Control Without Ownership: Governance of Nonprofit Hospitals

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March 2023

The paper provides a comprehensive analysis of the governance structures of nonprofit hospitals and hospital systems. We adapt the framework used to analyze for-profit governance by incorporating nonprofit objectives and legal constraints. Combining various data sources, we study both the internal governance tools (boards of directors, incentive contracts) and external tools (market for corporate control). Nonprofit boards are unusually large, include more independent and non-independent directors, and face weak external oversight. The disciplinary market for corporate control is less active: nonprofits with poor financial performance are half as likely to be acquired or closed than for-profits, and weak performance on non-financial goals has no effect on either event. CEO pay and turnover are sensitive to financial performance but are unresponsive (or less responsive) to nonfinancial goals, including the quality of medical treatment, patient satisfaction, and charity provision. We conclude that nonprofit governance structures lack the attributes that the literature has traditionally associated with 'good governance.'

1 Introduction

This paper offers a comprehensive analysis of the governance structures of nonprofit firms, focusing on the hospital sector. While governance of shareholder-owned corporations has been subject of extensive research, the literature has paid far less attention to nonprofits. The two organizational forms differ in fundamental ways: nonprofits have no shareholders, and their profits (if any) are retained rather than paid out to capital providers. Nonprofit objectives are often stated in terms of serving a broader community, which can include customers and the society at large. However, nonprofits and for-profits share a key similarity: in both cases, decision rights reside with professional managers who retain control over capital allocation. Consequently, both types of firms must rely on governance systems to ensure that managers allocate funds consistently with their firms' stated objectives.

Nonprofits are prevalent in the healthcare sector that comprises a large fraction of U.S. employment and GDP, which makes research on nonprofit governance increasingly relevant.[1] Moreover, U.S. firms have been facing pressures to pay more attention to their various stakeholders, including employees and wider communities. Understanding how nonprofits adapt their governance structures to accommodate such diverse interests offers a glimpse into how governance systems look like when corporations are stakeholder focused.

Our goal is to provide a broad picture of nonprofit governance, using the 'traditional' corporate governance framework as a guide. Thus, we combine a variety of data sources to study both the internal governance mechanisms (via boards of directors and incentive compensation) and external mechanisms (via the market for corporate control). We do not take a stand as to whether the observed structures are efficient in the sense that changing a hospital's status to for-profit (and adapting its governance) would result in a socially worse or better outcome. Instead, we study nonprofit firms' governance systems, taking their objective functions and legal constraints as given. We are interested in the type of governance tools nonprofits use and the specific ways in which they implement those tools.

[1] According to the American Hospital Association, in 2021, U.S. healthcare spending reached $4.3 trillion, accounting for over 18% of the GDP. Healthcare and social services employed over 20 million people in 2021 compared to 12.4 million for manufacturing (https://www.bls.gov/emp/tables/employment-by-major-industry-sector.htm). The hospital sector alone employed over 6 million people in 2021 and generated over $1 trillion in revenues. Over 50% of all U.S. hospitals are nonprofit.

While we do not take a stance on efficiency, our analysis offers insight into the challenges a nonprofit firm faces when trying to translate its objectives into action. The analysis paints a picture of a governance structure that is relatively weak in the sense that the alignment between the firm's goals and the financial outcomes of its decision makers is less tight. This does not necessarily mean that nonprofits achieve worse outcomes. In some industries, the more tenuous link – and the resulting inefficiencies – may be a price worth paying to avoid other distortions caused by the profit motive. Moreover, nonprofits may rely more on other means, such as cultural norms or self-selection, to regulate managers' behavior.

Our key message is, however, that the 'the price' an organization ends up paying for being nonprofit (in the form of limits to its governance) is potentially significant. We show that being nonprofit means giving up features of governance that have proved effective at motivating and monitoring managers elsewhere. This includes nimble boards, a tight link between a manager's wealth and the firm's objectives, and a takeover threat to insiders that fail to fulfill those objectives. One contribution of our paper is, thus, to describe and (to the extent possible) quantify the difference between nonprofit and for-profit firms along these dimensions.

To frame the empirical analysis, we begin by describing the legal and institutional constraints facing nonprofit firms and the theories of nonprofits developed in the literature. These theories do no explicitly model corporate governance, and we assume that its role is (analogously to for-profits) to align the interests of managers with those of the 'principals' they represent. Who those principals are varies depending on the theory of nonprofits and can include donors or taxpayers who fund the charitable causes (Fama and Jensen (1985), Rose-Ackerman (1996), and Fisman and Hubbard (2005)), or the firm's customers (or patients) who cannot fully evaluate the quality of its products or services (Easily and O'Hara (1983) and Glaeser and Shleifer (2001)).

We begin the empirical analysis by describing the basic features of nonprofit boards, comparing them to those of similar for-profits. A large literature emphasizes the role of boards in monitoring and advising management, with much attention devoted to studying board attributes, such as size and independence. We find that an average nonprofit board is unusually large. Taking hospital systems as an example, an average for-profit board consists of 9.1 directors vs. 20.1 directors for a nonprofit of

comparable size (an average nonprofit hospital board has 14.6 directors).[2] A typical nonprofit board includes a relatively large number of independent directors but also insiders or other directors with conflicts of interest. The participation of non-executive employees on boards is common in nonprofits and non-existent in similar for-profits. A median independent director of a for-profit system earns $270 thousand annually and holds $594 thousand equity in the firm. Nonprofit independent directors typically earn no pay and hold no financial stakes in their firms.

One interpretation of these findings is that the board attributes we observe are an efficient response to the greater demands placed on nonprofit directors (such as fundraising or dealing with more complex objectives); another is that, in the absence of the external pressure from shareholders, the boards are inefficient. In either case, our analysis suggests that the nonprofit boards may be less well-equipped to be effective monitors compared to their for-profit counterparts: there is a broad consensus that monitoring is more effective when boards are agile, independent, and incentivized to exert effort on behalf of principals, and based on our findings, nonprofit boards score relatively poorly on these dimensions.

