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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–Hirschman Index for each county and year, then measured the effects on the bankruptcy rate. I expected to find that increased consolidation would cause prices to go up, and thus a higher bankruptcy rate. However, I found that there is an inverse relationship between these two variables. The results show that increased market concentration is associated with lower bankruptcy rates, even when controlling for other leading causes of bankruptcy. This effect is magnified when independent variables are lagged for 1-2 years and bankruptcy rates are measured later. This finding, in conjunction with previous research that established prices increase with market concentration, suggests that hospitals price discriminate. My findings suggest that even though prices may increase for insurance companies, they do not necessarily increase for uninsured patients to the point where it would cause bankruptcy. I speculate that hospitals may be using profits from insurance companies to cover unaffordable medical bills for those who are uninsured, and thus decreasing bankruptcy rates following consolidation.

1. Introduction:

Hospital consolidation has become a common trend in the United States health care industry. There have been 1,519 hospital mergers between 1998 and 2018, with hospital markets being increasingly dominated by a handful of powerful hospital systems (Gaynor 2018). Growing concern for the efficiency and efficacy of our healthcare system demonstrates the importance of analyzing how mergers and other forms of consolidation may affect the lives of Americans. Previous research has shed light on the effects of mergers on market competition, prices, quality of care and mortality rate, yet patient financial health in the face of these changes is not well understood.

In November 2018 the Massachusetts Attorney General approved a deal that merged two of the largest hospitals in Massachusetts. Beth Israel Deaconess Medical Center and Lahey Health officially combined to form Beth Israel Lahey Health, the second-largest health system in the state (Kacik 2019). Hospital administrators claim that mergers improve the quality of care, increase efficiency and reduce costs. If there were no negative effects of these mergers, then the government would likely encourage and perhaps even incentivize them. Instead, the Massachusetts state government created a laundry list of requirements to approve this merger, including compliance with public insurance companies, a budget allocated to low-income families, as well as a 7-year price cap. These administrative specifications imply that merging warrants financial remedies, protection, and accommodation for patients, especially those with lower incomes and/or limited insurance.

Consolidation of large firms can in some cases significantly decrease market competition, leading to increased prices. The following study attempts to measure the financial burden on patients by measuring bankruptcy rates with changes in hospital market concentration. In the following sections, I will explain the connection between hospital mergers and price increases, the potential effects on uninsured patients, and why bankruptcy rates can be used as a proxy for patient financial burden. I will go into detail about the data sources and methodology used in my regression and data analysis. This paper will then explain the results, limitations and policy implications of my study.

2. Literature Review

I. Mergers, Bargaining and Price Increases:

Mergers have been found to decrease the quality of care meanwhile increasing prices by approximately 40% (Kenen 2019), both of which decrease consumer surplus. Many hospitals advocate for mergers because they believe that it will allow them to provide better care to patients, due to increased internal efficiency and a reduction in administrative costs. Hamilton and Ho published a study in 2000 citing evidence of a reduction in the quality of care following a hospital merger, while a different study (Dandrove 2003) saw an increase in producer surplus. This is likely the result of price increases and significant cost reductions.

Hospitals and insurance companies bargain over prices and percentages paid for different patient services. Hospital mergers increase the hospital's bargaining power in their negotiation with insurance companies. Once they gain the advantage in this situation, they have the incentive to increase prices. Hospitals price discriminate, so the negotiated price between the hospital and different insurance companies will vary. This price discrimination is especially true for uninsured patients, who are frequently charged more than what private insurers or programs pay for care (Anderson 2007). Despite being charged larger amounts for similar services, uninsured

patients are often unable to pay the billed amount and do negotiate individually on a smaller scale (Asplin et al 2005).

