Stakeholders, Governance, and Output: Evidence from the Hospital Sector*

Christoph Herpfer† Jianzhang Lin‡ Gonzalo Maturana§

November 18, 2022

[PRELIMINARY DRAFT]

This paper studies the effect of stakeholder orientation on the management and performance in the hospital sector. We exploit stakeholder orientation variation that results from state-level law changes governing the conversion of hospitals from nonprofit to for-profit. We show that for-profit orientation reduces hospital spending on emergency rooms, Medicaid patients and research activity, while simultaneously increasing the focus on revenue generation. Consistent with negative spillover effects, nonprofit hospitals located nearby converting hospitals experience an increase in emergency room visits. Finally, we investigate potential changes in hospital governance to align corporate behavior with stakeholders. Newly converted for-profit hospitals replace senior executives and adjust board composition by replacing MDs with MBAs.

keywords: Hospitals, for-profit status, conversion of healthcare institutions laws, governance, stakeholders

*We are grateful to Sam Kruger and Jordan Nickerson, as well as conference and seminar participants at the 2021 FRA Early Ideas session, Emory University, and the Georgia Institute of Technology for their helpful comments. We also thank Jinoug Jeung for research assistance and the Goizueta Business School Dean's Ad-Hoc Research Grant for research support.

†Goizueta Business School, Emory University. Email: Christoph.Herpfer@emory.edu.
‡Goizueta Business School, Emory University. Email: Jianzhang.Lin@emory.edu.
§Goizueta Business School, Emory University. Email: Gonzalo.Maturana@emory.edu.

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Two major aspects of corporate governance are the choice of a corporation's objective function and the subsequent implementation of policies to align the corporation's actions with the parties that have an interest in the corporation or that can be affected by its actions. While ample research has focused on how to align corporate behavior with shareholders and the balancing of shareholder interests with those of the community in which the corporation is embedded (i.e., corporate social responsibility), fewer studies have focused on the different corporate behaviors that result from serving other types of stakeholders. One particularly important, yet understudied area of investigation, is the governance of nonprofit entities that focus on benefiting the community at large as opposed to only benefiting shareholders (Graham, 2022).

One key challenge when comparing nonprofit corporations with for-profit corporations is that they are not evenly spread across the economy. While there are few nonprofits in, for example, the industrial or commodities sectors, they comprise an overwhelming majority of museums and universities. Although theory predicts large differences in the objective functions and governance mechanisms used by both types of entities (Glaeser, 2002), identifying the effect of stakeholder orientation on corporate output and governance is difficult given the lack of within-sector variation in corporate stakeholder orientation.

In this paper, we overcome this challenge by studying how the choice of stakeholders, or for-profit orientation, affects output and management decisions in a sector in which both nonprofits and for-profits directly compete: the hospital sector. Healthcare spending makes up 19.7% of U.S. gross domestic product (GDP), with hospitals accounting for about a third of this spending. About four out of every five hospitals are nonprofits, either because they are government owned or because they belong to private nonprofit organizations.[1] However, the share of for-profit hospitals has increased significantly over recent decades, leading policymakers and patients to question whether for-profit hospitals provide the same quality and affordability of care as their nonprofit-oriented counterparts. Of particular concern is

[1]See data from CMS and BEA.

the possibility that, as they shift stakeholders from local communities to shareholders, for-profit hospitals could reduce unprofitable operations with high community value, such as emergency care. On the other hand, others argue that hospitals, after being privatized, may experience efficiency gains that allow them to improve their performance and the provision of community benefits. This concern looms large given recent evidence on the importance of hospital finances for both hospital investment (Adelino et al., 2015) and clinical decision making (Adelino et al., 2022). This paper contributes to this important debate by investigating the effect of for-profit orientation on a series of financial and operating outcomes of hospitals.

Identifying the effect of for-profit orientation on hospital outcomes is also challenging due to the inherent non-randomness of the choice to convert a hospital to *for-profit*. Non-profit hospitals often change to for-profit status after periods of prolonged weak financial performance, which leaves their assets depleted and limits their ability to finance large, crucial investments. For-profit conversion is usually a last resort to avoid closing the hospital altogether.[2] Thus, worsening hospital outcomes after a conversion may not be due to the conversion itself, but as a result of the hospital's prior downward trend. On the other hand, steady or improved hospital outcomes after a conversion could merely reflect the replacement of inefficient management teams or the alleviation of financial frictions following the change in ownership.

We address this identification challenge by exploiting variation in the decision to convert a hospital to for-profit that results from state-level changes in conversion of healthcare institutions laws. These laws require mandatory approval of conversions by actors such as the state attorney general and effectively create hurdles to the conversion of nonprofit hospitals to for-profit status.[3] Specifically, we construct an index that tracks both the introduction and removal of provisions in these laws from 1990 to 2020 and use this index as an in-

[2]See, for example, Government Accountability Office (GAO) report.

[3]The hospital sector is heavily regulated and prior research has documented how regulatory scrutiny can distort the connections between financing and investment decisions (Adelino et al., 2015).

strumental variable (IV) for the for-profit conversion decision. We show that the index is a strong predictor of the likelihood that hospitals hold for-profit status, with hospitals in states with higher legal hurdles to conversion being substantially less likely to convert to for-profit status.

We show several results that support the validity of our IV. First, the legal provisions that we exploit are uniquely targeted towards the transition from nonprofit to for-profit. We show that these laws do not affect the likelihood of hospitals transitioning in the opposite direction (i.e., from for-profit to nonprofit). Similarly, we also show that these laws do not associate with mergers and acquisitions activity unrelated to changes to for-profit status. Second, we carefully consider the institutional and legal context of our setting (Karpoff and Wittry, 2018). Our framework considers existing "first generation" laws regulating the conversion of healthcare institutions, and we show that our results are not driven by the potential simultaneous passage of secondary conversion requirements. We further show that the conversion law changes are not associated with political elections and are largely bipartisan. Moreover, we show that the effect of the index on for-profit conversion decisions is not driven by different types of lobbying or by a small number of hospitals that are targeted by specific legislation. Third, we also show that the passage of conversion of healthcare laws is not associated with the economic fundamentals of states or with population trends, does not alter the average level of competition and is not the reaction to previous (or ongoing) hospital conversion waves. Overall, these results are consistent with the index only affecting hospital outcomes through the for-profit conversion decision (i.e., the exclusion restriction).

Using this IV regression approach, we find that for-profit conversion leads to a decrease in hospital output among various dimensions, among which are those that are required under Internal Revenue Services (IRS) rules prior to conversion to retain federal tax-exempt status. Specifically, we find a decrease in emergency room (ER) spending and ER outpatient visits, a central source of charitable (uncompensated) hospital care. Furthermore, we find a reduction in the fraction of Medicaid patients treated, which are also relatively unprofitable

patients and patients that, under nonprofit status, must be served by the hospital. We also show that for-profit hospitals decrease intensive care unit (ICU) beds associated with less profitable trauma, psychiatric and pulmonary patients, and decrease research activity. Finally, we also document reductions in the provision of social work services, which are important for communities and patients but not profit centers.

As for-profit hospitals decrease their focus on unprofitable activities, where do they direct their resources? We find that for-profit hospitals increase their emphasis on revenue generation and profitable services; they increase charges to patients for drugs and medical supplies. In addition, for-profit hospitals adjust their operational focus by increasing the number of profitable surgeries and the number of profitable surgical ICU beds, while reducing facility expenses, salaries, and the number of full-time physicians. When we look at aggregate local effects, we find that, after a for-profit conversion, the number of patients treated in neighboring nonprofit emergency rooms rises as the number of patients fall in for-profit hospitals. Since these additional patients increase the costs and strain on nonprofit hospitals, this result is consistent with for-profit conversions producing spillover effects.

Overall, our results show that for-profit hospitals cut down on unprofitable services, while simultaneously increasing their focus on revenue generation and profits. However, many of the services that for-profit hospitals stop favoring are typically associated with high community value. Thus, while not definitive, our results raise concerns as to whether for-profit conversions are good for social welfare.

Finally, we examine whether stakeholder orientation affects management and the composition of the board of directors. We find that hospitals that covert to for-profit are significantly more likely to replace their CEO, and that newly converted hospitals adjust board composition by replacing MDs for MBAs.

Our paper relates to a growing literature on financial incentives and governance in the hospital sector (Glaeser, 2002; Graham, 2022). Adelino, Lewellen, and McCartney (2022) show that hospitals with stronger connections to physicians responded differently to the Fi-

nancial Crisis than their counterparts. Babenko et al. (2021) shows that regulatory pressure can reduce the rents extracted by CEOs in the non-profit setting, effectively replacing shareholder pressure with government pressure. Lewellen (2022) finds that female CEOs manage hospitals similarly to male CEOs. We show that Newly converted for-profit hospitals replace senior executives and adjust board composition by replacing MDs with MBAs.

Our paper also relates to the literature studying the effect of private equity ownership on healthcare outcomes (Harrington et al., 2012; Pradhan et al., 2013; Gupta et al., 2021; Gandhi et al., 2020; Bruch et al., 2020; Gao et al., 2021) and its impact on the interactions between hospitals and government programs (Liu, 2021). Our paper complements these studies by examining the effects on hospital outcomes of a different type of privatization.

A large literature in health economics and public health examines the relationship between for-profit orientation and hospital behavior.[4] However, most of these studies are case studies or correlational in nature, and are constrained by small, localized samples. Thus, it is not surprising that the literature shows a wide range of mixed results.[5] To our knowledge, our paper is the first study at the national level to establish a causal relationship between for-profit orientation and a wide set of hospital outcomes.

1. Data and sample selection

1.1. Primary data

We obtain data from several sources. Hospital characteristics come from the American Hospital Association's (AHA) database, which is compiled from the annual survey of the American Hospital Association to its member hospitals (which comprise nearly all hospitals in the U.S.). These data include information regarding the types of hospital authority, which we use to classify hospitals into government, nongovernment (i.e., nonprofit), and investor-

[4]See Sloan (2000) for an overview of the early literature.

[5]For example, Joynt et al. (2014) find positive effects of for-profit orientation, whereas Horwitz (2005a) and Paul et al. (2020) find opposite results. Other studies of nonprofits and for-profits in the hospital sector yielding mixed results include Needleman et al. (1999), Young and Desai (1999), Hadley et al. (2001), Sloan et al. (2001), Sloan (2002), David (2009), and Hansen and Sundaram (2018).

owned (i.e., for-profit). In addition, these data include detailed information about hospital expenses in facilities and payroll, the number of hospital beds and their use, hospital staff (e.g., physicians, dentist), and social worker activities.

Next, we merge the previous data with data from the Healthcare Cost Report Information System (HCRIS). The HCRIS provides information from cost reports submitted annually to the Center for Medicare and Medicaid Services (CMS) by all Medicare institutional providers, including hospitals. The data from 1995 to 2021 are publicly available from the CMS' website. We extend our sample back to 1991 by requesting additional data from the CMS. The CMS data include important variables for our empirical analyses, such as the total costs of operating ERs and ICU units, patient charges related to supplies and drugs, Medicare/Medicaid inpatient days, patient net revenue, and total assets and liabilities.

