Department of Economics and Accounting
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The Effect of Hospital Concentration on Bankruptcy Rates

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Abstract:

This paper details a study conducted on 59 Florida counties from 2013 to 2018, on the effect of hospital consolidation on bankruptcy rates. The basis of exploring this connection is the rise in mergers and acquisitions in the healthcare industry over the past 20 years. Increased consolidation in the hospital market has been associated with higher prices. Many hospitals consolidate to cut costs and increase bargaining power relative to insurance companies, however, the financial effects on patients are not well understood. Uninsured patients often pay medical costs out-of-pocket. This increases their likelihood of being adversely affected by rising prices relative to their insured counterparts, who only pay an average of 2-3% of total costs. I calculated a Herfindahl–

1. Introduction:

Hospital consolidation has become a common trend in the United States health care

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who are uninsured and pay all or most costs completely out-of-pocket. To quantify market concentration, I will use the Herfindahl-Hirschman Index (HHI), which ranges from 0 to 10,000 and is calculated by squaring the market share of each firm and then summing those values. It should be noted that mergers are not the only explanation for changes in hospital concentration, as hospital openings and closings can also affect this figure.

I will be using a regression model using data from 59 Florida counties from 2013 to 2018, to quantify the effect of hospital consolidation on bankruptcy rates. I chose to study the state of Florida because it has the 4th highest uninsured rate in the country and would likely show more significant results than a state with a lower uninsured rate. Also, data on Florida's hospitals, hospital systems, admissions, outpatient visits, bankruptcy filings, and other key variables made calculating the necessary statistics possible.

4. Data:

The data used for this study was obtained from several federal, state and private sources. I compiled data from 59 out of Florida's 67 counties from 2013 to 2018. The excluded counties are Dixie, Gilcrest, Glades, Hamilton, Jefferson, Lafayette, Liberty and Volusia county. The American Hospital Association did not provide data on these counties because they do not have health care facilities deemed as hospitals, but rather smaller urgent care, private practice, and family doctor offices.

HHI data was from the American Hospital Association (AHA) Annual Survey on each hospital, healthcare provider, county, number of admissions and number of outpatient visits. Admissions figures are calculated using the number of patients, excluding newborns, accepted for inpatient service during the reporting period. This number includes patients who visit the emergency room and are later admitted for inpatient services. Total outpatient visits include all clinic visits, referred visits, observation services, outpatient surgeries, and emergency room visits, provided the patient is not lodged in the hospital. Both admissions and outpatient figures are either reported by the hospital or estimated by the survey analysts for a nonreporting hospital. If data on the individual hospital was limited to a period of fewer than 12 months, the data was expanded by the survey analysts to reflect twelve months. The AHA annual survey did not have data on the 8 excluded counties.

Bankruptcy data was compiled from the U.S Courts quarterly publications on the number of bankruptcy filings. I used the data from the F-5A report which details the "U.S. Bankruptcy Courts business and nonbusiness cases filed, by catreufas42 Tf1 0 0 1 303.s

Economic and Demographic Research, which calculated Florida's county estimates based on the results from the Florida Demographic Estimating Conference and volume 52 of the Florida Population Study. I gathered marriage dissolution counts and rates by county from The Florida Department of Health through the privately-owned Bureau of Vital Statistics in Florida. These counts include dissolutions and annulments of marriage.

5. Methods:

I used bankruptcy rates as a proxy for patient financial burden and its correlation to changes in hospital concentration in Florida. There were 354 observations in the multivariate regression, each of which represented one county-year combination in Florida from 2013 to 2018 (for example, Miami-Dade 2013, Miami-Dade 2014, etc.). I calculated a Herfindahl–Hirschman Index for each healthcare market, which I defined as one county in a particular year. Each observation has a population, unemployment rate, number of divorces, median income, uninsured rate, and bankruptcy rate.

County-level data was used because hospital mergers do not often occur within one city unless that city is very large. Using state-level data would likely drown out the effects of mergers with many other factors that would differ by state, for example, differences in health care policies and Medicare expansion. Using a state with many counties, no Medicare expansion and a high uninsured rate provided a way to keep observations as similar as possible, while still maximizing the chance of significant results.