The next governance mechanism we examine is the market for corporate control. Corporate finance research has long argued that the threat of takeovers can discipline incumbent managers because being acquired causes major career disruptions. While takeover transactions among nonprofits do not involve transfers of ownership, they constitute changes in control as decision rights are passed on from the target to the acquirer board (we discuss the relevant legal framework in Section 4). Our goal is to gain a better understanding of whether these transactions can play a disciplining role for nonprofit firms.[3]

Our overall findings are that the market for corporate control in the nonprofit sector, while active, is more limited compared to for-profits. On the one hand, we show that departures of CEOs and directors increase sharply after acquisitions, so insiders seem to experience career setbacks, similar to those documented for for-profits. On the other hand, the frequency of the change-of-control events is substantially lower for nonprofits, particularly after poor performance. For example, 4.8% of for-

[2] We focus the comparison on the level of systems rather than individual hospitals to gain a better understanding of governance structures of standalone firms (most for-profit hospitals are not standalone). Eldenburg, Hermalin, and Wesibach (2004) examine boards of 486 for-profit, nonprofit, and government hospitals in California from 1980 through 1996 and find consistent results.

[3] Large literature in health economics investigates nonprofit hospital M&A, but the focus is on their effects on market power and cost synergies (Sloan (2000) and Gaynor, Ho, and Town (2015)). To our knowledge, the research has not considered these transactions as a potential governance tool.

profit hospitals in our sample are acquired by a hospital system each year, but this frequency diminishes by a significant 2 percentage points for similar nonprofits. We find consistent results for other control transactions: mergers, closures, and private equity deals. Interestingly, acquisitions of nonprofits are entirely unresponsive to non-financial measures of performance that their stakeholders might care about, such as service quality or provision of charity care.

We discuss the potential reasons for the more modest role of takeovers in the nonprofit sector in Section 4 and summarize them briefly here. To begin with, acquisitions of nonprofits face more significant legal hurdles, particularly when they affect donor-restricted assets or cause changes in the nonprofit's purpose. A mismatch between the target and the acquirer objectives presents an additional challenge, particularly when the acquirer is for-profit (though for-profit buyers may have stronger incentives and the ability to turn around underperforming targets). Adding to this, our analysis of nonprofit boards suggests that target insiders have more power to resist changes in control, which, in turn, would discourage potential acquirers from approaching the target in the first place. Our evidence on nonprofit acquisitions is consistent with these explanations and suggests that external governance is an unlikely substitute for the arguably weaker boards.

The final part of the paper investigates the role of incentive compensation and CEO turnover in nonprofit governance. We show that they are important governance tools though both face limitations. An obvious challenge is that, compared to for-profits, nonprofit objectives are less well defined and more difficult to quantify. This makes it harder for boards to tie CEO pay or turnover explicitly to those objectives. Consistently, we find that, while CEO pay responds to hospital profits, there is no relation between pay and non-financial aspects of performance, including various indicators of service quality (such as patient satisfaction, mortality, or readmission rates) or the extent to which a hospital serves lower-income patients (such as the proportion of Medicaid patients on hospital admissions or expenditures on charity care). Similarly, CEO turnover responds to profits but exhibits less sensitivity to non-financial measures. In contrast, a typical for-profit CEO's pay is tightly linked to the relevant measures of firm performance (from the principals' perspective). Importantly, a median CEO of a for-profit hospital system holds a $31.6 million equity stake in the firm, so their wealth responds directly to changes in shareholder value. These effects are absent for nonprofits.

The nonprofit compensation contracts we observe are consistent with the theories of nonprofits (summarized in Section 2) and could be interpreted as an efficient response to the contracting frictions nonprofits face. Based on these theories, the lower sensitivity of CEO pay to financial performance is

efficient because it directs the CEO's efforts towards the less tangible goals. Similarly, the weak sensitivity to non-financial goals could reflect difficulties with aggregating and measuring those goals. Our results suggest, however, that, perhaps due to these frictions, the link between nonprofit CEO pay and firm objectives is more tenuous than for for-profit firms, and that the weaker built-in incentives create a greater demand for active monitoring by the boards.

The paper contributes to the corporate finance literature by examining the governance structures of nonprofit firms. Traditionally, finance research has focused on shareholder-owned firms through several recent contributions examining nonprofits, including their investment choices, the effects of financing constraints, and private equity involvement (Adelino, Lewellen, Sundaram (2015), Adelino, Lewellen, McCartney (2021), Aghamolla, Karaca-Mandic, Li, and Thakor (2021), Gupta, Howell, and Yannelis (2021), Gao, Lee, and Murphy (2022), Gao, Kim, Sevilir (2022), Duggan et al. (2023)). Babenko, Bennett, and Sen (2022) examine the effects of increased regulation of nonprofits in New York on CEO pay and find evidence of agency conflicts, consistent with our results. There is also an extensive literature on nonprofits in health economics, including studies of nonprofit objectives, efficiency, and product market choices (see reviews in Sloan (2000) and Gaynor, Ho, and Town (2015)). However, none of these papers examine corporate governance.

Several earlier studies, mostly in the accounting literature, examine specific aspects of nonprofit governance. For example, the earlier studies of nonprofit boards focus on estimating the relation between board characteristics and various hospital outcomes, such as the link between board size and hospital performance, or between board independence and CEO pay (Brickley, Van Horn, and Wedig (2010), Aggarwal, Evans, and Nanda (2012), O'Regan and Oster (2005)).[4] The studies of CEO compensation and turnover estimate the responsiveness of pay (or turnover) to performance, similar to what we do in Section 7. Their broader motivation is often to infer nonprofit objectives from the explicit incentives of their CEOs. Consistently with our results, these studies find that nonprofit CEO pay and turnover respond to financial performance, but that the effects tend to be weaker than for for-profit CEOs (Brickley and Van Horn (2002), Eldenburg, Hermalin, Weisbach, and Wosinska

[4] Brickley, Van Horn, and Wedig (2010) document a positive association between insider participation on boards and CEO pay in a sample of 308 nonprofit hospitals from 1998 to 2002. Aggarwal, Evans, and Nanda (2012) study boards in a large sample of nonprofits across multiple sectors and find that board size is positively associated with the nonprofit's performance and negatively associated with the strength of managerial pay-for-performance incentives. O'Regan and Oster (2005) study associations between board attributes and directors' behavior in a sample of New York city nonprofit contractors and find, for example, that larger boards are associated with more director giving.

