — one on changes in hospital prices to commercial insurers following hospital mergers and another on the relationship between hospital market structure and the form of the hospital-insurer contract — and has made some modifications to the original methodology. Most of our commentary below focuses on these two new analyses, but we also note some of the critiques of the original paper that are still relevant in the revised version.³ In particular, some of the paper’s findings, which we describe below, give rise to general questions about how to interpret the paper’s empirical findings regarding the association between hospital market structure and various measures of hospital bargaining leverage.

At the onset, it is worth noting that the authors acknowledge, as they did in their previous version of the paper, that their paper is “fundamentally descriptive...and [l]inks between market structure, prices, and contract form, because market structure will be correlated with unobserved factors, should not be assumed to be causal.” (page 4) This is an important and appropriate caveat that was largely ignored in the press coverage of the paper’s initial release.⁴

Analysis of Relationship between Hospital Mergers and Prices

The authors use four years of data on hospital prices paid by three managed care organizations (Aetna, Humana, and UnitedHealthcare) to assess changes in prices following hospital mergers in variously defined local “markets.” To do so, they first identify the universe of hospital merger transactions that occurred between 2008 and 2011. Then, to determine whether these mergers are associated with subsequent price increases, they match the hospitals involved in these transactions with similar hospitals that did not merge during the time period (the control group) and compare the post-merger changes in prices at the merging hospitals and the matched control group. Based on this analysis, the authors find that mergers of hospitals located up to 25 miles apart were associated with subsequent increases in the merging hospitals’ prices relative to the control groups.

¹ All authors are economists at Charles River Associates. The conclusions set forth herein are based on independent research and publicly available material. The views expressed herein are the views and opinions of the authors and do not reflect or represent the views of Charles River Associates or any of the organizations with which the authors are affiliated. Financial support was provided by the American Hospital Association.

² Zack Cooper, Stuart Craig, Martin Gaynor, John Van Reenen. “The Price Ain’t Right? Hospital Prices and Health Spending on the Privately Insured?” National Bureau of Economic Research Working Paper 21815. Updated, May 2018. <http://www.healthcarepricingproject.org/papers/paper-1> (hereafter, “The Price Ain’t Right Update.”)

³ See, Monica Noether, Commentary on “The Price Ain’t Right: Hospital Prices and Health Spending on the Privately Insured” (2015) for a more complete discussion of the 2015 paper.

⁴ See, for example, Melanie Evans, “Data Suggest Hospital Consolidation Suggests Higher Prices for Privately Insured.” Modern Healthcare, December 15, 2015. <http://www.modernhealthcare.com/article/20151215/NEWS/151219906>.

There are, however, several shortcomings of the authors' interpretation of their results. First, while the authors argue that their results are robust to alternative specifications—in part based on an assessment of alternative control groups—the results they report in Appendix Table 20 show meaningful variation in their estimates. For example, those results indicate that, utilizing a variety of alternatively defined control groups, only mergers of hospitals located within 5 miles of each other are consistently associated with significantly greater increases in prices relative to any of the alternative control groups. (See Panels C-F of Appendix Table 20.) These results are contrary to the baseline specification that the authors describe in much greater detail in the body of their article, which shows a relationship for mergers of hospitals that are up to 25 miles apart. Given the importance of market definition in hospital merger enforcement activity by the antitrust agencies, the discrepancy in findings associated with alternative distances used to define the geographic market is important.

Moreover, the authors find no consistent effect of mergers on the post-merger prices of neighboring non-merging hospitals.⁵ Given that hospital mergers are thought to potentially change the bargaining dynamic between hospitals and managed care organizations, economic theory predicts that hospital mergers that allow the merging hospitals to negotiate higher prices should also benefit nearby non-merging hospitals (i.e., allow those hospitals also to negotiate higher prices).⁶ The fact that the authors do not find that nearby non-merging hospitals negotiate higher prices suggests that the price increases for merging hospitals they observe in the data are not a manifestation of changes in the bargaining position of the hospitals.