Finally, we manually collect information on conversion of healthcare institutions laws. We describe this data and how we use it in more detail in Section 2.

1.2. Secondary data and final sample

We merge our primary data with several macroeconomic variables at the state level. Data on unemployment rates, population, and income per capita come from the Bureau of Labor Statistics. We also obtain information on house prices from the Federal Housing Finance Agency and information on hospital expenditures per capita from the Kaiser Family Foundation.

Finally, we obtain the number of scientific papers written by affiliated doctors of each hospital from Google Scholar, and merge in-hospital service areas (HSAs) classifications.[6] HSAs are local healthcare markets for hospitals. An HSA is a group of ZIP codes whose residents get most of their hospitalizations from the hospitals in that area.

Our data consists of observations at the hospital-year level from 1991 to 2019.[7] We focus on hospitals (private and public) which identify as nonprofit at the beginning of our sample

[6]See The Dartmouth Atlas Project.
[7]This is the longest period for which all variables used in the analysis are available).

period. Thus, our final sample consists of 5,064 hospitals, 576 hospitals of which eventually convert from nonprofit to for-profit.[8] We scale hospital characteristics and financial variables by total hospital beds. Table 1 presents summary statistics for nonprofit and for-profit hospitals (Panel A) and the differences in means between hospitals that convert to for-profit and their counterparts which never convert (Panel B). The table shows that for-profit hospitals have fewer hospital beds, doctors, payroll expenses, and facility expenses, and that hospitals that convert to for-profit are generally performing worse at the time of conversion than the average hospital that never converts.

[Insert Table 1 here]

2. Empirical framework

The main challenge in identifying the effect of for-profit orientation and hospital outcomes is that hospitals do not change status randomly. Nonprofit hospitals mostly convert to for-profit following long periods of poor performance, which draw down reserves to a degree that they cannot continue to finance their ongoing operations or the necessary capital investments (Sloan et al., 2007).[9] Conversion is essentially a measure of last resort to avoid closing the hospital altogether. Thus, a simplistic comparison of hospital outcomes before and after conversion does not allow differentiating between the effect of alleviating capital constraints, a change in ownership and management, and the effect of becoming "for-profit." Possibly due to this challenge, early studies on this topic have not found a clear connection between hospital for-profit conversion and hospital outcomes (Sloan et al., 2001; Joynt et al., 2014).

To overcome this challenge, we exploit variation in stakeholder orientation that results from state-level law changes governing the conversion of hospitals from nonprofit to for-profit. About half of U.S. states have passed legislation regulating the conversion of Healthcare (CH)

[8]Figure IA.1 of the Internet Appendix plots the number of for-profit conversions over time and shows that there is significant variation in the timing of conversions throughout our sample period.

[9]Lu and Lu (2021) describe a similar dynamic in the nursing home sector, with financially underperforming nursing homes being the most likely to convert to for-profit status

institutions. These laws, many of which were passed during a wave in the late 1990s, feature several provisions limiting the ability of charitable hospitals to convert to for-profit status. We focus on the three types of provisions typically considered to be the most relevant. Specifically, we consider provisions that require for-profit conversions to be approved by the states' attorney general or by another state-level agency. We also consider the requirement of a "Certificate of need," which mandates the review of major changes of ownership and investment in the healthcare sector.[10]

We construct an index based on these three types of legal provisions for all 50 U.S. states since 1990. The index captures the introduction and the removal of these regulatory hurdles. For example, an index equal to 0 signals a state without impediments to conversion, whereas an index equal to 3 signals a state that requires attorney general approval, second agency approval, as well as a certificate of need. Figure 1 plots the geographic distribution of the index in 1990 (Panel A) and 2010 (Panel B).[11] Overall, the figure shows that there is substantial variation in the value of the index both across states and time.[12]

[Insert Figure 1 Here]

To identify the effect of shareholder orientation on hospital outcomes, we follow a two-stage least-squares/IV (2SLS/IV). More specifically, we use the previously described index as an instrument for the for-profit conversion decision of the hospitals in our sample. From here on, we refer to this index as the conversion of healthcare (CH) index. Thus, the first-stage regression is:

$$1(for\ profit)_{i,t} = \beta_1 CH\ Index_{i,l,t} + X'_{i,l,t}\Gamma + \epsilon_{i,l,t}, \tag{1}$$

[10]Certificate of need provisions were originally introduced to curb excessive competition in the healthcare sector, and were effectively mandatory under federal law from 1974 until 1987.

[11]Figure IA.2 of the Internet Appendix plots the distributions in 2000 and 2019.

[12]The index increases over time for most states except for Alabama and Illinois. We find 28 changes in the index in 27 states throughout our sample period. Index changes range from -2 (representing the removal of two provisions) to +3 (representing the introduction of all three provisions). Most changes occurred in the wave from the late 1990s, however, there were also 9 changes after the year 2000.

where $1(for\ profit)_{i,t}$, an indicator that takes the value of 1 if hospital i has a for-profit orientation in year t. $CH\ Index_{i,l,t}$ is our measure of the level of regulatory hurdles to for-profit conversions of hospitals in hospital i's state in year t. The vector $X'_{i,l,t}$ represents a wide set of hospital control variables and state-level economic indicators. The second-stage regression is:

$$Outcome_{i,t} = \beta_1 1(\widehat{for\ profit})_{i,l,t} + X'_{i,l,t}\Gamma + \epsilon_{i,l,t}, \tag{2}$$

where $Outcome_{i,t}$ is the outcome of interest (e.g., expenditure in ER) of hospital i in year t,[13] and $1(\widehat{for\ profit})_{i,l,t}$ are the fitted values from Equation (1). We cluster standard errors by hospital to account for serial correlation in error terms within a hospital.

3. For-profit status and hospital outcomes

3.1. The CH index and for-profit conversion

We begin our analysis estimating the first-stage regression from Equation (1). For ease of interpretability, we normalize $1(For\ profit)$ to have a mean of zero and standard deviation of one. Table **2** shows the estimation results.

[Insert Table **2** here]

The most basic specification in column 1, which only includes hospital and year fixed effects, yields a coefficient estimate on the CH index of -0.066, statistically significant at the 1% level. This coefficient indicates that conversion of healthcare laws prevent hospital for-profit conversions and is consistent with the relevance condition of the IV estimation.

However, it is possible that both the conversion decisions and the legal environment for the conversion could be driven by a state's size, economic growth, or economic cycle. In

[13] A change in for-profit status may coincide with shifts in the size of hospital operations. For-profit owners could shrink hospitals to save costs or expand them to increase revenue. To avoid the possibility that our results are driven by these contemporaneous changes in hospital size, we scale all outcome variables by the number of inpatient beds.

column 2, we control for these confounding factors and add state-level controls for income per capita, population size, and unemployment rate. In addition, since the summary statistics have shown that hospitals that decide to convert to for-profit status are different from other hospitals in both size and financial dimensions, we add controls for hospital characteristics (column 3) and financials (column 4). In all specifications, our coefficient estimate on the conversion of healthcare index remains economically and statistically very stable, with our most stringent specification yielding a coefficient of -0.054.

The CH index shows not only economic relevance but also statistical power. The Kleibergen-Paap F statistic of the entirety of the first stage is 16.8, well above the critical Stock and Yogo level for a maximum 10% bias in instrument size, and the individual F-statistic for the index in the most complete specification is close to 11. The index, therefore, fulfills not just the relevancy criterion but also shows properties that alleviate the concern of a weak instrument.

Next, we investigate potential alternative channels through which the CH index could impact hospital behavior and affect the exclusion restriction. Studies exploiting state-level law changes need to carefully account for the legal and institutional context. Specifically, we implement three main tests proposed in Karpoff and Wittry (2018) to validate our empirical framework.

Our first test focuses on one of the main challenges to studies around law changes: lobbying. If a subset of affected firms influences the legislative process to suite their needs, the identifying assumption of the exogeneity of the law changes is violated.[14] To alleviate the concern that lobbying could impact our findings, we conduct a detailed news search in the 2-year window around each of the 28 conversion law changes in our setting. We identify whether any lobbying took place, whether the lobbying was associated with a specific transaction, and whether the lobbying was conducted by nonprofit or for-profit hospital organizations.

[14]For example, in the case of business combination laws, Karpoff and Wittry (2018) show that the effects on firm behavior following the passage of these laws is concentrated in companies which had actively lobbied for them, calling into question the causal relationship between the passage of the laws and changes in firm behavior.

We then re-estimate our first-stage regressions excluding those states that show any evidence of lobbying. The results are presented in Table 3.

[Insert Table 3 here]

In column 1, we exclude all states in which we identify lobbying that is directly linked to the passage of conversion of healthcare laws. In column 2, we drop all states in which we identify general medical sector lobbying surrounding the passage of conversion of healthcare laws, without reference to the specific laws (i.e., "indirect lobbying"). In both cases our first-stage coefficient remains statistically and economically very similar to the full-sample estimation. One remaining concern could be that lobbying is particularly strong if it comes from one specific group (e.g., for-profit hospital associations). In columns 3 and 4, we drop states in which the lobbying effort can be traced to for-profit and nonprofit groups, respectively, and find that our results remain robust.

A second potential issue with law changes could be that they are the result of broader political posturing around elections. For example, if politicians running for office make conversion of healthcare institutions part of their race, the passage of these laws might systematically coincide with gubernatorial elections and other political and economic changes surrounding them. This is an even bigger concern if one party systematically champions for conversion of healthcare laws, meaning their passage systemically coincides with the election of governors from one specific party.

To address this concern, we collect data on gubernatorial elections around the passage of all 28 law changes in our sample. First, we note that there is no pattern of partisan preferences among those changes. Of the 28 law changes, 14 were passed by democratic governors, 12 by republican governors, and two by independents.[15] Changes in conversion of healthcare laws seem, therefore, non-partisan. Regardless, in column 5 of Table 3, we drop

[15]In the two states that reduced the hurdles to conversion, one was passed under a Democratic governor and one under a Republican governor.

all states for which the passage of conversion of healthcare laws coincided with election years and once again find that the first-stage coefficient remains unchanged.

A third set of concerns could be that conversion of healthcare laws do not merely impact the conversion of hospitals to for-profit status, but also reduce the likelihood of conversions in the opposite direction, or hamper M&A activity more generally. Thus, in column 1 of Table 4 we investigate if conversion of healthcare laws impact conversions from for-profit to nonprofit. If these laws also impacted these types of conversion, then our results might not estimate the effect of for-profit conversion, but rather also an effect from a decrease in nonprofit conversion (i.e., changes in the control group). We create a sample of initial for-profit hospitals analogous to our main sample construction, and define a new outcome variable, *1(Nonprofit)*, that takes value 1 for hospitals that are nonprofit. We then estimate regressions similar to our first-stage regressions using *1(Nonprofit)* as dependent variable, and present the results in Table 2. Results shows no evidence of a relationship between conversion of healthcare laws and conversion from for-profit to nonprofit.