(2004), Eldenburg, Gaertner, and Goodman (2015)).[5] In Section 7, we expand this literature by considering a wider range of performance metrics, a larger and updated sample, and incentives coming from the CEOs ownership stakes in their firms. The expanded sample is important, in part, because the earlier studies are often based on hospitals in California, where the regulatory environment differs from other states (see discussion in Section 4).

More broadly, our goal is to provide a comprehensive picture of nonprofit governance that includes monitoring by the boards, incentive contracts, and the market for corporate control (the latter channel has not been previously examined). We believe that considering the entire governance structure (rather than each tool in isolation) adds value as it helps us evaluate the system as a whole. Our analysis suggests that replacing owners with stakeholders as principals of the firm results in a governance system that lacks many of the traditionally 'desirable' features, including agile boards, a tight link between CEO outcomes and the principals' goals, and an active market for corporate control. We find no evidence that a relative weakness in one area of the governance structure (such as boards) is compensated by a relative strength in another area (such as the market for corporate control). Such substitution effects have been previously documented for for-profits, suggesting that their governance structures may be better able to adapt to external constraints.[6]

2 Institutional background

2.1 Legal framework, regulation, and oversight

A nonprofit corporation (denoted henceforth as a 'nonprofit') is usually defined as a corporation set up for the purpose other than making profits. This means that any profits it earns must be retained and used to further the corporate purpose. The laws governing nonprofit corporations are determined by the state of incorporation. The relevant state statues typically follow the Model Nonprofit

[5] Brickley and Van Horn (2002) study a large sample of nonprofit hospitals in 1991-1995 and conclude that their CEOs have incentives to focus on financial performance, similarly to for-profits. Ballou and Weisbrod (2003) and Erus, Burton, and Weisbrod (2003) use survey data provided by a compensation consulting company for a sample of hospitals during 1992-1997. Both studies find that CEOs of for-profit hospitals receive higher bonuses and lower base salaries compared to CEOs of nonprofit hospitals. Eldenburg, Hermalin, Weisbach, and Wosinska (2004) study board and CEO turnover in 486 California hospitals of different organizational forms from 1980 through 1996. They report a positive link between CEO turnover and profits but no effect of uncompensated care. Eldenburg, Gaetrtner, and Goodman (2015) find, also within a sample of California hospitals, that the strength of the CEO's pay-for-performance incentives is negatively associated with charity expenditures of for-profit hospitals (but not nonprofit hospitals).

[6] For example, Denis and Cruse (2000) show that the decline in disciplinary takeovers in the late 1980s was accompanied by an increase in other value-improving corporate restructurings. They conjecture that this was due to the rise of alternative governance mechanisms, such as stock-based compensation or more active boards.

Corporation Act proposed by the American Bar Association in 1952, which has been adopted by 37 states.[7] The act distinguishes three categories of nonprofit corporations: religious, public benefit, and mutual benefit, with nonprofit hospitals falling into the second category.

According to state corporation laws, the oversight of nonprofits is the responsibility of the state attorneys general (AGs). The state AG is charged with protecting a nonprofit's charitable assets and ensuring that its activities are consistent with the stated mission. This can involve performing audits of the nonprofit's public filings or reviewing and approving major transactions, such as mergers, dissolutions, or conversions to for-profit status. In some cases, the AGs have gone as far as removing directors or dissolving nonprofits that engaged in asset diversion. Many legal scholars compare the oversight responsibilities of the AGs to those of shareholders, noting that the AGs' financial resources are much more limited. For example, Fremont-Smith (2004) reports that in over half of the states, the AG offices employ fewer than four staff members dedicated to the oversight of all nonprofits in the state. Another challenge is that an AG's mandate (and political motivation) is to represent the citizens of their own state, creating weaker incentives to monitor larger nonprofits that operate in multiple states (Molk and Sokol (2021)).

Nonprofit organizations can seek tax-exempt status under Section 501 of the Internal Revenue Code (IRC). Most nonprofits, including hospitals, fall under Section 501(c)(3) of the code and must demonstrate that they provide sufficient 'community benefit' to qualify. The preferential tax treatment subjects nonprofits to additional federal tax rules and oversight by the IRS. In many cases, these rules reinforce those imposed by the state corporation acts. For example, the IRS requires that a nonprofit's activities are constrained by its mission and that its earnings are not used to benefit private individuals. Finally, the tax law requires nonprofits to make public filings with the IRS, the most comprehensive of which is the Form 990. The form is required from organizations that exceed a certain size threshold and includes information on the organization's programs and activities, governance, and financial results. The form is the main source of data in this paper.

2.2 Internal organization and boards of directors

The internal organization of a charitable nonprofit, along with its purpose, is initially specified in its articles of incorporation. In most cases, the control of the organization is entrusted to a self-

[7] Most states that have not adopted the act follow their respective for-profit business law. Delaware and Kansas have no statues specific to nonprofits.

perpetuating board of directors. Some charitable corporations also have members, though, in such instances, members and directors are often the same persons. The position and power of members are analogous to those of shareholders, except that members have no financial stakes. In the hospital sector, membership is often used to set up parent-subsidiary structures whereby the 'parent' corporation is a sole voting member of a 'subsidiary' and, as such, retains control over the subsidiary. This can include the power to appoint directors or amend bylaws.

Fiduciary duties of directors of charitable organizations, as specified in the state laws, are analogous to those of directors of for-profit corporations and include the duties of care, loyalty, and obedience. Most state laws impose no additional requirements on the identities of nonprofit directors. One of the exceptions is the California Nonprofit Corporation Act, which requires that not more than 49% of a nonprofit can be the so-called 'interested persons' (that is, persons who receive compensation from the nonprofit). Generally, it is customary that nonprofit directors serve without compensation, but there are no restrictions on executives to receive salaries or serve on the board.

Several legal scholars argue that nonprofit boards are poorly equipped to be effective monitors, citing the boards' self-perpetuating nature, the lack of financial incentives, and no external scrutiny by shareholders. Many nonprofit board members may also lack the necessary business knowledge, particularly if they gain the board seat on the basis of their financial contributions. On the positive side, a director's willingness to serve on a nonprofit board may indicate their intrinsic motivation. In the subsequent sections, we provide empirical evidence on the structure and decision making of nonprofit boards.