Bankruptcy rates were calculated by dividing the total number of nonbusiness bankruptcy filings for each county-year by the corresponding population this variable had an average of about 0.18%. Business bankruptcy filings which are usually under chapter 11, were available but not applicable to this study because the relative wealth of the county was captured by median income, and because bankruptcies due to medical debts fall under the nonbusiness category. All chapters of nonbusiness filings were included in the subtotals because neither chapter 7 nor chapter 13 are exclusive to medical debt, and involve differences in terms of restructuring debt, and the availability of assets.

The HHI was calculated to measure market concentration, using hospital admissions as well as outpatient visits. For each county-year observation, I used the number of admissions/ outpatient visits as the weight of each hospital. However, the hospital weight was combined into the weight of the health care provider, which may or may not have had multiple hospitals within it. This is what allowed me to measure hospital consolidation changes over time. The market share of each health care provider (HCP) was used to calculate an HHI value for each county-year ranging between 0 and 10,000, using the following formula.

$$\mathbf{HHI = 10{,}000*[}(s_1)_2 + (s_2)_2 + (s_3$$

the uninsured rate is added to the equation. The strength of the correlation between HHI and bankruptcy decreases slightly when the uninsured rate is added to the regression. This correlation is not as strong but remains significant. When including HHI, population, unemployment rate,

7. Discussion and Conclusion:

The results of this study showed that bankruptcy filings and hospital market concentration (HHI) had a significant inverse relationship. Previous literature found that when hospitals consolidate, this increases the market concentration, decreases competition, and thus increases prices. I hypothesized that consolidation would have a negative effect on patient finances. I measured the bankruptcy rate in response to price increases caused by mergers and consolidation, since past studies found that over half of all bankruptcy filings are due to medical expenses, and because the state of Florida has a significantly high uninsured rate. However, this data shows that the opposite is true. When a county has a more concentrated, less competitive market, bankruptcy rates seem to be lower, even when controlling for the other leading causes of bankruptcy and the uninsured rate in that county-year.

This may be explained by the fact that not all hospital debt leads to bankruptcy. Uninsured patients may be faced with greater medical expenses when HHIs are greater, but not to the point of bankruptcy. It is also possible that there was not a significant change in HHI over the 6 years and that the individual mergers, openings, and closings were not well captured by this measure. In Graph 2 we can see that the mean HHI calculated with admissions remained relatively stead(on)] TJETQq0.00000912 0 612 7912 7912 7912 76gF1 12 Tf1 0 0 1 168.33 5q0.00000912 0 612

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Crawford, G. and Yurukoglu, A. (2010). The welfare effects of bundling in multichannel television markets. unpublished manuscript, University of Warwick, Stanford University.

Gaynor, M. and Vogt, W. (2003). Competition among hospitals. RAND Journal of Economics, 34:764–785.

Gaynor, Martin. 2018. “Examining the Impact of Health Care Consolidation.” Statement before the Committee on Energy and Commerce Oversight and Investigations Subcommittee, US House of Representatives, February 14, 2018.

Volpp, K. G., Williams, S. V., Waldfogel, J., Silber, J. H., Schwartz, J. S., and Pauly, M. V. (2003). Market reform in New Jersey and the effect on mortality from acute myocardial infarction. Health Services Research, 38(2):515–533.

Berry, Steven T., and Philip A. Haile. 2014. “Identification in Differentiated Products Markets Using Market Level Data.” Econometrica 82 (5): 1749–97

Crawford, Gregory S., and Ali Yurukoglu. 2012. “The Welfare Effects of Bundling in Multichannel Television Markets.” American Economic Review 102 (2): 643–85.

Kane, N. M., Magnus, S. A. 2001. “The Medicare Cost Report and the Limits of Hospital Accountability: Improving Financial Accounting Data.” Journal of Health Politics Policy and Law 26 (1): 81–105.

Ho, V. and Hamilton, B. H. (2000). Hospital mergers and acquisitions: Does market consolidation harm patients? Journal of Health Economics, 19(5):767–91.

Kacik, Alex. *Beth Israel Deaconess and Lahey Health Complete Merger*. Modern Healthcare, 1 Mar. 2019.

U.S. Census Bureau, Real Median Household Income in the United States [MEHOINUSA672N], retrieved from FRED, Federal Reserve Bank of St. Louis;

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