[Insert Table 4 here]

A related concern could be that conversion of healthcare laws capture a generally negative climate for mergers and acquisitions in the healthcare sector. We obtain data on mergers from 2000 to 2014 from Cooper et al. (2019). While some mergers lead to a change to for-profit status, most mergers are between institutions of the same for-profit status. Out of 1,137 merger events for 985 hospitals in our sample, only 78, or about 8%, lead to a conversion to for-profit. Although mergers do not seem to lead to a change in for-profit status, we investigate the possibility that conversion of healthcare laws impact merger activity more broadly, rather than just through for-profit status conversion, in column 2 of Table 4. The outcome variable is *1(Target indicator)*, an indicator taking value 1 if a hospital is the target of an M&A transaction in a given year (regardless of whether the takeover attempt is by a for-profit or nonprofit hospital). We find no statistical or economically significant relationship between conversion of healthcare laws and general M&A activity.

Finally, in the Internet Appendix, we investigate if conversion of healthcare laws are associated with competition. One additional challenge to the exclusion restriction could be that states with more stringent laws see a generally higher level of concentration, resulting in lower competition.[16] In Table IA.**1**, we present results from panel regressions of county level Herfindahl-Hirschman indices on the CH index. The coefficients associated with the CH index are economically close to zero and statistically insignificant in all specifications, providing no support to the notion that CH laws could be associated with changes in the competitive environment.

3.2. Stakeholder orientation and hospital output with high community value

We begin this section by examining whether newly converted for-profit hospitals reduce the provision of likely unprofitable, community-oriented services. Specifically, the most prominent of the activities we examine is the provision of emergency room care, irrespective of patients' ability to pay. ERs provide basic medical services as a form of safety net, and are a major source of charity care (Horwitz, 2005b; Morganti et al., 2013). Our first outcome of interest is, therefore, the total expenditure on the emergency room in hospitals. As hospitals change to for-profit status, they might cut back expenditure on this loss center.

Panel A of Table **5** presents the results from estimating Equation (2) using ER expenditure as dependent variable. Standard errors are clustered at the hospital level. For ease of interpretation, we normalize our main instrumented indicator ariable, *1(for-profit)*, so that the coefficient estimate can be interpreted as the change in the outcome variable resulting from a one-standard-deviation change in the (instrumented) likelihood of becoming for-profit. In columns 1 through 4, we progressively add controls for state-level characteristics, hospital-level controls, and hospital financials. The coefficient associated with for-profit conversion ranges from -0.052 to -0.063. Specifically, in our most stringent specification (column 4), a one-standard-deviation increase in the likelihood of becoming for profit decreases

[16]That is particularly relevant as one of the three provisions in the CH index, certificate of need requirements, apply to all hospitals irrespective of for-profit status.

ER expenditure per bed by $58,000, a substantial amount compared to the sample mean of about $40,000.[17]

[Insert Table 5 here]

Another major cost center with high community value is the provision of services to Medicaid patients. Private insurance pay about 75% higher average rates than Medicaid (Selden et al., 2015). Thus, one would expect a reduction in the provision of medical services to Medicaid patients after conversion to for-profit. We test this conjecture in Panel B of Table 5 displaying once again the second stage of our 2SLS regressions.

The outcome is the ratio of Medicaid inpatient day to hospital bed (i.e., size). The results show that, across specification, a one-standard-deviation increase in the likelihood of becoming for-profit leads to 9–11 fewer Medicaid inpatient days per bed, consistent with hospitals cutting the ratio of poorly paying Medicaid interactions after conversion.

Next, we turn to another unprofitable part of hospital operations: the provision of critical care beds not associated with surgery. These beds include cardiac, neonatal, pediatric, burn, and other special intensive beds (Barrett et al., 2015). Importantly, all these types of critical care are particularly unprofitable (Horwitz, 2005b) but provide potentially large community benefits. In fact, the reduction in such beds, especially pulmonary critical care beds by for-profit hospitals have been discussed as a potential driver of the Covid pandemic. Column 1 of Table 6 shows that for-profit hospitals indeed reduce the provision of these non-surgical ICU beds.

[Insert Table 6 here]

We investigate two other measures of "community benefits" in columns 2 and 3 of Table 6. First, we investigate if for-profit conversion leads to a lower propensity to provide social

[17]We note that this economic magnitude reflects the fact that the IV estimate captures the local average treatment effect (LATE) on ER expenditure on those hospitals that convert, that is, the compliers. These compliers are likely hospitals in substantial financial trouble with large initial ER expenditures, leading to these high estimates.

worker services. These services are not revenue generating but are associated with lower rates of re-admission after treatment and therefore provide benefits to patients and their communities, but not hospitals (Steketee et al., 2017). In column 2, the outcome variable in the second stage of our 2SLS estimation is the indicator *1(Social work services)*, which takes the value 1 if a hospital provides social work services in house. We find that, while 87% of our sample hospitals provide social services, a one-standard-deviation increase in the likelihood of being for-profit reduces the prevalence of social work services by a sizable 18.6%.

Finally, another type of community benefits nonprofit hospitals provide is that profits or "surplus" funds get allocated into research. We quantify each hospital's research activity by collecting data on the number of scientific papers written by the hospital's affiliated doctors in Google Scholar. Column 3 of Table **6** shows that for-profit hospitals publish fewer scholarly articles each year.

3.3. Stakeholder orientation and revenue generating activity

For-profit hospitals could not just cut on activities that provide community benefits but could also increase focus on revenue generation. In this section, we investigate this possibility.

First, in Table **7**, we investigate the effects of for-profit status on the charges to patients. If for-profit hospitals put relatively more emphasize on increasing revenue over optimal patient care, they might exhibit a propensity to charge more to patients.

[Insert Table **7** here]

Table **7** displays results from the second stage of our 2SLS estimation for two outcomes: (1) the amount of medical supplies charged to patients (column 1) and (2) the inpatient amount of drugs charged to patients (column 2). Since a rise in charges could simply reflect higher hospital utilization under new and improved management, we scale the total expenditure to the actual amount of care provided, that is, the total number of inpatient days. Consistent with the hypothesis that for-profit hospitals increase charges to patients, we find

substantial increases in both medical supplies and drugs charged.[18]

For-profit hospitals might not just cut unprofitable operating areas and charge more to patients, but also re-focus operational decisions. Table 8 presents second-stage results for five outcome variables. Column 1 shows that for-profit orientation is associated with a higher likelihood that a hospital provides cardiac or orthopedic surgery, which are particularly profitable sub-specialties. In column 2 we show that there is a substantial increase in the number of surgical ICU beds at for-profit hospitals. As surgeries are considered a particularly profitable part of hospitals' operations, this result is consistent with a stronger focus on profits. It also stands in contrast to the reduction in non-surgical ICU beds we documented previously.

[Insert Table 8 here]

In columns 3 to 5 of Table 8, we turn our attention towards the cost side of hospital operations. We find that for-profit status is associated with substantially lower facility expenses (column 3). Glaeser (2002) predicts that in the absence of shareholders as residual claimants, non-profit should have a tendency to over-spend on personnel, particularly personnel close to management. Consistent with idea, column 4 shows a reduction in the number of full-time doctors employed by the hospital and column 5 documents a decrease in total payroll. These results could reflect either a general increase in efficiency, or a substitution of doctors with less-trained and lower-paid professionals such as nurse practitioners (Geurts-Laurant et al., 2004; Laurant et al., 2018; Goryakin et al., 2011).

3.4. Spillover effects

An important limitation of our analysis thus far is that while we provide evidence of operational changes within hospitals, we cannot speak to aggregate welfare effects. Even

[18]Importantly, it is worth noting that these results do not directly speak to aggregate welfare effects. Higher charges could potentially reflect increased efficiency in the provision of services and more comprehensive coverage, or they could reflect over-treating.

though we document a decline in activities that are associated with high community benefits in for-profit hospitals, we cannot speak to the benefits of conversion, in particular increased tax revenue. In this section, we take an initial step in the direction of analysis welfare effects. To do so, we estimate a difference-in-differences specification in Table 9 that captures the effect of for-profit conversions on its neighboring nonprofit hospitals.

[Insert Table 9 here]

Our explanatory variable in these regressions is $NFP \times other\ conversion$, the interaction of two indicators. The first variable, NFP, is an indicator for the nonprofit status of a hospital. The second variable, *other conversion*, is an indicator taking value 1 in years following the for-profit conversion of a hospital in the same hospital service area (based on Dartmouth health atlas classification). The outcome variables of interest are the total cost of emergency rooms (column 1) and the number of emergency room outpatient visits (column 2). If converting hospitals shrink their emergency room operations, one could expect an increased burden from higher utilization (and costs) for the neighboring nonprofit hospitals. Consistent with this idea, we find positive and statistically significant increase in both the total volume and cost of emergency room care for local nonprofit hospitals following a for-profit conversion of a neighboring hospital, consistent with negative spillover effects.

4. Corporate governance channels

This section lays out the different ways in which both classic governance channels and the tax code connect hospital operations to the objective function of their different stakeholders.

4.1. Corporate governance through boards and executives

The first channel through which a for-profit owner can attempt to align corporate behavior with the interests of shareholders is by installing a different executive team. In Table 10, we investigate this question and find that, in fact, after a conversion the new for-profit

owners are about 4% more likely to replace the chief executive officer. In terms of economic magnitude this reflects a roughly 20–25% relative increase in the likelihood of CEO turnover compared to the unconditional average.

[Insert Table **10** here]

Another major channel through which the interests of stakeholders are aligned with the actions of the organization is the board of directors. We obtain data on board composition for a subset of both for-profit and nonprofit hospitals from Execucomp.[19] Table **11** presents results on changes in board compositions following for-profit conversion.

[Insert Table **11** here]

Column 1 shows that for-profit conversion is followed by a 20% increase in the likelihood that the board features at least one board member with an MBA or JD, that is, business oriented professional degrees. On the other hand, column 2 shows that there is a 30% drop in the likelihood of having at least one MD present on the board. These results are consistent with for-profit owners shifting the expertise and focus of the board, the main governance organ, to reflect more of a business mindset rather than a medical mindset.[20]

4.2. Corporate governance through the tax code

Hospitals have historically had nonprofit status in the U.S. Early hospitals were essentially charitable organizations providing basic healthcare to ordinary citizens, financed exclusively through donations. Tax exemption for these charitable hospitals has been a staple of American tax codes since the 1984 Wilson-Gorman Tariff Act (Arnsberger et al., 2008; Gentry and Penrod, 2007).

[19]Note that board composition data is available more widely for nonprofit hospitals through regulatory filings, but not for for-profit hospitals. We choose to limit our sample to those hospitals of both types that are present in Execucomp to have the most comparable subsets of hospitals.

[20]One caveat in these tests is that Execucomp does not feature a full set of board members for all boards. It is conceivable that for-profit hospitals highlight the business side of their boards, while not-for-profit hospitals stress the medical expertise of their board members, leading to the difference in the recorded data.