2.3 Mergers and acquisitions

Business combinations involving nonprofit firms are governed by different legal rules than the more familiar for-profit transactions though their economic consequences are often similar. The legal literature distinguishes three basic types of non-profit business combinations: member substitutions, mergers, and asset purchases or sales. Member substitutions – the most common of the three – are transactions whereby the acquirer becomes the (usually sole) member of the nonprofit target (or, alternatively, a newly-formed 'parent' becomes a sole member of both, the target and the acquirer). The literature often compares these transactions to stock purchases in the context of for-profits and describes the resulting structure as akin to a parent-subsidiary structure. While the parents in such entities do not own their subsidiaries' shares, they exert de-facto control as the subsidiaries' sole voting

members.[8] The transfer of control to the parent is accomplished by an amendment to the target's bylaws and articles of incorporation. After the transaction, the original target corporation, including its contractual relationships, is preserved.

The two other forms of business combinations used by nonprofits are mergers and asset purchases (or sales). Most state nonprofit corporation acts allow nonprofits to engage in these transactions with other nonprofits and for-profits. The merger (or sale) process is, in many respects, analogous to that involving for-profits: it includes negotiations and a signing of a merger (or sale) agreement, and in most states, it requires approvals of the respective boards (or members, if any). In a typical merger, one target entity ceases to exist, and the surviving entity assumes the target's assets and liabilities (alternatively, both entities may be absorbed by a newly formed surviving entity).

Setting aside these similarities, business combinations involving nonprofits are, in many ways, distinct. First, transactions between nonprofits typically do not result in cash transfers to the acquired entity at closing. Instead, a nonprofit acquirer may promise to commit capital in the future, such as investing in facilities or patient services that benefit the target.[9] Second, the target and the acquirer often negotiate over the degree of autonomy that the target retains after the transaction. Thus, the resulting affiliation agreement may limit the 'reserve powers' of the acquirer with respect to the target, or it may allow the target directors to sit on the acquirer's board.

Third, the deals can face considerable legal hurdles when they result in a dissolution of a nonprofit or a change in its charitable purpose, or when they affect the use of the nonprofit's donor-restricted assets. In such cases, many states require that such transactions are approved by the court, and that the surviving entity carries on activities as close as possible to the nonprofit's original purpose.[10]

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[8] The parent may also have the right to determine the target's board of directors without being formally a member.

[9] For example, Ballard Health as part of its acquisition of two hospitals in Virginia in 2021, committed $310 million 'to improve health and healthcare for the areas served by each hospital' (David Muoio, Fierce Healthcare, November 22, 2021). For-profit Community Health Services' (CHS) acquisition of non-profit hospitals from Empire Health System provides another example. In 2008, CHS acquired the hospitals and committed to provide charity care that meet or exceed those of Eastern Washington. However, in 2017, the Empire Health Foundation filed a lawsuit against CHS accusing them of breach of contract arguing they have failed to provide up to 110 million worth of charity care (https://www.bizjournals.com/nashville/news/2017/06/13/lawsuit-accuses-chs-of-failing-to-provide-up-to.html).

[10] According to the so-called cy press doctrine courts can, under certain conditions, modify a nonprofit's purpose to one that is 'as near as possible' to the original purpose (or to the donor's original intent). One of the conditions is that the original purpose or intent is 'impossible or impractical' for the nonprofit to carry out. There is a considerable disagreement among legal scholars as to the interpretation of the doctrine, and its application varies across states (see details in Fremont-Smith (2004)). A related issue is that the contracting parties must agree about the surviving entity's mission or services, which can be challenging when the parties' own missions diverge. According to the Wall Street Journal, the $28 billion merger between Catholic Health Initiatives and Dignity Health required clearance from 'several congregations of nuns and two archbishops' and, ultimately, the Vatican (Melanie Evans, WSJ, May 14th, 2018).

Fourth, nonprofit deals can be subject to additional legal requirements, such as filling a notice of the transaction with the state or obtaining a Certificate of Need.[11] For example, in California, any transaction that transfers control over a nonprofit hospital requires an application with the AG and triggers a 60-day review period, which entails, among other things, an assessment of the deal's impact on the community's healthcare. The review process includes a public meeting of 'local leaders, community groups, elected officials, advocacy groups, consumers, and employees' unions' (Urban (2003), p.49).

Acquisitions of nonprofits by for-profits are more likely to require state (or court) approvals and often present additional challenges. For once, for-profit buyers cannot assume the nonprofit's tax-exempt debt, so the debt must be retired. Moreover, state corporation laws often require that a for-profit acquirer pays a consideration of no less than the market value of the acquired assets, and that the funds (minus the cost of debt) are used for purposes similar to those of the target nonprofit. Similarly, according to the IRS rules, the proceeds from a sale of nonprofit assets must be directed towards another nonprofit activity and cannot benefit private persons (including the for-profit acquirer). To comply with these laws, the proceeds are typically used to establish a foundation with a purpose close to that stated in the nonprofit's charter (or close to the donors' original intent if restricted funds are involved). Overall, these legal requirements impose costs on any control transactions involving nonprofits, particularly when control is passed on to a shareholder-owned firm.

3 Theoretical framework

In this section, we summarize the theories of a nonprofit firm developed in the literature and discuss their implications for nonprofit governance.

3.1 Theories of nonprofits

The theories of nonprofits can be grouped into three broad categories, which we label altruism-, information friction-, and insider-based. According to the altruism-based view, certain altruistic agents derive utility from subsidizing the consumption of goods or services by others, and nonprofit firms emerge as suppliers of these goods (Fama and Jensen (1985), Rose-Ackerman (1996), Fisman and

[11] Certificate of Need (CON) state laws (originally mandated by federal law) require healthcare providers to obtain permission before adding or modifying services. The laws' stated goal was to 'curb needless duplication of services and consequent excess capacity' (Conover and Sloan (1998), p. 455). Existing local providers can oppose granting a CON to a provider on the grounds that they already offer similar services. Currently, 35 states have CON laws (National Conference of State Legislatures, Certificate of Need (CON) State Laws, December 20th, 2021).