The effects of this bilateral negotiation have been explored in the context of other markets. Crawford and Yurukoglu published a study in 2012 on bargaining between cable companies and content providers. They found that one way a party will earn more beneficial terms of trade is by improving its bargaining power through merging. For cable companies this meant smaller cable companies merging with much larger ones to cut costs. This logic of merging with a competitor to cut costs extends to hospitals as well. Once a hospital merges with its competitor, they increase their ability to adjust prices and percentages paid in their favor (Kenen 2019). Dafny and Ho found in a study done in 2016 that this effect not only occurs with horizontal mergers in the same geographical area but also in cases where the merging parties are 90 minutes apart. This is because the key factor that drives this geographical difference is that bargaining power can only be gained in the healthcare industry when the two merging parties share common patients and insurers. One way that mergers have been quantified concerning their effects on the market has been in a study by Fulton in 2017 where he used HHI measures and found that there has been a tremendous amount of consolidation over the past 20 years, and more specifically from 2010 to 2016.

Hospital profits are heavily influenced by relative bargaining power when it comes to price negotiations between the hospital and insurance companies. DRGs or Diagnostic Related Groups are how health insurance companies (public and private) categorize hospitalization costs. When a patient is seen by a health care professional, they are placed in one of approximately 475 different DRGs and the insurance company will pay the hospital the pre-determined amount. The price for each DRG depends on how influential the hospital is compared to the insurance company. When the insurance company is larger and more powerful than a particular hospital, then it will attempt to drive down the negotiated DRG price. Consolidating would give hospitals more leverage to drive up this price. If a hospital spends less than that fixed price, it will earn a profit. If the hospital ends up spending more, the hospital will lose money (Davis 2020).

There are for-profit and nonprofit hospitals in our health care industry. Gaynor and Vogt found that there is little evidence to support the notion that these two types of hospitals price differently. In addition to this, a study by Capps et al. (2010) examined whether nonprofit hospitals offered more charity care or services in response to their increase in market power. After analyzing hospital data in California for a period of 7 years, they found no significant difference in the number of socially beneficial activities when their market power varies. For this study, I will be treating profit and nonprofit hospitals equally.

II. Uninsured Patients:

Insured patients are relatively inelastic to price changes in the healthcare industry compared to uninsured patients. This is due in part to the fact that insured patients pay a very small fraction of medical costs out-of-pocket, while uninsured patients will likely pay a much larger portion out-of-pocket. Gaynor and Vogt (2003) found that on average, patients will only pay 2-3% of the hospital bill out-of-pocket. They also found that this implies that bargaining incentives make hospitals act more elastically than individual patients, but less elastically than patients without insurance.

Patients without insurance do not pay the negotiated DRG price discussed in the previous section since they are not associated with an insurance company. This means that even though the hospitals are merging to increase their bargaining power, a major side effect is an increase in

"sticker prices" which are the non-negotiated prices posted by individual hospitals on every procedure, medicine, and piece of medical equipment. Uninsured patients are charged the total "sticker price" out of pocket, which tends to be higher than DRG prices.

When a merger takes place and the new hospital system leverages this power to pay a smaller percentage of healthcare costs and increase prices, insured patients tend not to feel the effects of this financial tug-of-war. Premiums, copays, and deductibles would change only slightly if at all. On the contrary, uninsured patients deal directly with the hospital, so they are more likely to feel the effects of price changes (Gaynor et. al. 2003). Berry and Haile (2014) found that to measure the effects of hospital and insurance company bargaining, it is important to see how elasticities of demand vary depending on the type of coverage a patient has. They found that the risk-reduction component of insurance dampens consumer price responsiveness relative to having no insurance.

A patient's finances and insurance coverage status can directly affect their physical health. Uninsured patients are often driven to wait until they are in a health emergency to seek medical care to avoid unaffordable medical bills. One in five uninsured adults went without needed medical care due to cost in 2018. When uninsured patients do check into hospitals, the costs often place them in significant financial distress since eight out of ten uninsured individuals are below 400% of the Federal Poverty Line.