Over time, legislators became concerned that the tax-exempt status of private foundations could be abused for tax evasion, leading to changes in the Tax Reform Act of 1969 that require tighter documentation of the charitable nature of operations to qualify for tax exemption.[21]

Specifically, the IRS calls for six provisions for hospitals to qualify for nonprofit status: (1) Operating an emergency room open to all, regardless of ability to pay; (2) Maintaining a board of directors drawn from the community; (3) Maintaining an open medical staff policy; (4) Providing hospital care for all patients able to pay, including those who pay their bills through public programs such as Medicaid and Medicare; (5) Using surplus funds to improve facilities, equipment, and patient care; and (6) Using surplus funds to advance medical training, education, and research.

Hospitals that qualify for tax-exempt status under these conditions are exempt from most federal and state taxes, including tax on corporate profits or property taxes. These hospitals also qualify for charitable donations and enjoy effectively subsidized access to capital through tax-exempt status of their bonds (Gentry and Penrod, 2007).

The idea behind the tax exemption is that hospitals use these benefits to finance the provision set out in the tax code, which are unprofitable. Of particular concern are servicing Medicaid patients (Selden et al., 2015) and emergency rooms, which provide the bulk of uncompensated care (Horwitz, 2005b; Morganti et al., 2013) and require subsidization. It is a natural hypothesis that hospitals would scale back these services after they are no longer required to provide them following a conversion to for profit status.

Our results are very much consistent with these tax incentives being a major driver that aligns hospital behavior with stakeholders. As hospitals convert from nonprofit to for-profit, they reduce all activities that were previously mandated by the tax code to retain tax-exempt status. They shuffle their boards, reduce the size of their emergency room, the treatment to Medicaid patients, and reduce research activities.

[21] See IRC section 501(c)(3).

5. Additional tests and discussion

One potentially important factor in our setting is the historical development of legal provisions.[22] In our setting, the most likely candidate for such a "historical" law are certificate of need (CON) provisions. Certificate of need laws are intended to control healthcare costs by avoiding unnecessary over-investment in health care facilities. CON laws require state approval for major capital investments in healthcare. For profit conversions often trigger these clauses, either because CON laws also cover merger activity or because a conversion is associated with (dis)investments.[23]

To avoid the historic presence of CON laws to affect our results, we carefully track CON law levels throughout our sample period, to avoid instances where laws are first abolished and then re-established. In addition, we include these first-generation CON laws as part of our overall CH index, making sure we take their presence into account.

In addition, our two other index components, approval by state attorney general or other agencies, are novel features introduced for the first time in CH laws in the late 1990s. In Internet Appendix Table IA.**2**, we separately investigate the three components of our index. We find that each individual index component, not just CON laws, are negative associated with for-profit conversion. Even when jointly estimating the effect of the three separate index components they remain negative and significant whole controlling for the presence of the "first" generation CON laws. Each of our individual index components is therefore an important, independent measure of legal hurdles against conversions to for-profit status.

The final challenge in the spirit of Karpoff and Wittry (2018) is the potential presence of

[22]In the case of business combination laws, for example, Karpoff and Wittry (2018) show that in many cases the laws studied broadly were in fact second generation laws, that partly re-instated previous provisions. In effect, some years assigned to the control period would then actually feature more impactful (first generation) business combination laws than the treatment periods following the second-generation laws.

[23]The first certificate of need law was introduced in New York in 1964 (Simpson, 1985). In 1975, Congress passed the National Health Planning and Resources Development Act (NHPRDA) which effectively mandated state level CON laws for access to public funds. As a result, all States except Louisianan had CON laws in place by 1982. In 1987, the federal mandate on CON laws was repealed, and as a result only 32 states had a CON law in place at the start of our sample.

other rules and laws that might overlap with the one studied in a specific setting. In the case of business combination laws, contemporaneous poison pill measures confounded inference. To address this potential issue, we collect additional data on numerous other laws and regulations regarding the for-profit conversion of hospitals. Specifically, we investigate various provisions contained in two types of model legislation: (1) the 1997 National Association of Attorneys General model act and (2) the 2003 model act created by two NGOs, Community Catalyst and Consumers Union.[24]

These model acts contain a variety of rules regarding various aspects of the conversion process that are of lesser importance than an outright veto power, as measured by our main index. These secondary hurdles could nonetheless still act as a deterrent for conversions activity and can be widely present if states model their local legislation after these acts. Thus, we collect information in each state and year on the presence of the following secondary provisions: (1) the need for advanced written notice to state attorney general (AG) before conversion; (2) a non-binding form of AG recommendation (i.e. a right to challenge the deal by the AG); (3) the need for public notice or public hearings; and (4) whether there is ex-post monitoring of the transaction.

In Internet Appendix Table IA.**3**, we reestimate our first-stage regression using each individual first-order and second-order index component. We find that all these secondary components from the model legislation are economically and statistically insignificant. In Internet Appendix Table IA.**4**, we go one step further and construct a "secondary index" which counts these measures from the model acts and re-estimate all our second-stage tests controlling for this secondary index. All our results hold, with the only exception that our result on Medicaid patients, which goes from being marginally significant at the 10% level to being marginally insignificant. While we cannot rule out the presence of yet other types of legal provisions not captured by the model acts, these results are reassuring that one of the most obvious competing legal frameworks is not driving our results on CH laws.

[24]See government accountability office report for detailed description and comparison here.

We conclude by implementing several additional robustness tests for our results in the internet appendix. First, in Table IA.5, we show that our results are robust to variations in the degree to which we lag the CH index. Estimates are robust to either not lagging the index at all or lagging it by two years. Second, we estimate a series of additional robustness tests for our first-stage regressions. In Table IA.6, we show that our results are robust to an event-centering approach that alleviates potential concerns with the staggered two-way fixed effects model in our main analysis. The inclusion of event-time fixed effects in these tests drastically reduce our sample by 60% as we can only draw inference from states with actual law changes. However, inferences are still that higher levels of anti-conversion of healthcare legislation reduce the propensity of conversion, even in this very limiting setting. In column 3 of Table IA.6, we add one more robustness test which collapses the index into a single indicator taking the value 1 for all observations in which at least one conversion of healthcare law occurred.

Another potential challenge is that CH index changes could be the result of an ongoing conversion wave. In this case, changes in conversion status would drive the index, rather than the index impacting conversions. To test this conjecture, we estimate OLS regressions in which we explain changes in the CH index using lagged numbers of conversions. If stricter CH laws are the result of a string of previous for-profit conversions, we would expect conversions to have a positive effect on the CH index. However, Internet Appendix Table IA.7 shows that there is effectively zero correlation between previous conversions and changes in the index.

Finally, one last potential identification challenge could be that CH laws change as a result of economic fundamentals. In Internet Appendix Table IA.8, we estimate the effect of income, population, healthcare expenditure, unemployment, and political party in charge on the CH index. We find that none of these covariates are correlated with the index except for a weak, negative correlation with the unemployment rate.

6. Conclusion

We investigate how the objective function of organizations in the form of different stakeholders impacts their operational decisions. We compare for-profit and nonprofit hospitals competing in the same sector. We introduce a novel index of state-level legislation governing for-profit conversion of healthcare institutions, and we overcome the endogeneity of stakeholder orientation by using the index as an instrument for the for-profit conversion decision. We show that for-profit hospitals systematically pivot their operations consistent with a change in their objective function. For-profit hospitals cut operations with large community benefits but high financial costs, such as emergency rooms that administer the bulk of charity care. At the same time, they increase revenue by charging more for drugs and equipment and expanding surgeries, while cutting costs.

The owners of these for-profit hospitals align the actions of their organizations with their new objective function through standard corporate governance mechanisms, such as changing the composition of the board of directors and executive team. At the same time, our evidence is also consistent with the tax code (i.e., government oversight) being an important to align nonprofit hospital behavior with the objectives of their communities.

Our findings raise concerns that for-profit hospitals may prioritize profitability at the expense of community benefits. Moreover, these costs may be amplified by negative spillover effects, such as the increase in ER cost and volume in neighboring nonprofit hospitals following a for-profit conversion that we also document. However, it is important to highlight that we unable to measure the overall welfare consequences of these for-profit conversions. Reductions in medical staff and expenses could reflect improved efficiency, and the reduction in community benefits, such as uncompensated care, would ultimately need to be compared against the benefits of higher tax revenue following for-profit conversions. Our paper takes an important first step in the direction of making a causal link between hospital for-profit status and operating decisions. Estimating the aggregate welfare implications of these events

is an important question that we leave for future research.

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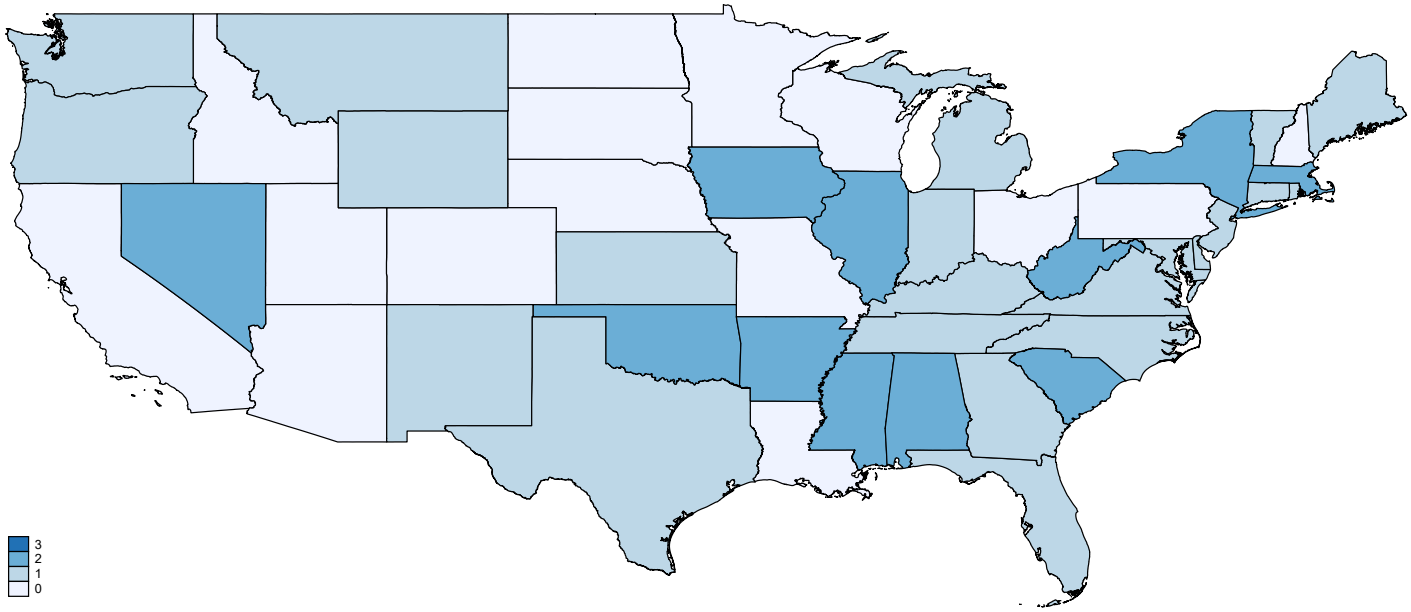
Figure 1
Conversion index by state and over time
This figure shows the value of our main indx in 1990 (Panel A) and in 2010 (Panel B). The darker areas represent the higher index, which indicate the higher level of regulatory hurdles to for-profit conversions of hospitals.