Hubbard (2005), and Lakdawalla and Phillipson (2006)). The altruistic agents could be thought of as donors or taxpayers who provide funds to nonprofits. To survive, nonprofits must compete for donations (or subsidies), so their choices must be aligned with the preferences of the altruistic agents. To approximate this, the models typically assume that nonprofit firms maximize the utility of their donors (or taxpayers).

The information friction-based theories start with the assumption that, in some industries, such as healthcare or education, customers cannot easily evaluate product quality (Easily and O'Hara (1983) and Glaeser and Shleifer (2001)).[12] As a result, shareholders are incentivized to shirk quality to increase profits. These incentives are mitigated in a nonprofit firm that has no shareholders and must retain all its profits. While this non-distribution constraint 'softens' the profit motive and improves incentives to maintain quality, the absence of shareholders has undesirable side-effects. It means that control is, effectively, in the hands of the nonprofit's insiders who pursue their own objectives. Unlike shareholders, managers cannot pay themselves dividends, but they can divert profits in other ways, for example, via excessive salaries or perks. Easily and O'Hara (1983) and others show that, despite these inefficiencies, nonprofits can be the optimal organizational form in industries where product market frictions are most severe.

Newhouse (1970), Feldstein (1971), and others take these ideas a step further and argue that nonprofit hospitals are fully controlled by their powerful employees, such as managers, directors, and physicians. In Newhouse (1970), nonprofit hospitals maximize these insiders' prestige subject to a non-distribution constraint. This amounts to maximizing the hospital's size and service quality, both of which contribute to prestige. Similarly, in Pauly and Redisch (1973), nonprofit hospitals are, effectively, doctor cooperatives, in which employees have full autonomy. Glaeser (2003) argues that, while hospital insiders do enjoy significant discretion, their power has diminished over time due to the increasing competitive pressures.[13]

[12] Similar arguments are in Arrow (1963) and Hansmann (1980) who point out that healthcare is particularly prone to the information frictions because of the complexity and opacity of medical advise. Hansmann acknowledges, however, that private donations and government subsidies likely contributed to the importance of nonprofits in the hospital sector.

[13] Glaeser (2003) describes how U.S. nonprofit hospitals evolved from charitable institutions of the 19th century, financed by donors, to the complex organizations of the 1980s, subsidized by taxpayers and controlled by physicians. Until 1983, Medicare reimbursed hospitals on a cost-plus basis, which meant compensating the hospital fully for its costs plus an added percentage. This regime was replaced by the fixed-price system, whereby reimbursements are determined by the patient diagnosis and the severity of the case. This change, and the emergence of the Health Maintenance Organizations (HMOs) that competed with traditional insurance, put pressures on hospitals to reduce prices and become more efficient.

3.2 Governance of nonprofits

3.2.1 Basic perspective

The theories of nonprofits outlined above do not explicitly model corporate governance as a way to mitigate agency conflicts. In contrast, the literature on governance of shareholder-owned firms is extensive and investigates a variety of mechanisms, including monitoring by the boards of directors, incentive pay, and forced CEO turnover. An important strand of this literature studies the role of takeover threats as a disciplining force.

The perspective we take in this paper is that similar mechanisms are at work in nonprofits. As we explain in Section 2, nonprofits are also governed by boards of directors with fiduciary duties analogous to those in for-profits, and external oversight comes from the state attorneys general and the IRS. While there is no market for corporate control in the traditional sense, nonprofits can become takeover targets, and these events likely hurt the target CEOs' careers (we provide evidence on this in Section 5).

Our baseline hypothesis is that nonprofit governance is designed to help align managers' interests with those of external stakeholders (or 'principals'). According to the altruism-based view, these stakeholders are the donors and taxpayers who provide financing and ensure the nonprofit's survival; according to the information-frictions view, they are the firm's customers, or in the case of hospitals, patients.

While the basic purpose of corporate governance is analogous in nonprofits and for-profits, the strength of the various governance mechanisms and their practical implementation will differ. In the empirical part of the paper, we explore these differences focusing on three areas: (1) the structure and composition of corporate boards; (2) the change-of-control events, such as system acquisitions and mergers; and (3) the CEO incentive contracts and turnover.

The discussion in Sections 2 and 3.1 suggests that, compared to for-profits, nonprofit hospitals' governance will be relatively weak in all three areas (we discuss the specific hypotheses in the subsequent sections). For example, we expect that, because of the legal hurdles associated with changes in control, such events will be less frequent and, thus, will constitute a lower external threat to incumbent managers. Similarly, the nonprofits' weak external oversight and multifaceted objectives suggest more obstacles to effective monitoring by the boards. However, nonprofit hospitals must compete for patients and charitable contributions, and their long-term survival depends critically on

their ability to generate cash. This requires some level of efficient management and alignment with external stakeholders. How nonprofit governance structures respond to these forces and institutional constraints, and what types of structures emerge as a result is ultimately an empirical question.

3.2.2 Measuring a nonprofit hospital's performance

In both types of firms (nonprofits and for-profits), the boards are charged with monitoring, incentivizing, and replacing CEOs and, to fulfill these tasks, both must rely on noisy signals of CEO performance. The set of 'useful' signals depends on the firm's stated objectives. Thus, a for-profit board is interested in its CEO's contribution to shareholder value so that it will focus on profits and stock returns. A non-profit's objectives are more complex, and their precise formulation varies across the theoretical frameworks summarized in Section 3.1. The donor-based theories imply that the board should pay attention to the nonprofit's charity provision since charity directly enters the donor's utility and is the sole purpose of creating the nonprofit in the first place. The information-friction theories, in turn, suggest that the board should consider measures of service quality. This assumes that the board is better able to evaluate quality than the hospital's patients, for example, because it can access internal data on patient experience or health outcomes.[14]

Both sets of theories suggest that, compared to for-profits, nonprofit boards should focus relatively less on financial performance. First, to satisfy donors and taxpayers, free cash flows should be used to provide charity services, not to generate excess profits. Second, too-much attention to profits can cause for-profit firms to skimp on quality, which is what nonprofits are designed to avoid. However, neither theory suggests that the weight on profits should be zero: high profits could be a sign of good management rather than rent extraction or under-provision of charity. Good management should be encouraged because the resulting profits can be used for more charity (or better services) in the future.