The authors also attempt to validate their findings by assessing the price trends for two years before and after the mergers that they study. They do this to test whether their estimates might in fact be attributable to other “intertemporal factors” apart from the merger. However their results suggest further investigation is warranted. First, since the authors are only using four years of data, they have incomplete information for each time period other than the year of the merger itself. As a result, the number of data points that are available to assess prices in the pre- and post-periods (particularly years t-2 and t+2) is likely quite small.⁷ Second, the results that they report in Panel D of Table 8 and in Figure 15 are inconsistent with the typical patterns of multi-year hospital-payor contracting. As noted in the previous paragraph, their sensitivity results indicate that, based on a variety of control groups, only mergers of hospitals located within five miles of each other are associated with significant increases in prices. Yet, for hospitals within the 5-mile radius indicated to be most relevant, hospital prices increase in the year of the merger with no further subsequent increase. Given that most hospital contracts are unlikely to be renegotiated immediately following the completion of a merger, this pattern seems unlikely to be the manifestation of a change in the bargaining position of hospitals.

As with their cross-sectional analyses, the authors attempt to assess the effect of their data's lack of information on the prices paid by Blue Cross and Blue Shield (BCBS) plans, which are

⁵ Table 8 shows that the only significant effect (and only at the 10 percent level) occurs for rivals of merging hospitals located within 10 miles, and a mix of negative and positive, but all statistically insignificant, effects for neighbors of hospitals merging within other distances.

⁶ See Leemore Dafny, “Estimation and Identification of Merger Effects: An Application to Hospital Mergers.” *The Journal of Law and Economics* 52 (2009), 523-550. She found substantial price increases at neighboring rival hospitals.

⁷ For example, for mergers that occurred in 2008 (the first year of their data) they have no data with which to estimate prices in t-1 and t-2. Conversely, for mergers that occurred in 2011, they have no data with which to estimate the post-period (t+1 and t+2.)

frequently the largest payor in an area. To do this, they compare their results in markets with a high BCBS share with those for markets with relatively lower BCBS shares. (See Appendix Table 26). Markets in which the local BCBS plan has a relatively high share are likely, correspondingly, to have lower shares of the three health plans whose data the authors study. If a high insurer share gives health plans countervailing bargaining power, one might think that a hospital merger in these areas might be most likely to increase the bargaining leverage of the hospitals relative to the health plans whose prices the authors analyze. But the results in Appendix Table 26 show the opposite: In markets with high BCBS share, hospital mergers are not associated with any significant change in hospital prices for Aetna, Humana, and UnitedHealthcare post-merger.

Finally, the analysis does not appear to differentiate between mergers that result in hospitals with large or small post-merger shares in their markets. Yet, a merger that resulted in a hospital system that accounted for 90 percent of discharges in a candidate market might be expected to have a very different effect than one that resulted in a hospital with 10 percent.

These inconsistencies between what economic theory might predict about the factors associated with variation across hospital mergers and post-merger hospital prices and the actual patterns that the authors estimate suggest that further inquiry is warranted.

Analysis of Insurer-Hospital Contract Structure

The authors argue that hospitals prefer contracts that force insurers to bear more of the risk associated with variation in the cost of treating different patients for the same condition. As a result, the authors conclude that hospitals with market power are more likely to negotiate successfully for discount-off-charges contracts, which are based on the specific individual services that they provide to each patient, rather than accepting per-case rate approaches (such as DRG-based payments), which pay a uniform amount for each patient treated for a particular condition regardless of the particular services that an individual patient requires.

The fundamental premise of this argument is that hospitals are risk-averse, which is a predicate for which the authors provide no support.⁸ Indeed, a hospital can be expected generally to have better information about its own ability to manage cost variation across patients than a health plan with which it contracts. Moreover, to the extent that the hospital can do a better job controlling costs than anticipated, the hospital stands to benefit from the upside risk of a fixed case rate payment approach. If the hospital possessed market power, it may, therefore, prefer to negotiate a case rate that reflects its bargaining strength and provides a sufficient premium to compensate for the risk associated with variation in individual patients' requirements. As a result, it seems unlikely that a savvy, reasonably sized hospital would prefer a charge-based payment approach.

Theory aside, some of the authors' results are inconsistent with their findings. For example, Figure 9 compares the rates paid for vaginal delivery at a high-volume hospital under two contracts, one charge-based and the other a case rate. According to the authors' theory, since hospitals prefer charge based approaches, the discount-off-charges approach should result in generally higher dollar payments to the hospital. But Panel A of Figure 9 shows exactly the opposite pattern: the hospital is paid substantially better under the case rate approach. Unless

⁸ None of the articles that the authors cite pertain to hospitals' preferences for discount-off-charges versus case rate payment approaches.

the hospital is very risk averse, this pattern is inconsistent with the hospital using its negotiating leverage to obtain a charge-based payment formula.