Panel A: 1990



Panel B: 2010

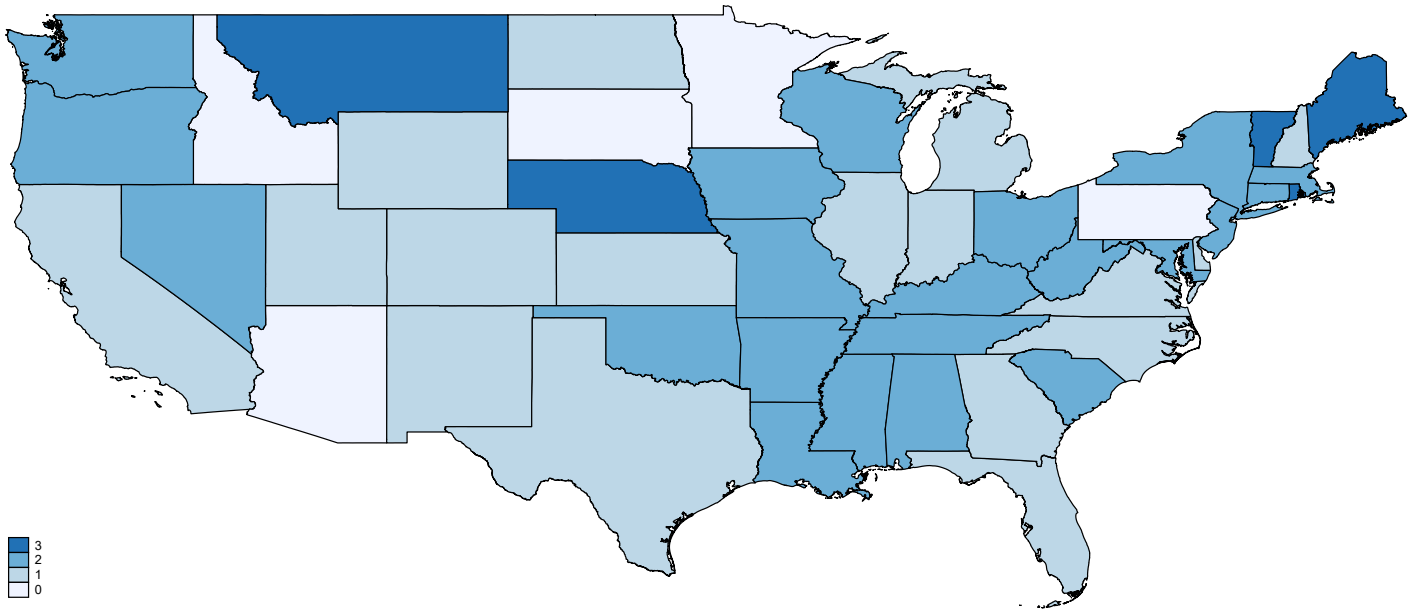


Table 1
Summary Statistics

This table shows the summary statistics of hospitals in the sample. Panel A shows the sumary statistics of for-profit hospitals (CNTRL code (29,40) in AHA survey) and non for-profit hospitals. Panel B shows the summary statistics of Hospitals which were converted from not-for-profit to for-profit, hospitals which has never been converted, and the difference between two groups. Federal owned hospitals are excluded. In addition, hospitals which are for-profit at the begining of the sample are exlcuded. The dollar flow variables are scaled by a million. The sample period is from 1991-2019. Variables are winsorized by 1 percent. A detailed description of all variables is available in Appendix A. Reported standard errors in parentheses are heteroscedasticity-robust and clustered by hospital. $^{***}p<0.01$, $^{**}p<0.05$, $^{*}p<0.10$.

Panel A

For-profit hospitals	*N*	Mean	SD	p10	p50	p90
Hospital beds	5,123	145.95	123.70	25.00	112.00	332.00
Facility payroll expenses	5,123	0.21	0.13	0.08	0.19	0.37
Full time doctors	5,123	0.04	0.08	0.00	0.02	0.11
Facility expenses	5,123	0.56	0.36	0.20	0.48	1.00
Medical surgical ICU beds	3,793	0.06	0.05	0.00	0.06	0.13
Other ICU beds	3,543	0.01	0.02	0.00	0.00	0.00
Non surgical beds	3,793	0.94	0.05	0.87	0.94	1.00
Net patient revenues	5,123	0.59	0.43	0.19	0.50	1.08
Cost of emergency room	5,123	0.04	0.04	0.01	0.03	0.08
Medical supplies charged to patients	5,061	0.46	0.38	0.08	0.34	1.04
Drugs charged to patients	5,115	0.93	0.65	0.26	0.77	1.95
Medicaid inpatient days	4,930	20.81	22.32	1.92	13.51	48.37
Emergency room outpatient visits	5,123	190.74	132.42	61.41	160.63	366.00
Social workers services	3,793	80.38	39.71	0.00	100.00	100.00
Google scholar output	2,941	0.01	0.02	0.00	0.00	0.01
Asset	5,123	74.83	101.38	3.65	40.20	187.81
Liability	5,113	51.53	69.99	2.38	25.09	130.94
Leverage	5,123	0.85	0.55	0.17	0.79	1.67

Not-for-profit hospitals	*N*	Mean	SD	p10	p50	p90
Hospital beds	99550	171.55	179.11	25.00	105.00	413.00
Facility payroll expenses	99550	0.26	0.20	0.07	0.20	0.52
Full time doctors	99548	0.08	0.15	0.00	0.03	0.22
Facility expenses	99550	0.63	0.51	0.14	0.48	1.31
Medical surgical ICU beds	88298	0.05	0.05	0.00	0.05	0.12
Other ICU beds	74959	0.01	0.02	0.00	0.00	0.00
Non surgical beds	88298	0.95	0.05	0.88	0.95	1.00
Net patient revenues	99550	0.64	0.54	0.13	0.48	1.35
Cost of emergency room	99550	0.04	0.04	0.01	0.03	0.09
Medical supplies charged to patients	96778	0.26	0.27	0.03	0.17	0.58
Drugs charged to patients	99306	0.49	0.45	0.08	0.36	1.05
Medicaid inpatient days	97014	21.02	24.22	1.40	13.32	48.80
Emergency room outpatient visits	99550	175.29	130.78	41.33	146.98	343.84
Social workers services	88291	86.98	33.66	0.00	100.00	100.00
Google scholar output	63219	0.02	0.06	0.00	0.00	0.03
Asset	99550	157.97	284.80	4.78	49.97	414.40
Liability	99507	74.97	144.46	1.40	21.04	196.32
Leverage	99550	0.50	0.34	0.14	0.44	0.89

Panel B

	Converted hospitals	Never converted hospitals	Difference in means
Hospital beds	151.47	172.74	21.27***
Facility payroll expenses	0.18	0.26	0.08***
Full time doctors	0.05	0.09	0.03***
Facility expenses	0.45	0.64	0.19***
Medical surgical ICU beds	0.05	0.05	-0.00
Other ICU beds	0.00	0.01	0.00
Non surgical beds	0.95	0.95	0.00
Net patient revenues	0.46	0.65	0.20***
Cost of emergency room	0.03	0.04	0.01***
Medical supplies charged to patients	0.28	0.26	-0.02*
Drugs charged to patients	0.51	0.49	-0.02
Medicaid inpatient days	21.18	20.96	-0.22
Emergency room outpatient visits	159.23	175.39	16.17***
Social workers services	81.20	87.09	5.89***
Google scholar output	0.00	0.02	0.01***
Asset	80.99	162.79	81.80***
Liability	49.80	76.76	26.96***
Leverage	0.72	0.49	-0.23***

Table 2

First stage: For-profit status and the conversion index

This table shows the first-stage estimates of the instrumental variable regressions. The dependent variable is an indicator that takes the value of 1 if the hospital is for-profit (CNTRL code (29, 40) in AHA survey), and 0 otherwise. The independent variable is *CH index* the number of regulatory approvals that need to be obtained for conversion. Index is lagged by one year. The dependent variable is normalized so that regression coefficients reflect the impact of changing the variable by one standard deviation. Hospital and state controls, year, and hospital fixed effects are included as reported. State control: log(income per capita), log(population), and unemployment rate. Hospital control from AHA: log(total hospital beds). Hospital financial control from CMS: leverage and net patient revenue. Control variables are winsorzied by 1 percent. The sample is from 1991-2019. A detailed description of all variables is available in Appendix A. Reported standard errors in parentheses are heteroscedasticity-robust and clustered by hospital. ***p <0.01, **p <0.05, *p <0.10.

	For-profit			
	(1)	(2)	(3)	(4)
Conversion Index	-0.0666***	-0.0581***	-0.0583***	-0.0543***
	(0.0133)	(0.0135)	(0.0135)	(0.0132)
Hospital FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
State-level Control	No	Yes	Yes	Yes
Hospital-level Control	No	No	Yes	Yes
Financial-level Control	No	No	No	Yes
N	104,673	104,673	104,673	104,673
$Adj.R^2$	0.59	0.59	0.59	0.59
Mean of Dependent Variable	0.05	0.05	0.05	0.05

Table 3

For-profit status and the conversion index excluding states with lobbying or election years

This table shows the first-stage estimates of the instrumental variable regressions. The dependent variable is an indicator that takes the value of 1 if the hospital is for-profit (CNTRL code (29, 40) in AHA survey), and 0 otherwise. The independent variable is *CH index* the number of regulatory approvals that need to be obtained for conversion. Index is lagged by one year. The dependent variable is normalized so that regression coefficients reflect the impact of changing the variable by one standard deviation. Hospital and state controls, year, and hospital fixed effects are included as reported. State control: log(income per capita), log(population), and unemployment rate. Hospital control from AHA: log(total hospital beds). Hospital financial control from CMS: leverage and net patient revenue. Control variables are winsorzied by 1 percent. The sample is from 1991-2019. The sample from column (1): states with direct lobby are excluded; column (2): states with indirect lobby are excluded; column (3): states with forprofit organizations lobby are excluded; column (4): states with nonforprofit organizations looby are excluded; column (5): states with governors elections on the passage of CH laws are excluded. A detailed description of all variables is available in Appendix A. Reported standard errors in parentheses are heteroscedasticity-robust and clustered by hospital. ***p <0.01, **p <0.05, *p <0.10.