The theories offer no clear guidance as to the weights nonprofits should assign to each of the three performance signals (i.e., quality, charity, and profits), and one of our goals in this paper is to estimate these weights empirically. We do so in the context of the three main governance mechanisms available to both for-profits and nonprofits: the incentive contracts, CEO turnover, and takeover

[14] In practice, hospitals are required by the Center for Medicare Services to generate a variety of quality metrics, which are available to the boards.

threats.[15] Thus, we are able to offer a comprehensive picture of CEO incentives and show that, combined, they can have a meaningful impact on the types of policies nonprofits pursue.

4 Sample and data

4.1 Data sources

The paper combines data from a variety of sources. Information on hospital governance comes from the IRS Form 990 filings that are required from most tax-exempt organizations with gross receipts above 200,000 and total assets above $500,000.[16] For the years 1999 through 2014, we acquire the data from Guidestar USA; for the years 2015 through 2018, we download it directly from the IRS website. The Form 990 filings contain the filer's financial information, including the balance sheet and the statements of revenues and functional expenses. The forms also list the names, titles, and annual compensation of the filers' officers and directors. We use the reported titles to identify the hospital's CEO, or in the absence of the CEO, the president (henceforth, we will refer to both the CEO and the president as a 'CEO' for simplicity).[17] To identify directors in the full sample, we also rely on the reported titles though starting in 2008, hospitals provide director indicators in the IRS filings. We use these indicators in the subset of tests that are based on the post-2008 data.[18] We complement the IRS governance data with hand-collected information on director backgrounds for a sub-sample of nonprofit hospitals, nonprofit systems, and all publicly traded for-profit systems.

We obtain data on the hospitals' services, system affiliations, mergers, and closures from the American Hospital Association (AHA) Annual Survey Database provided to us by The Dartmouth Institute for Health Policy and Clinical Practice for the years 2000 through 2018. We restrict the sample to for-profit and nonprofit hospitals (i.e., we exclude government hospitals from the sample). The data on system acquisitions and PE events were generously provided to us by Gao, Kim, and

[15] The first two mechanisms are deliberate policies set by the boards while the last mechanism is implicit. Thus, in this latter case, we estimate the extent to which takeover threats increase when nonprofits underperform.
[16] https://www.irs.gov/pub/irs-pdf/i990.pdf.
[17] The titles and names obtained from the Form 990 are not standardized and are sometimes misspelled. We search each title for strings indicating a CEO (such as 'CEO' or 'Chief execut') or indicating a president wherever a CEO cannot be identified. We then examine firm-years with multiple executives tagged as potential CEOs (or presidents). Most of these cases are CEO transitions, in which case we eliminate the departing CEO, or cases in which the form lists CEOs of both the filer and its related organizations. We resolve such cases manually wherever possible.
[18] We use IRS Form 990, Part VII to classify directors. This allows us to identify when directors have multiple non-exclusive roles (e.g., officers and trustees). Schedule J, which is often used to obtain more detailed information on key people's compensation, reports only one role per individual (e.g., officer or trustee).

Sevilir (2022) and were manually cross-checked against publicly available sources. (We discuss our definitions of the different corporate events in Section 4.3.)

Mortality, readmission, and patient satisfaction data come from the Center for Medicare and Medicaid Services (CMS). Data on readmission and mortality rates are available starting in 2008 and 2009, respectively, whereas patient satisfaction data has been available since 2008. In some of the analyses, we also use financial data from the Healthcare Cost Report Information System (HCRIS). The cost reports are submitted annually to the CMS by Medicare-certified institutional providers, including hospitals.

Finally, for the for-profit systems (described in Section 4.2), we obtain the financial statement and stock return data from the Compustat database and the Center for Research in Security Prices (CRSP). CEO compensation data comes from the Standard & Poors ExecuComp database, and information on their boards of directors comes from BoardEx. We fill in missing compensation data by manually searching the systems' proxy statements. All variables' definitions are in Appendix A.

4.2 Sample for the internal governance analysis (IRS sample)

For the governance analysis, we use a sample of nonprofit organizations from 2000 through 2018 that file Form 990 with the IRS and are included in the AHA hospital database. The matching between the AHA and the IRS is done using the organizations' names and addresses, with ambiguous matches manually resolved. This initial sample consists of 32,552 observations and 2,196 hospitals. To be included in the analysis, we require that a hospital's service revenues and total assets each exceed $1 million, and that we can identify the hospital's CEO (or the president) from the IRS filing. These conditions reduce our sample to 2,069 hospitals and 27,869 hospital-years. Descriptive statistics for the sample are in Table 1, and the variables definitions are in Appendix A.

For the governance analysis on the hospital system level, we construct a sample of nonprofit systems by combining system information from the AHA hospital database with the IRS Form 990 governance data we obtained from Guidestar for 2009-2014. Merging the AHA systems with the IRS data by the nonprofit's name and location and requiring the availability of board data yields 182 systems and 849 system-years. For comparison with for-profit systems, we also consider a sub-sample of the largest nonprofit systems defined as those with more than 4,000 hospital beds (13 systems and 52 system-years). Finally, we construct a sample of for-profit systems starting with 19 firms (127 firm-years) on Compustat with the SIC code of 806 (Hospitals). Merging these firms with the AHA systems

by name and requiring the availability of governance data on BoardEx yields 14 for-profit systems (71 system-years).

4.3 Sample for the M&A analysis (AHA sample)

To construct the dataset for the M&A analysis, we begin with a hospital panel from the AHA database. We limit this panel to the hospital-years used in Gao et al. (2022), who provide us with acquisition data, and require the availability of financial information from the HCRIS database. For consistency with the IRS sample, we also require that a hospital's operating revenues and total assets each exceed $1 million. This sample contains 73,582 hospital-year observations and spans the years 2001-2018. In contrast to the IRS sample, the panel includes nonprofit hospitals (3,245) and for-profit hospitals (1,099). The descriptive statistics for hospitals by organizational form are in Table 2.