III. Bankruptcy:

Lack of insurance paired with a low income can place individuals in a position where they are at risk for high medical bills along with the inability to pay them, with extreme cases resulting in bankruptcy. Uninsured adults are likely to use up savings, borrow money and have their bills sent to collection agencies (Hamel et al 2016). I will be attempting to use bankruptcy rates as a proxy for the financial burden that uninsured patients incur after increases in the cost of care after hospital mergers. A previous study by Thomas G. Koch (2013) used a similar approach to see how the implementation of the EMTALA (Emergency Medical Treatment and Active Labor Act) impacted insurance rates and bankruptcy rates. Bankruptcy rates can be a valuable tool for measuring the financial burden incurred from large medical expenses, especially since over 50% of all bankruptcies involve health care debt. (Himmelstein et al, 2005).

A different study by Alejandro Arrieta (2013) used "hospital bad debt" to measure the effects of the Massachusetts health care reform on unpaid medical bills. He used bankruptcy rates in a difference-in-difference approach, but he mentioned that bankruptcy does not tell the whole story. He claims that bankruptcy only shows extreme cases, and since not all unpaid medical bills will necessarily lead to bankruptcy, it would be missing the still painful burden of incurring unaffordable levels of debt. He used CMS Hospital Cost Reports (2004-2009) to obtain his data.

This study uses bankruptcy rates, which does not capture the subtleties of financial burden, but rather more extreme cases. There is considerable evidence that medical bills may be linked to consumer bankruptcy (Fay et al, 2002).

3. Question:

My research attempts to see how hospital mergers, which increase market concentration, affect patients financially. Within a smaller area, a hospital that merges with surrounding facilities, will decrease competition and therefore increase prices. This would likely have a stronger effect on patients who pay a significantly large co-payment percentage, as well as those

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 chapter of the bankruptcy code, district, and county, during the 12-Month Period Ending December 31 of [each year starting 2013]." (uscourts.gov).

To capture the effect of health insurance coverage on bankruptcies, I used the US Census Bureau's Small Area Health Insurance Estimates (SAHIE) to compile data on the number of uninsured Floridians. The SAHIE provides data on the estimated number of people aged 65 and under who do not have some form of health insurance. They are the only data source that provides annual health insurance coverage rates on a county level across the United States. Since there is currently no annual survey for these figures, analysts used models to estimate these statistics.

The Federal Reserve Economic Database (FRED) provides an annual estimate for median household income using U.S census data. The household data is collected as of March each year and is not seasonally adjusted. I collected annual unemployment rate averages from The Bureau of Labor Statistics on a county level. Population figures were sourced from the Office of

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.

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

Where S is the market share for each HCP, calculated by dividing the number of admissions or outpatient visits for that HCP by the total number of admissions/outpatient visits in that county-year. This was repeated for each county-year and for both admissions and outpatient visits, reaching a total of 708 HHI values.

For example if a county had 3 different HCPs, and HCP1 had 200 admissions, HCP2 had 300 and HCP3 had 500 admissions, the admissions HHI for that county would be $=10{,}000*[(200/1000)_2+(300/1000)_2+(500/1000)_2] = 10{,}000*[.04 +.09+.25]=3{,}800$.

The focus of the study was to see the effect of HHI on bankruptcy rates, but other variables were included as controls to capture any other correlations that could be present in the data. According to America's Debt Help Organization, unemployment and divorce are the second and fourth leading causes of bankruptcy after medical expenses, with Florida having the second-highest bankruptcy rates in the country.

Median income and population were also used as controls for differences between counties and across the 6 years observed in this study. Listed in Table 1 are some summary statistics on the main dependent and independent variables in this study. Notice the particularly high average uninsured rate. The uninsured rate variable was included because it naturally provides a possible link between consolidation and bankruptcy through increased medical bill charges. The regression was run using the following formula.