	Direct lobby (1)	Indirect lobby (2)	For-profit FP lobby (3)	NFP lobby (4)	Election years (5)
Conversion Index	-0.0839***	-0.0625***	-0.0833***	-0.0868***	-0.0556***
	(0.0140)	(0.0139)	(0.0160)	(0.0164)	(0.0143)
Hospital FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
State-level Control	Yes	Yes	Yes	Yes	Yes
Hospital-level Control	Yes	Yes	Yes	Yes	Yes
Financial-level Control	Yes	Yes	Yes	Yes	Yes
N	92,197	92,238	91,980	82,750	93,382
$Adj.R^2$	0.59	0.58	0.59	0.57	0.59
Mean of Dependent Variable	0.05	0.05	0.05	0.05	0.05

Table 4
Not-for-profit status, MA activity, and the conversion index
Column (1) in this table shows difference in differences estimates from a a placebo exercise in which we replace the outcome indicator of for-profit conversion with an analogously defined indicator of not-for-profit conversion and estimate the effect of conversion of healthcare laws on the conversion of for-profit hospitals to not for profit status. The dependent variable is an indicator that takes the value of 1 if the hospital is not-for-profit, and 0 otherwise. In effect, this specification tests the reverse of our main test. Analogous to our main test we only include hospitals that are potentially able to convert, which in this case means only hospitals which are for-profit at the start of the sample. From column (2) in this table, the dependent variable is an indicator that takes the value of 1 if the hospital was being target in that year, and 0 otherwise. The target indicator is obtained from Cooper et al. (2019). The independent variable is *CH index* the number of regulatory approvals that need to be obtained for conversion. Index is lagged by one year. The dependent variable is normalized so that regression coefficients reflect the impact of changing the variable by one standard deviation. Hospital and state controls, year, and hospital fixed effects are included as reported. State control: log(income per capita), log(population), and unemployment rate. Hospital control from AHA: log(total hospital beds). Hospital financial control from CMS: leverage and net patient revenue. Control variables are winsorized by 1 percent. The sample is from 1991-2019. A detailed description of all variables is available in Appendix A. Reported standard errors in parentheses are heteroscedasticity-robust and clustered by hospital. ***p <0.01, **p <0.05, *p <0.10.

	Not-for-profit (1)	M&A Target (2)
Conversion Index	0.0114	-0.0005
	(0.0385)	(0.0029)
Hospital FE	Yes	Yes
Year FE	Yes	Yes
State-level Control	Yes	Yes
Hospital-level Control	Yes	Yes
Financial-level Control	Yes	Yes
N	23,782	50,261
$Adj.R^2$	0.73	0.02
Mean of Dependent Variable	0.35	0.02

Table 5

The effect of for-profit hospital conversion on emergency rooms and Medicaid patients

This table shows the second stage results of 2SLS estimations with the indicator 1(for-profit) as the instrumented variable and CH Index as the instrument. In Panel A, the dependent variable is the total cost of the emergency unit and is scaled by total hospital beds. In Panel B, the dependent variable is the medicaid inpatient days and is scaled by total hospital beds. The independent variable is normalized. State control: log(income per capita), log(population), and unemployment rate. Hospital control from AHA: log(total hospital beds). Hospital financial control from CMS: leverage and net patient revenue. The sample is from 1991-2019. All variables are winsorized by 1 percent. All variables are winsorized by 1 percent. A detailed description of all variables is available in Appendix A. Reported standard errors in parentheses are heteroscedasticity-robust and clustered by hospital. ***p <0.01, **p <0.05, *p <0.10.

Panel A	Emergency room expenditure			
	(1)	(2)	(3)	(4)
For-profit	-0.052***	-0.063***	-0.055***	-0.058***
	(0.012)	(0.016)	(0.014)	(0.016)
Hospital FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
State-level Control	No	Yes	Yes	Yes
Hospital-level Control	No	No	Yes	Yes
Financial-level Control	No	No	No	Yes
N	104,673	104,673	104,673	104,673
Kleibergen-Paap rk Wald F	25.01	18.58	18.67	16.82

Panel B	Medicaid inpatient days			
	(1)	(2)	(3)	(4)
For-profit	-9.784**	-10.932**	-9.336**	-9.136*
	(4.070)	(4.751)	(4.529)	(4.871)
Hospital FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
State-level Control	No	Yes	Yes	Yes
Hospital-level Control	No	No	Yes	Yes
Financial-level Control	No	No	No	Yes
N	101,937	101,937	101,937	101,937
Kleibergen-Paap rk Wald F	29.89	22.87	22.98	20.62

Table 6
The effect of for-profit hospital conversion on various hospital cost centers
This table shows the second stage results of 2SLS estimations with the indicator 1(for-profit) as the instrumented variable and CH Index as the instrument. In Column (1), the dependent variable is the number of other ICU beds, including cardiac, neonatal, pediatric, burn, other special, and other intensive beds, and is scaled by total hospital beds. In column (2), the dependent variable is an indicator that takes the value of 1 if the hospital provides social workers services, and 0 otherwise. The dependent variable times 100. In Column (3), the dependent variable is the number of google scholar indexed research papers per year and is scaled by total hospital beds. The independent variable is normalized. State control: log(income per capita), log(population), and unemployment rate. Hospital control from AHA: log(total hospital beds). Hospital financial control from CMS: leverage and net patient revenue. The sample is from 1991-2019. All variables are winsorized by 1 percent. All variables are winsorized by 1 percent. A detailed description of all variables is available in Appendix A. Reported standard errors in parentheses are heteroscedasticity-robust and clustered by hospital. $^{***}p<0.01$, $^{**}p<0.05$, $^{*}p<0.10$.

	Other ICU beds (1)	Social workers services provider (2)	Research output (3)
For-profit	-0.100**	-17.232**	-0.024*
	(0.040)	(8.561)	(0.015)
Hospital FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
State-level Control	Yes	Yes	Yes
Hospital-level Control	Yes	Yes	Yes
Financial-level Control	Yes	Yes	Yes
N	78,172	92,039	66,159
Kleibergen-Paap rk Wald F	8.52	18.42	9.10

Table 7
The effect of for-profit conversion on medical charges
This table shows the second stage results of 2SLS estimations with the indicator 1(for-profit) as the instrumented variable and CH Index as the instrument. In column (1), the dependent variable is the medical supplies charged to patients and is scaled by total inpatient days. In column (2), the dependent variable is the durgs charged to patients and is scaled by total inpatient days. The independent variable is normalized. State control: log(income per capita), log(population), and unemployment rate. Hospital control from AHA: log(total hospital beds). Hospital financial control from CMS: leverage and net patient revenue. The sample is from 1991-2019. All variables are winsorized by 1 percent. All variables are winsorized by 1 percent. A detailed description of all variables is available in Appendix A. Reported standard errors in parentheses are heteroscedasticity-robust and clustered by hospital. ***p <0.01, **p <0.05, *p <0.10.

	Medical supplies charged to patients (1)	Drugs charged to patients (2)
For-profit	0.115* (0.065)	0.406*** (0.122)
Hospital FE	Yes	Yes
Year FE	Yes	Yes
State-level Control	Yes	Yes
Hospital-level Control	Yes	Yes
Financial-level Control	Yes	Yes
N	101,835	104,414
Kleibergen-Paap rk Wald F	17.26	16.60

Table 8
The effect of for-profit conversion on hospital operational decisions
This table shows the second stage results of 2SLS estimations with the indicator 1(for-profit) as the instrumented variable and CH Index as the instrument. In column (1), the dependent variable is the number of surgical ICU beds and is scaled by total hospital beds. In column (2), the dependent variable is total facility expenses and is scaled by total hospital beds. In column (3), the dependent variable is the total number of doctors and is scaled by total hospital beds. In column (4), the dependent variable is total payroll and is scaled by total hospital beds. The independent variable is normalized. State controls: log(income per capita), log(population), and unemployment rate. Hospital control from AHA: log(total hospital beds). Hospital financial control from CMS: leverage and net patient revenue. The sample is from 1991-2019. All variables are winsorized by 1 percent. All variables are winsorized by 1 percent. A detailed description of all variables is available in Appendix A. Reported standard errors in parentheses are heteroscedasticity-robust and clustered by hospital. ***p <0.01, **p <0.05, *p <0.10.

	Surgical ICU beds (1)	Total facility expenses (2)	Total doctors (3)	Total payroll (4)
For-profit	0.054***	-0.880***	-0.178***	-0.366***
	(0.017)	(0.225)	(0.053)	(0.093)
Hospital FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
State-level Control	Yes	Yes	Yes	Yes
Hospital-level Control	Yes	Yes	Yes	Yes
Financial-level Control	Yes	Yes	Yes	Yes
N	92,046	104,673	104,671	104,673
Kleibergen-Paap rk Wald F	18.42	16.82	16.82	16.82

Table 9
The effect of for-profit conversion on neighboring hospitals
This table shows the regression results with 1(Not-for-profit) × 1(Other hospitals conversions in HSA). In Column (1), the dependent variable is the total cost of the emergency unit and is scaled by total hospital beds. In column (2), the dependent variable is the number of emergency outpatient visits and is scaled by total hospital beds. The independent variable is normalized. State control: log(income per capita), log(population), and unemployment rate. Hospital control from AHA: log(total hospital beds). Hospital financial control from CMS: leverage and net patient revenue. Control variables are winsorized by 1 percent. Hospital service areas (HSA), obtained from the Dartmouth Atlas Project, are local health care markets for hospital care. An HSA is a collection of ZIP codes whose residents receive most of their hospitalizations from the hospitals in that area. HSAs were defined by assigning ZIP codes to the hospital area where the greatest proportion of their Medicare residents were hospitalized. The sample is from 1991-2019. A detailed description of all variables is available in Appendix A. Reported standard errors in parentheses are heteroscedasticity-robust and clustered by hospital. $^{***}p<0.01$, $^{**}p<0.05$, $^{*}p<0.10$.

	Total cost of emergency (1)	Emergency outpatient visit (2)
NFP × other conversion	0.0027***	3.7983*
	(0.0007)	(2.1064)
Hospital FE	Yes	Yes
Year FE	Yes	Yes
State-level Control	Yes	Yes
Hospital-level Control	Yes	Yes
Financial-level Control	Yes	Yes
N	104,180	104,180
$Adj.R^2$	0.79	0.77

Table 10
The effect of for-profit conversion on CEO turnover
This table shows the regression results with CEO turnover event. The dependent variable is an indicator if the chief administrator changes. The dependent variable multiplied by 100 for ease of exposition. The independent variable is 1(for profit). State control: log(income per capita), log(population), and unemployment rate. Hospital control from AHA: log(total hospital beds). Hospital financial control from CMS: leverage and net patient revenue. Control variables are winsorized by 1 percent. The sample is from 1991-2019 A detailed description of all variables is available in Appendix A. Reported standard errors in parentheses are heteroscedasticity-robust and clustered by hospital. $^{***}p<0.01$, $^{**}p<0.05$, $^{*}p<0.10$.