We examine four types of corporate events, which we label as *System Acquisitions*, *Private Equity (PE) Events*, *Mergers*, and *Closures*. We denote as *System Acquisitions* events whereby a hospital joins a system (or changes system affiliation) but survives as a separate entity in the AHA file and continues filing separate cost reports with the CMS. In contrast, we classify as *Mergers* transactions that result in a deletion of a hospital from the AHA file, with the reason for deletion listed as 'merged.' We treat the deleted hospital as the merger target and the surviving hospital as the acquirer.[19] Finally, we classify as *Closures* hospital deletions from the AHA files, with the reason for deletion listed as 'closed.' *PE Events* are transactions that involve private equity firms, which include acquisitions by PE-backed systems or infusions of PE capital into for-profit hospitals.

The overall sample of nonprofits and for-profits includes 1,615 system acquisitions (981 where the acquirer is a nonprofit system and 634 where the acquirer is a for-profit system), 126 mergers, and 196 closures. The sample also includes 607 transactions involving private equity firms, 378 of which are also system events where the acquirer is PE-backed (the remaining 229 are infusions of private equity capital into for-profit hospitals). The numbers of system acquisitions, mergers, and closures involving nonprofit targets are: 1,065, 87, and 88 respectively. Additional statistics on these events are reported in Table 2 Panel A. Panel B reports the number of acquisitions by target and acquirer type (nonprofit vs. for-profit) and their incidence relative to the total number of observations by the target

[19] In some cases, both merging hospitals are deleted and a new entity is formed. In such cases, we classify the smaller hospital as the target. We measure size based on the hospital's total beds (or based on personnel in the absence of total beds) in the year prior to deletion.

type. It shows that acquisitions within-type are more common than across-type, with acquisitions of nonprofit hospitals by for-profits being the least frequent.

Using the AHA data, we examine the geographic incidence of nonprofit hospitals by State in 2018. Appendix Figure A1 shows stark differences across regions: southern states show a higher prevalence of for-profit hospitals, while nonprofit hospitals are more common in the Midwest. To control for these differences, we include state-year fixed effects in our tests.

4.4 Measures of hospital performance

The theories on nonprofits, discussed in Section 3.2.2, suggest three dimensions of hospital performance that boards might care about: profitability, charity provision, and service quality. Throughout the paper, we use hospital profit margin (*Margin)* to capture the financial dimension. Charity provision, defined here as the provision of services below their marginal costs, is measured using the hospital's spending on Medicaid and charity care. We use *Medicaid* (defined as the fraction of Medicaid admissions to total admissions) as our main measure because Medicaid services are, on average, unprofitable to hospitals, and the data is available reliably throughout our sample period.[20] Information on charity care expenditures comes from Worksheet S-10 of the Medicare Cost Reports and is reported consistently starting in 2011. To construct our measure (*Charity)*, we scale this variable by the hospital's total expenditures. Charity care includes free or discounted services to patients who are unable to pay and, thus, qualify for the hospital's financial assistance programs (see details in Dranove, Garthwaite, and Ody (2016)).

To measure service quality, we use hospital-level data on patient readmission rates, mortality rates, and patient satisfaction. The CMS reports risk-adjusted data on readmission and mortality rates at the provider level. The risk adjustment takes into account patient characteristics that may affect the likelihood of death or readmission, such as age, medical history, or other medical conditions.[21] We focus on the 30-day risk-adjusted mortality and readmission rates for three key acute conditions that have been consistently reported since 2008: heart attacks (AMI), heart failures (HF) and pneumonia

[20] For example, in 2017, hospitals received 87 cents for every dollar spent caring for Medicaid and Medicaid patients ("Underpayment by Medicare and Medicaid Fact Sheet", American Hospital Association (January 2019)). See Dranove and White (1998) and Frakt (2011) for evidence on Medicaid reimbursement in earlier years. Importantly, several studies show that hospitals have a discretion to limit services they provide to Medicaid patients. Venkatesh et al. (2019) find that emergency departments are more likely to discharge or transfer uninsured or Medicaid patients compared to privately insured patients with similar medical conditions. See also Nacht, Macht, and Ginde (2013) and Kidnermann et al. (2014).

[21] https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/MMS/Downloads/Risk-Adjustment.pdf.

(PN). These measures are used routinely to evaluate the quality of a hospital's medical services (Beaulieu et al., 2020; Aghamolla et al., 2021; Cooper et al., 2022; Gao et al., 2022). We average the mortality rates (or the readmission rates) across the three conditions by hospital-year and then normalize them by year across all hospitals (including government owned) to have a mean of zero and a standard deviation of one. *Mortality (low)* and *Readm. (low)* are the normalized measures multiplied by -1.

We complement the data on the quality of medical treatment with direct measures of patient satisfaction. The data comes from a survey administered by the CMS to a random sample of adult patients as part of the Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS). The survey asks multiple related questions, for example, concerning the level of communication with medical personnel or the patient's overall level of satisfaction with the service. To identify underperforming hospitals, we focus on the percentage of surveyed patients that do not recommend the hospital (we exclude hospital-years with less than 20% response rates). For consistency with the previous measures, we normalize this variable by year to have a mean of zero and a standard deviation of one. *Not recom. (low)* is the normalized measures multiplied by -1. Finally, we combine all three quality measures into a single *Quality Index* by averaging the normalized variables by hospital-year.[22]

Descriptive statistics for measures of charity provision and service quality are in Table 1 (for the IRS sample) and Table 2 (for the AHA sample). Focusing on Table 2, Medicaid patients constitute 18.9% of all admissions for nonprofit hospitals, compared to 16.5% for for-profit hospitals. The proportions of charity care on operating expenses are similar for both hospital types (averages of 1.7% for nonprofits vs. 1.8% for for-profits). Nonprofit hospitals perform better on average based on all measures of service quality, resulting in *Quality Index* of 0.08 for nonprofits and -0.29 for for-profits.