Moreover, one would expect that smaller hospitals, which may see an insufficient number of patients to manage the risk associated with a few high cost outliers effectively, to be more likely to push for discount-off-charges based contracts. However, the authors' detailed results, presented in Appendix Table 8, reveal that (conditional on market structure) larger hospitals are more likely to operate under charge-based payment approaches. That is, the authors find that a larger "monopolist" hospital is more likely to be paid as a percentage of charges than a smaller "monopolist" hospital.

Finally, the authors also posit that, to the extent that hospitals are paid under case rate approaches, they prefer case rates that are specific to the particular hospital rather than being based on Medicare case rates. However, again it is not clear why a hospital with information about its own costs (and sufficient market power to negotiate for a favorable payment arrangement) cannot secure a Medicare-based case rate payment arrangement that is, on average, sufficient to cover its costs and a normal return.

Other Issues with the Papers' Empirical Approach

Health plans and hospitals typically negotiate simultaneously over the entire bundle of services that a hospital provides. As a result, the prices negotiated for a particular service can only be meaningfully assessed in the context of negotiations for the entire bundle of services: hospitals and plans may agree, for example, to higher prices for cardiac procedures in return for lower prices for, say, obstetric services. Or, they may trade off higher inpatient rates for lower outpatient rates. As a result, the paper's analyses of prices for particular services may reflect this bargaining dynamic rather than any factors that are idiosyncratic to particular services. Indeed, even the aggregated analysis of inpatient prices may be affected by the omission of any corresponding and related outpatient price data, or by the omission of data for the services provided by physicians employed by the hospital.

The authors identify MRI procedures as particularly useful to assess in isolation as they are less differentiated across patients and facilities. While they are likely correct regarding MRI's greater homogeneity, studying MRI procedure prices in isolation has limitations beyond its focus on a single service: MRIs are also provided by freestanding (non-hospital) facilities. However, the analysis focuses only on hospital-based MRI services and therefore potentially ignores a major source of competition to these hospital-provided services. For both these reasons, any estimated association between the prices for a hospital's MRI services and the number of hospital competitors may reflect multiple factors other than hospital-payor bargaining dynamics.

As noted earlier, the data lack any information on the prices paid by BCBS plans. These plans typically represent either the first or second largest plan in a particular area, so, as the authors recognize, their omission could bias the results. The paper's assessment of the differences between high and low BCBS share markets raises questions. We already noted the unexpected result that, in markets in which BCBS has a high share (and the three studied insurers likely have concomitantly lower share), hospital mergers are not associated with any change in prices. Similarly, in the cross-sectional analyses, in areas with high BCBS share, the number of hospital competitors is not associated with any measured variation in price levels. Again, these are the areas in which one might expect to see the most significant effect, if in areas in which Aetna, Humana and UnitedHealthcare are relatively smaller, hospitals are better

able to negotiate favorable rates. Despite this puzzle, the authors maintain that “our main finding that having fewer hospitals in a market is associated with higher prices...remains robust.” Whether the reason for the variation in results across high and low BCBS share areas has anything to do with systematic differences in insurers’ relative shares or arises, rather, because BCBS share is itself associated with certain market characteristics (such as patient number or density) is unclear.⁹

Lastly, the authors estimate the effect of the combined share of the three health insurers contributing data to their analysis. However, what should affect the price that an individual insurer pays is its own share: for a variety of reasons, hospitals may be willing to accept lower rates from insurers that provide more patients, and the shares of other insurers may be associated with the alternatives available to a hospital if it fails to reach an agreement with a particular insurer.¹⁰ To the extent that the paper find lower hospital prices in areas where the three insurers’ combined share is larger, this may be attributable to other unmeasured market characteristics that are related to this measure of combined share.

Conclusion

The recent update to “The Price Ain’t Right?” provides some additional analyses and further discussion of the underlying empirical methodology. While it addresses interesting policy questions, as the authors note, the papers’ findings can at most be viewed as describing observed associations, not causal links. Some of the anomalous findings we describe in this note indicate that further research (and data) are necessary to make even these associations with confidence.

⁹ Given the reported counts for hospitals and counties in the high and low BCBS share areas, it appears that the areas with high BCBS shares tend to be smaller.

¹⁰ While the data provided to the authors do not identify the particular payor associated with each claim, the authors should be able to identify the relative size of each payor in each market from the number of claims associated with that payor and use that information, along with information on the total insured population to develop measures that are more aligned with each individual insurer’s share.