	1(CEO Turnover)			
	(1)	(2)	(3)	(4)
For-profit	4.530***	4.480***	4.481***	3.686***
	(1.059)	(1.057)	(1.057)	(1.056)
Hospital FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
State-level Control	No	Yes	Yes	Yes
Hospital-level Control	No	No	Yes	Yes
Financial-level Control	No	No	No	Yes
N	104,148	104,148	104,148	104,148
Mean of Dependent Variable	17.34	17.34	17.34	17.34

Table 11
The effect of for-profit conversion on board composition
This table shows the regression results with hospital board composition. In Column (1), the dependent variable is an indicator for the presence of at least one director holding a MBA or JD. In column (2), the dependent variable is an indicator for the presence of at least one director holding a MD degree. The independent variable is 1(for profit). State control: log(income per capita), log(population), and unemployment rate. Hospital controls from AHA: log(total hospital beds). Hospital financial controls from CMS: leverage and net patient revenue. Control variables are winsorized by 1 percent. Hospital financial controls from BoardEx: Board size. The sample is from 1992-2019. A detailed description of all variables is available in Appendix A. Reported standard errors in parentheses are heteroscedasticity-robust and clustered by hospital. ***p <0.01, **p <0.05, *p <0.10.

	1(Any MBA or JD) (1)	1(Any MD) (2)
For-profit	0.215***	-0.313**
	(0.073)	(0.156)
Hospital FE	Yes	Yes
Year FE	Yes	Yes
State-level Control	Yes	Yes
Hospital-level Control	Yes	Yes
Financial-level Control	Yes	Yes
N	779	779

Internet Appendix
Stakeholders, Governance, and Output: Evidence from the Hospital Sector

A. Supplementary figures and tables

Figure IA.1
Number of for-profit conversions per year
This figure shows the total number of conversions from not-for-profit to for-profit (for-profit indicator switched from 0 to 1) each year over the sample period.

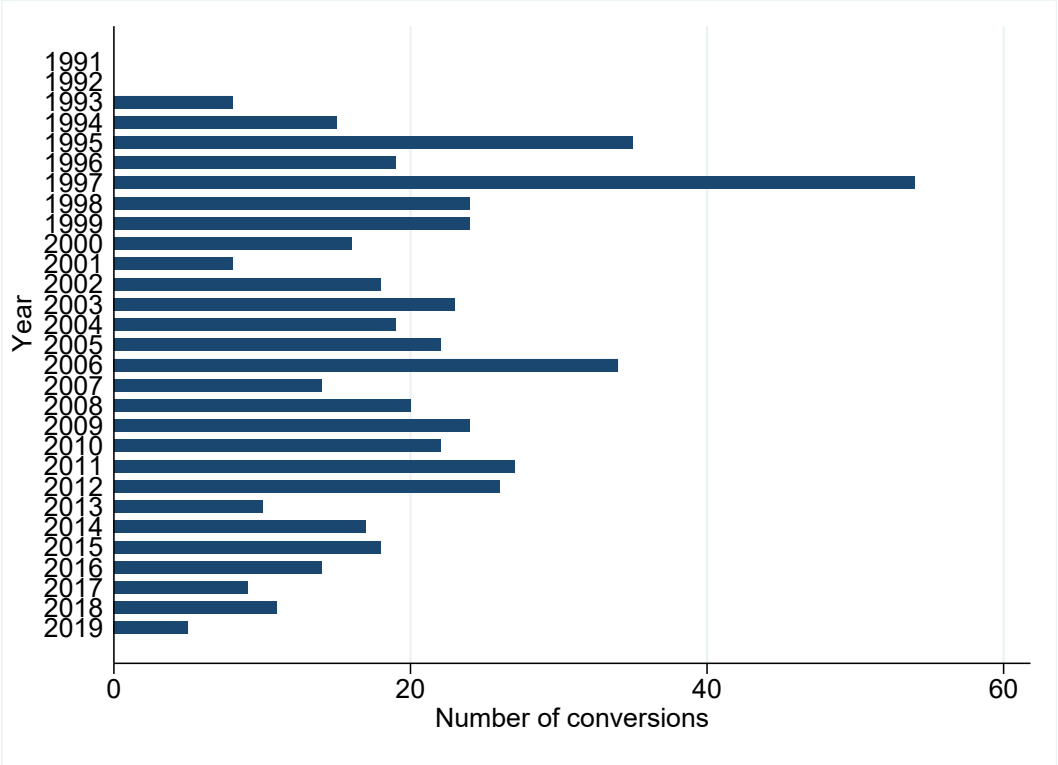
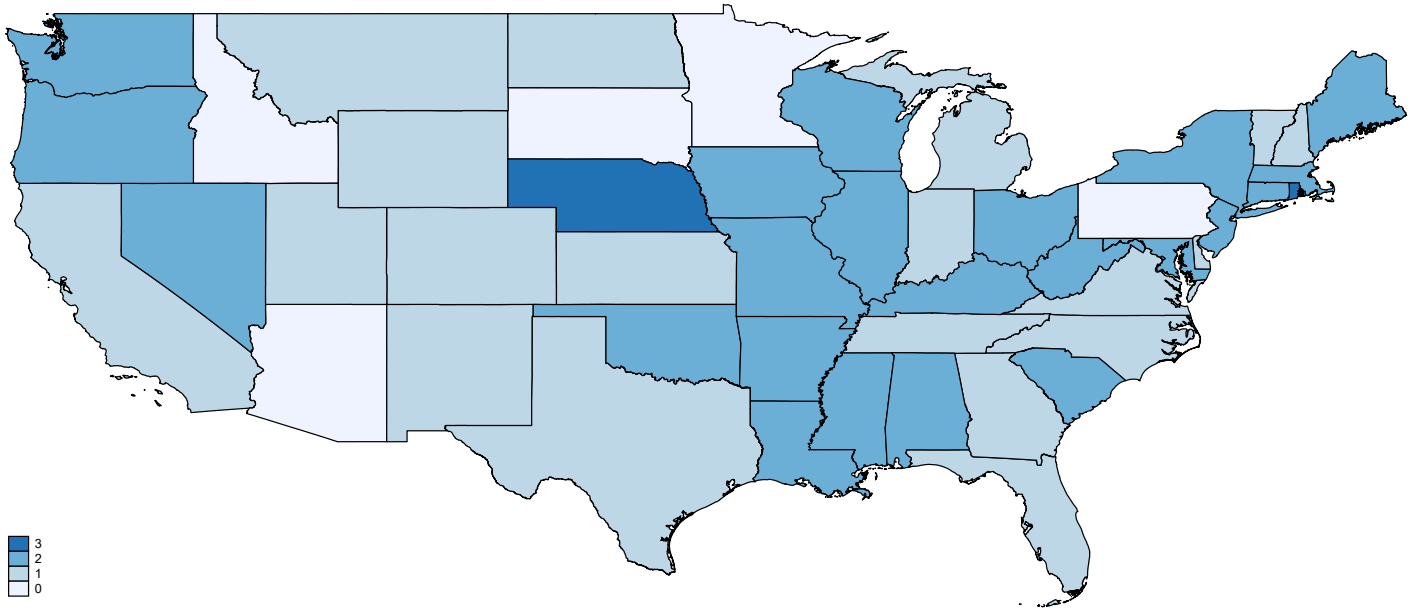


Figure IA.2
Conversion index by state and over time
This figure shows the value of our main indx in 2000 (Panel A) and in 2019 (Panel B). The darker areas represent the higher index, which indicate the higher level of regulatory hurdles to for-profit conversions of hospitals.

Panel A: 2000



Panel B: 2019

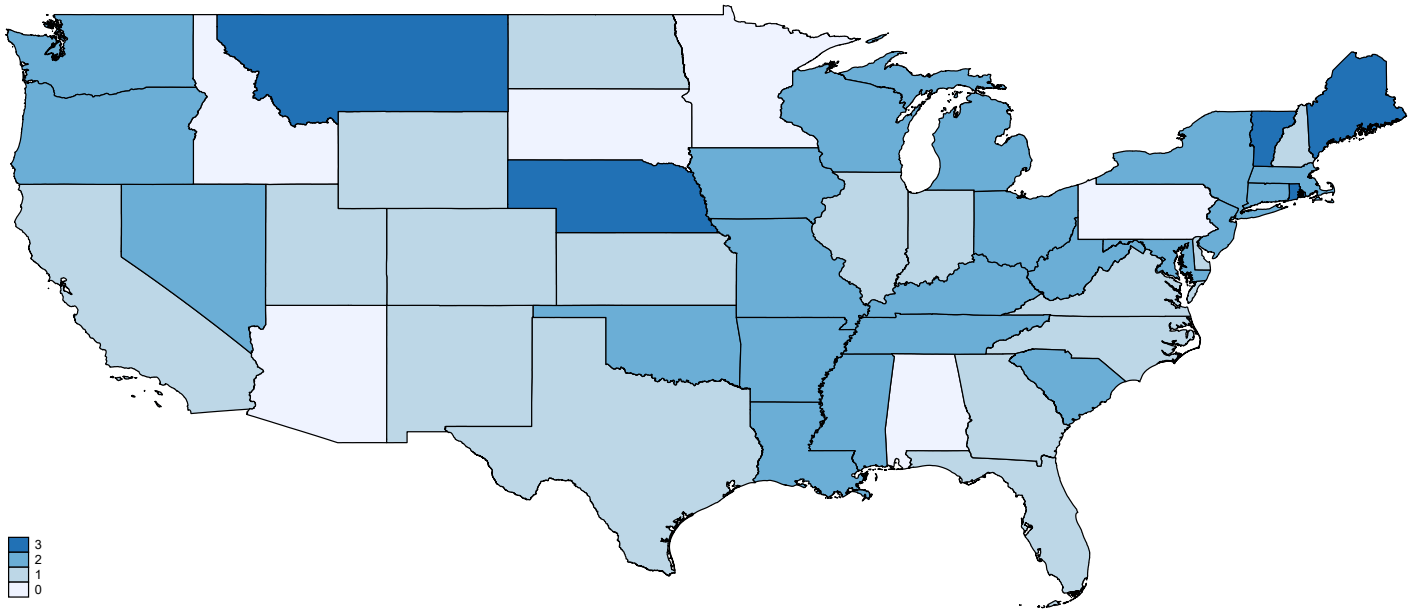


Table IA.1
County HHI and CH Index

This table shows the impact of CH index on Herfindahl–Hirschman Index. The dependent variable is county-level HHI, which is calculated by hospital beds. The independent variable is *CH index* the number of regulatory approvals that need to be obtained for conversion. Index is lagged by one year. State control: log(income per capita), log(population), and unemployment rate. The sample is from 1991-2019. A detailed description of all variables is available in Appendix A. Reported standard errors in parentheses are heteroscedasticity-robust and clustered by state. ***p <0.01, **p <0.05, *p <0.10.