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7$$

Where Y is the bankruptcy rate, calculated by dividing the number of nonbusiness filings by the population of that county-year. Each X variable represents one of the 7 independent variables, including admissions/outpatient HHIs, population, divorce rate, unemployment rate, median income, uninsured rate, and a year dummy variable used to capture any universal time trend.

Table 1
Summary Statistics

Variable	Mean	Std. Dev.	Min	Max
Bankruptcy Rate	.0018	.0014	.0003036	.0143946
Population	298,645	474,002	8479	2,779,322
Uninsured Rate	.2133	.0486	.1	.37
Unemployment Rate	.0552	.0161	.026	.12
Median Income	45,584	8,514	29806	73836
Divorce Rate	.0142	.0536	.0000315	.3901412
Admissions HHIs	6,889	2,944	1443.193	10,000
Outpatient HHIs	6,929	2,884	0	10,000

This table contains brief summary statistics on the main dependent and independent variables used in the regression. Means and standard deviations do not include values with the correct number of significant figures. None of the displayed values for bankruptcy rate and divorce rate are displayed with significant digits.

6. Results:

I expected to see that bankruptcy rates and HHI concentrations would show a direct relationship, where a county-year with a highly concentrated market (HHI closer to 10,000), would have a higher bankruptcy rate. However, for regressions A-E (Table 2) HHI and bankruptcy rates show an inverse relationship. Our results show that less concentrated markets (HHI closer to 0), tend to have higher bankruptcy rates.

The HHI measure that was calculated using admissions seemed to have a stronger correlation with bankruptcy rates than the outpatient measure, but only by approximately .04e-07 for every 1 unit of increase in bankruptcy rates. Although both HHI values were inversely related to bankruptcy rates, this difference can be seen when comparing regressions, A and B. These first two bivariate regressions only accounted for approximately 18% of the variation in bankruptcy rates. Therefore, I decided to use the admissions HHI variable for the remainder of the regressions.

In regression C, population, unemployment rate, and median household income all show a direct and significant relationship with bankruptcy rates. This is also true in regression D when

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, divorce rate, median household income, and uninsured rate, they accounted for approximately 32% of the variation in bankruptcy rates. In regression D we can see that HHI decreases by 1.49e-07 for every 1 unit of increase in bankruptcy rates. Regression E was similar to D but included a dummy variable for the year and only used county-years with uninsured rates above the 75th percentile. This showed a .11e-07 increase in the correlation between HHI and bankruptcy rates, and the uninsured variable became significant.

Table 2
Regression Results of Bankruptcy Rate on various Independent Variables

Independent Variable	(A)	(B)	(C)	(D)	(E)
Admissions HHI	-1.92e-07 (2.09e-08)**		-1.44e-07 (2.60e-08)**	-1.49e-07 2.66e-08)**	-1.60e-07 (2.98e-08)**
Outpatient HHI		-1.88e-07 (2.16e-08)**			
Population			4.47e-10 (1.67e-10)**	3.93e-10 (1.67e-08)*	5.11e-11 (2.35e-10)
Unemployment Rate			.0272014 (.0038302)**	.0251591 (.0045481)**	.0138066 (.0090181)
Divorce Rate			-.0015923 (.0010235)	-.0018488 (.0010692)	-.0026537 (.0017498)
Median Household Income			3.37e-08 (7.35e-09)**	3.46e-08 (7.43e-09)**	3.98e-08 (8.82e-09)**
Uninsured Rate				.001331 (.0015967)	.0060798 (.0029375)*
Year Dummy	No	No	No	No	Yes
R_2	0.1922	0.1768	0.3230	0.3243	0.2950
Adjusted R_2	0.1899	0.1744	0.3132	0.3126	0.2658
N	354	354	354	354	354

The unemployment rate, bankruptcy rate, divorce rate, and uninsured rate were formatted as a decimal. Population (count) and median household income (dollars) were formatted as a whole number. Each letter represents a different regression. Numbers in parenthesis indicate the standard error of the coefficient. Yes and No indicate if the year dummy variable was used in the regression. Asterisks are used to identify significant results with * and ** indicating a 95% and 99% confidence respectively.