	County HHI			
	(1)	(2)	(3)	(4)
Index approvals lag 1 yr	0.0053	-0.0029	-0.0031	
	(0.0167)	(0.0032)	(0.0031)	
Index approvals lag 1 yr = 1				-0.0089
				(0.0080)
Index approvals lag 1 yr = 2				-0.0042
				(0.0091)
Index approvals lag 1 yr = 3				-0.0239**
				(0.0099)
State FE	No	Yes	Yes	Yes
Year FE	No	Yes	Yes	Yes
State Control	No	No	Yes	Yes
N	61,222	61,222	61,222	61,222
$Adj.R^2$	0.00	0.17	0.17	0.17
Sample Avg.	0.85	0.85	0.85	0.85
Sample Std.	0.26	0.26	0.26	0.26

Table IA.2
For-profit status and index approval type

This table shows the regression of for-profit indicator on the index. The dependent variable is an indicator that takes the value of 1 if the hospital is for-profit (CNTRL code (29, 40) in AHA survey), and 0 otherwise. The independent variables of interest are the components of *index*. Index is lagged by one year. The dependent variable is normalized so that regression coefficients reflect the impact of changing the variable by one standard deviation. Hospital and state controls, year, and hospital fixed effects are included as reported. State control: log(income per capita), log(population), and unemployment rate. Hospital control from AHA: log(total hospital beds). Hospital financial control from CMS: leverage and net patient revenue. Controls variables are winsorized by 1 percent. The sample is from 1991-2019. A detailed description of all variables is available in Appendix A. Reported standard errors in parentheses are heteroscedasticity-robust and clustered by hospital. ***p <0.01, **p <0.05, *p <0.10.

	For-profit		
	(1)	(2)	(3)
Con Law	-0.0848**		
	(0.0363)		
Approval AG		-0.0496*	
		(0.0264)	
Approval (others)			-0.1203***
			(0.0264)
Hospital FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
State-level Control	Yes	Yes	Yes
Hospital-level Control	Yes	Yes	Yes
Financial-level Control	Yes	Yes	Yes
N	104,673	104,673	104,673
$Adj.R^2$	0.59	0.59	0.59
Mean of Dependent Variable	0.05	0.05	0.05

Table IA.3
For-profit status and index approval type additional approvals
This table shows the regression of for-profit indicator on the index. The dependent variable is an indicator that takes the value of 1 if the hospital is for-profit (CNTRL code (29, 40) in AHA survey), and 0 otherwise. The independent variable of interest is the component *index*. The main index, index approval is the sum of CON law requirement, AG approval, and Other agencies approval. The dependent variable is normalized so that regression coefficients reflect the impact of changing the variable by one standard deviation. Hospital and state controls, year, and hospital fixed effects are included as reported. State control: log(income per capita), log(population), and unemployment rate. Hospital control from AHA: log(total hospital beds). Hospital financial control from CMS: leverage and net patient revenue. Controls variables are winsorized by 1 percent. The sample is from 1991-2019. A detailed description of all variables is available in Appendix A. Reported standard errors in parentheses are heteroscedasticity-robust and clustered by hospital. ***p <0.01, **p <0.05, *p <0.10.

	For-profit			
	(1)	(2)	(3)	(4)
Advanced notice	0.0327			
	(0.0236)			
AG non-binding review		0.0187		
		(0.0363)		
Public disclosure hearing			0.0188	
			(0.0232)	
Expost monitoring				0.0133
				(0.0283)
Hospital FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
State-level Control	Yes	Yes	Yes	Yes
Hospital-level Control	Yes	Yes	Yes	Yes
Financial-level Control	Yes	Yes	Yes	Yes
N	104,673	104,673	104,673	104,673
$Adj.R^2$	0.59	0.59	0.59	0.59
Mean of Dependent Variable	0.05	0.05	0.05	0.05

Table IA.4
Controlling for secondary index

This table shows the second stage results of 2SLS estimations with the indicator 1(for-profit) as the instrumented variable and CH Index as the instrument. In column (1), the dependent variable is the total cost of the emergency unit and is scaled by total hospital beds. In column (2), the dependent variable is the medicaid inpatient days and is scaled by total hospital beds. In column (3), the dependent variable is an indicator that takes the value of 1 if the hospital provides social workers services, and 0 otherwise. In column (4), the dependent variable is the number of emergency outpatient visits and is scaled by total hospital beds. In column (5), the dependent variable is the number of other ICU beds, including cardiac, neonatal, pediatric, burn, other special, and other intensive beds, and is scaled by total hospital beds. In column (6), the dependent variable is the medical supplies charged to patients and is scaled by total inpatient days.In column (7), the dependent variable is the durgs charged to patients and is scaled by total inpatient days. In column (8), the dependent variable is the number of surgical ICU beds and is scaled by total hospital beds. In column (9), the dependent variable is the total facility expenses and is scaled by total hospital beds. In column (10), the dependent variable is the total number of doctors and is scaled by total hospital beds. In column (11), the dependent variable is the total payroll and is scaled by total hospital beds. The independent variable is normalized. State control: log(income per capita), log(population), and unemployment rate. Hospital control from AHA: log(total hospital beds). Hospital financial control from CMS: leverage and net patient revenue. The sample is from 1991-2019. All variables are winsorized by 1 percent. All variables are winsorized by 1 percent. A detailed description of all variables is available in Appendix A. Reported standard errors in parentheses are heteroscedasticity-robust and clustered by hospital. ***p <0.01, **p <0.05, *p <0.10.

	EmgCost (1)	MedicaidDay (2)	SocialWorker (3)	Emg outvisit (4)	OtherICUbed (5)	MedsupplyCharge (6)	DrugsCharge (7)	SurgicalICUbed (8)	FacilityExp (9)	Doctor (10)	Payroll (11)
For-profit	-0.040***	-2.080	-30.062***	-54.566**	-0.048***	0.245***	0.513***	0.055***	-0.582***	-0.122***	-0.254***
	(0.010)	(3.895)	(9.767)	(21.479)	(0.018)	(0.074)	(0.127)	(0.018)	(0.141)	(0.037)	(0.060)
Hospital FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State-level Control	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Hospital-level Control	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Financial-level Control	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Secondary index Control	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	104,673	101,937	92,039	104,673	78,172	101,835	104,414	92,046	104,673	104,671	104,673
Kleibergen-Paap rk Wald F	21.11	22.30	17.70	21.11	8.79	21.25	20.83	17.70	21.11	21.11	21.11

Table IA.5
For-profit status and the conversion index (contemporaneous and 2-year lag)
This table shows the regression of for-profit indicator on the index. The dependent variable is an indicator that takes the value of 1 if the hospital is for-profit (CNTRL code (29, 40) in AHA survey), and 0 otherwise. The independent variable of interest is *index*, a measure of the approval. Column(1): Index approvals is at the current time t; Column (2): Index approvals is lag 2 year. The dependent variable is normalized so that regression coefficients reflect the impact of changing the variable by one standard deviation. Hospital and state controls, year, and hospital fixed effects are included as reported. State control: log(income per capita), log(population), and unemployment rate. Hospital control from AHA: log(total hospital beds). Hospital financial control from CMS: leverage and net patient revenue. Controls variables are winsorized by 1 percent. The sample is from 1991-2019. A detailed description of all variables is available in Appendix A. Reported standard errors in parentheses are heteroscedasticity-robust and clustered by hospital. $^{***}p<0.01$, $^{**}p<0.05$, $^{*}p<0.10$.

	For-profit	
	Contemporaneous	2-year lag
	(1)	(2)
Conversion Index	-0.0518***	-0.0559***
	(0.0139)	(0.0128)
Hospital FE	Yes	Yes
Year FE	Yes	Yes
State-level Control	Yes	Yes
Hospital-level Control	Yes	Yes
Financial-level Control	Yes	Yes
N	104,673	104,671
$Adj.R^2$	0.59	0.59
Mean of Dependent Variable	0.05	0.05

Table IA.6
Robustness: Event-time centered regression and collapsed indicator
This table shows the regression of for-profit indicator on the main index. The dependent variable is an indicator that takes the value of 1 if the hospital is for-profit (CNTRL code (29, 40) in AHA survey), and 0 otherwise. The independent variable of interest is *index*, a measure of the approval. Index is lagged by one year. The dependent variable is normalized so that regression coefficients reflect the impact of changing the variable by one standard deviation. Column (1) colapses the CH index into indicator that takes value 1 whenever the index is larger than 0. Column (2) estimates regressions including event-time fixed effects. Hospital and state controls, year, and hospital fixed effects are included as reported. State control: log(income per capita), log(population), and unemployment rate. Hospital control from AHA: log(total hospital beds). Hospital financial control from CMS: leverage and net patient revenue. Controls variables are winsorized by 1 percent. The sample is from 1991-2019. A detailed description of all variables is available in Appendix A. Reported standard errors in parentheses are heteroscedasticity-robust and clustered by hospital. ***p <0.01, **p <0.05, *p <0.10.

	For-profit	
	Collapsed	Stacked
	(1)	(2)
Conversion Index	-0.1185***	-0.0289*
	(0.0260)	(0.0174)
Hospital FE	Yes	Yes
Event-time FE	No	Yes
Year FE	Yes	No
State-level Control	Yes	Yes
Hospital-level Control	Yes	Yes
Financial-level Control	Yes	Yes
N	104,673	50,536
$Adj.R^2$	0.59	0.63
Mean of Dependent Variable	0.05	0.04

Table IA.7
Are previous conversions explaining changes in CH laws?
This table shows the simple regression of the main index change on the number of conversions. The sample is from 1991-2019. No state and year fixed effects. A detailed description of all variables is available in Appendix A. Reported standard errors in parentheses are heteroscedasticity-robust and clustered by state. $^{***}p<0.01$, $^{**}p<0.05$, $^{*}p<0.10$.

	Change of Index Approvals	
	(1)	(2)
Number of conversions last year	0.002	
	(0.005)	
Number of conversions during last 2 years		0.000
		(0.003)
N	1,378	1,327
$Adj.R^2$	-0.00	-0.00
Sample Avg.	0.02	0.02

Table IA.8
Past conversions, economic fundamentals, and the conversion index
This table shows the simple regression of CH index on state-level characteristics. The dependent variable is the change of CH index and raw CH index. The sample is from 1991-2014 since state-level healthcare expenditure is obatined from CMS and from 1991-2014. All variables are winsorized by 1 percent. All variables are winsorized by 1 percent. A detailed description of all variables is available in Appendix A. Reported standard errors in parentheses are heteroscedasticity-robust and clustered by state. $^{***}p$ <0.01, $^{**}p$ <0.05, $^{*}p$ <0.10.

		Passage of legislation	
	(1)	(2)	(3)
Number of conversions	0.002		0.001
	(0.005)		(0.009)
Number of conversions last 2 year		0.000	0.000
		(0.003)	(0.006)
In(Income)			0.001
			(0.046)
In(Population)			-0.009
			(0.007)
Healthcare expenditure			-0.064
			(0.041)
Unemployment rate			-0.005
			(0.003)
Governor is Democratic			0.004
			(0.013)
N	1,378	1,327	1,051
R^2	0.00	0.00	0.02
Mean of Dependent Variable	0.02	0.02	0.03