I created a lagged variable to account for a delayed effect on the independent variables from changes in the bankruptcy rates. This means that for every unit of change in the HHI for a given year, the regression will measure the correlation with bankruptcy rates from 1 or 2 years after the HHI year. Because of this, the bankruptcy rate values from 2018 would not be used in this regression.

Table 3
Regression Results of Lagged Independent Variables on Bankruptcy Rates

Variable	1 Year Lag	2 Year Lag
Admissions HHI	-1.61e-07**	-1.72e-07**
Population	3.80e-10*	3.95e-10
Unemployment Rate	.0233723**	.0159997
Divorce Rate	-.0022432	-.0029288*
Median income	3.31e-08**	3.25e-08**
Uninsured Rate	.0033447	.0056301**
R_2	0.3135	0.3187
Adjusted R_2	0.2992	0.3009
N	295	236

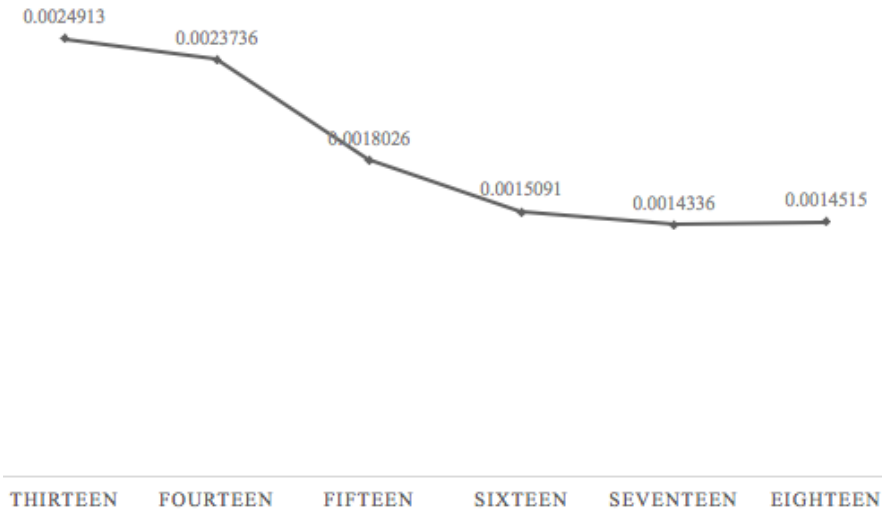
The table above uses uninsured, bankruptcy, divorce, unemployment and uninsured rates as a percentage of the population in a given county year. 2018 is omitted from the data in the 1-year lag column because the effects of the independent variables are measured 1 year later, meaning a change in HHI from 2013, will be measured in 2014 bankruptcy rates. The same is true for the 2-year lag, except both 2017 and 2018 are omitted, meaning a change in HHI from 2013 will be measured in 2015 bankruptcy rates. Standard errors are not included.

In Table 3, both the 1 and 2 year lags produced significant results for HHI and median income. The correlation between HHI and bankruptcy rates is still negative, meaning they are still inversely related when there is a lag. The 2 year lag in the measurement of bankruptcy rates is approximately .11e07 stronger than that of the 1-year lag. The divorce rate, median income, and uninsured rate are all significant in the 2-year lag regression. Similar to table 2, the independent variables in the lagged regressions only accounted for approximately 30% of the variation in bankruptcy rates. Also, the relationship between bankruptcy rates and both HHI and divorce rate are inverse, while the remainder of the variables show a direct relationship.

Graphs 1 and 2 show how average bankruptcy rates and HHI values changed over time. We can see that bankruptcy rates have been falling since 2013. Average admissions HHI values have remained steady, but outpatient HHI values dipped in 2014 and then began to rise after that, through 2018.

Graph 1

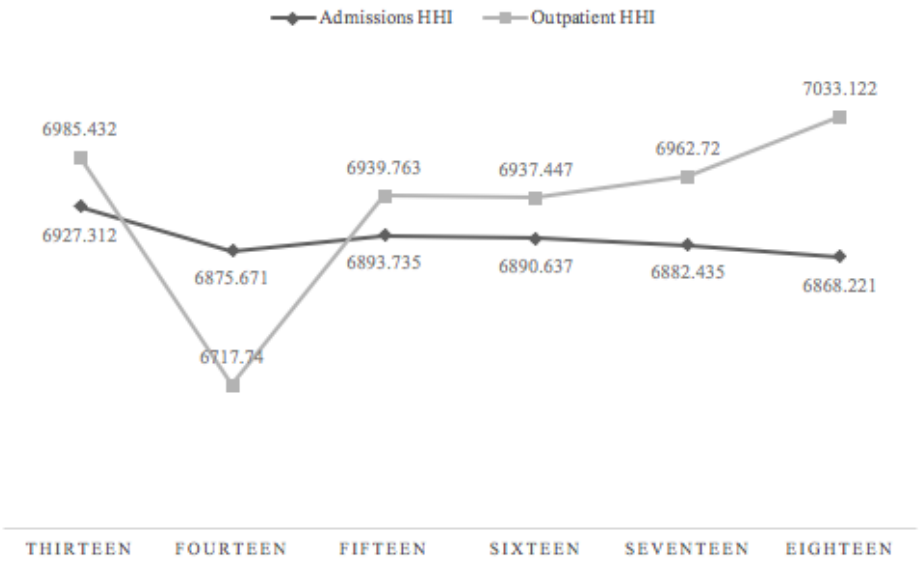
Annual Mean Bankruptcy Rate 2013 to 2018



The graph to the left (Graph 1) displays the mean bankruptcy rate for 59 Florida counties from 2013 to 2018.

Graph 2

Annual Mean HHI Market Concentration for Hospital Admissions and Outpatient Visits 2013 to 2018



The graph to the left (Graph 2) displays the mean HHI market concentration measure for each year from 2013 to 2018. The gray line represents the HHI calculated using hospital outpatient visits, and the black line represents the HHI calculated using hospital admissions.

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 steady over the 6 years. Perhaps tracking counties with or without mergers would reveal a different relationship, rather than looking at all counties regardless of specific consolidation events.

I created a 1 and 2-year lag to capture any delayed effects of the independent variables on bankruptcy rates. This is because when a hospital bill is past due it takes 6 months to be sent to a collection agency, then additional time for the household or individual to file for bankruptcy if they are unable to pay. However, instead of seeing the relationship between market concentration and bankruptcy rates become direct, it became more strongly inversed.

When thinking about how price increases may affect bankruptcy rates, price discrimination is the most plausible reason for this result. Previous research has found that consolidation in the health care industry increases hospital bargaining power relative to insurance companies. This, in turn, allows the hospital to increase prices and generate more profit for each DRG. This inverse relationship between market concentration and bankruptcy rates may be because these price increases only apply to insurance companies and insured patients. Perhaps increased profits as a result of consolidation allow hospitals to have more money to help cover the cost of negotiated charges for those who cannot pay their medical bills and lack insurance. The results of the lagged bankruptcy rates in Table 3 suggest that bankruptcy rates are reduced further when measuring 1 or 2 years after increases in hospital market concentration.

I can conclude that in 59 Floridian counties from 2013-2018, increased market concentration is associated with a decrease in bankruptcy rate. As previously mentioned, there are variations to the methods used in this study that could show different results. However, I did not find evidence that hospital consolidation is associated with financial burden leading to bankruptcy, but instead that county-years with more consolidated health markets had less bankruptcy. Policy implications of this study would encourage hospital consolidation and mergers on the basis that it is associated with less financial burden on citizens and would increase total surplus.

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