5 Boards of directors: descriptive evidence

5.1 Background

A large literature analyzes the role of boards of directors in the governance of shareholder-owned firms (see theoretical contributions in Hermalin and Weisbach (1998, 2003), Adams and Ferreira (2007), Raheja (2005), Harris and Raviv (2006)). The common perspective is that a board's primary

[22] We do not consider quality metrics based on "timely and effective care" (Cooper et al, 2019), as there are no measures that are consistently reported throughout our sample period.

responsibility is to monitor and advise managers, ensuring they act in their shareholders' interest. However, the board itself is subject to agency conflicts, and its structure and decision making is not always aligned with what is best for shareholders. For example, a powerful CEO might support the election of friendly directors who, in turn, help entrench the CEO (Hermalin and Weisbach (1988)).

Guided by the theory, many studies investigate the structure of corporate boards, with two attributes – board size and independence – receiving particular attention (see overview in Hermalin and Weisbach (2003)). A common view is that, while larger boards can bring in more diversity and expertise, they are also more prone to free rider and coordination problems. Similarly, while inside directors contribute firm-specific knowledge, they often face conflicting incentives and lack independence from the CEO. The evidence on how board size and composition vary across firms is broadly consistent with these trade-offs (e.g., Coles, Daniel, and Naveen (2007), Linck, Netter, and Yang (2008)). For example, boards tend to be smaller and less independent in firms with higher R&D and more uncertain cash flows, consistent with the premise that these firms value agility and firm-specific knowledge. In contrast, larger and more independent boards are more common in large, complex, and diversified firms that benefit more from expertise across different business areas.[23]

In the following, we provide evidence on the size and composition of nonprofit boards, comparing them to boards of similar for-profits. As in for-profits, nonprofit boards advise and monitor managers, but they also face additional challenges, including fundraising and dealing with more complex objectives (see discussion in Section 2.2). These additional demands likely affect a nonprofit board's 'optimal' attributes and, indirectly, the board's ability to monitor managers. Our descriptive evidence below focuses on the board attributes that the literature has identified as relevant from the monitoring perspective, notably, board size, composition, and director remuneration.

5.2 The attributes of nonprofit boards

Table 3 examines the size and structure of nonprofit hospitals (Panel A) and nonprofit and for-profit hospital systems (Panel B). Most for-profit hospitals are part of systems (instead of being standalone) and do not disclose information on boards at the hospital level. Hence, the system evidence allows us to compare the governance structures of firms in the hospital industry organized as either for-profits or nonprofits.

[23] Testing the effects of boards size and composition directly is difficult because exogenous changes in these attributes are hard to come by. The results from these studies are mixed (see overview in Hermalin and Weisbach (2003)).

The first striking observation from Table 3 is that nonprofit boards are unusually large. An average nonprofit hospital has 14.6 directors, and an average nonprofit system has 17.6 directors. This compares to 9.0 directors for a – typically much larger – for-profit system. Boards of nonprofit systems of comparable size have, on average, 20.7 directors (middle columns of Panel B).[24]

There are two ways to interpret these differences. One is that the larger boards in nonprofits are necessary to fulfill their more complex responsibilities (due to, for example, murkier objectives, heterogeneous stakeholders, or fundraising goals). The implication is that nonprofit boards 'give up' some of the agility and cohesion associated with a smaller size to accommodate these additional challenges. Another (not mutually exclusive) interpretation is that nonprofit boards are sub-optimally large because they lack external oversight by shareholders who would otherwise constrain their size. A direct consequence of either scenario is that a nonprofit board's ability to perform its 'traditional' functions of monitoring and advising is diminished.

The second key feature of corporate boards is their independence. While the IRS imposes no restrictions on the independence of nonprofit boards, it requires (starting in 2008) that nonprofits disclose the numbers of independent directors in their Form 990 filings. The IRS considers a director to be independent if they are not compensated as an employee of the organization (or related organizations) and has no other conflicts of interest, for example, via business transactions or family relationships.[25] This definition of independence is similar to that used by the US stock exchanges in their listing requirements, and it is also similar to that used by firms in their proxy statement disclosures.[26] In the following, we rely on the IRS disclosures to measure the independence of nonprofit boards and on the proxy statement disclosures to measure the independence of for-profit boards. We deviate from the proxy designation of independence in that we code private equity directors as independent. This assumes that private equity investors are more aligned with the firm's other shareholders than with its insiders.[27]

We find that nonprofit firms (hospitals and systems) have higher numbers of both independent and 'non-independent' directors compared to for-profits. Taking systems as an example, the number

[24] As an additional check, we construct a sample of nonprofit public firms matched on size to the nonprofit hospitals in our sample. We require that the for-profit firms have R&D below 0.02 of assets, which is close to the sample median (hospitals report no R&D). We find that these firms' boards have, on average, 7 directors compared to the 14 directors of nonprofit hospitals.

[25] See details in the instructions for the Form 990: https://www.irs.gov/pub/irs-pdf/i990.pdf.

[26] See, for example, Nasdaq definition: https://listingcenter.nasdaq.com/rulebook/nasdaq/rules/nasdaq-5600-series.

[27] Consistently, the IRS considers donors as independent even if they may be a major source of funds for the nonprofit.

of non-independent directors in for-profits is 1.8 (out of the total of 9.1) vs. 4.0 (out of the total of 17.6) in nonprofits (Panel B of Table 3). The fraction of non-independent directors are similar across for-profit and nonprofit systems (0.21 and 0.23) though its is lower for large nonprofit systems (0.14). The structures are similar for all nonprofit systems and for nonprofit hospitals (Panel A).

The higher numbers of independent directors in nonprofits are to be expected as this group likely includes donors (in Table A1, we show that independent directors are more common in hospitals that rely more on donations). The justification for the additional non-independent directors is perhaps less obvious. To gain insight into their roles, we split the non-independent directors into three groups: executives, non-executive employees, and other non-employee directors with conflicts of interest.[28] We classify the for-profit non-independent directors into analogous groups using information on directors' backgrounds in the firms' proxy statements. We find that both nonprofit and for-profit system boards typically include the firm's top executive, who is usually the CEO (1.05 directors for nonprofits and 1.36 for for-profits). However, nonprofits are more likely to include a non-executive employee (0.98 directors for nonprofits and 0.00 for for-profits) and another non-employee director with conflicts of interest (1.11 directors for nonprofits and 0.52 for for-profits).[29] Employee directors are not present in any of the for-profit firms we examine. Figure 1 presents the evolution of nonprofit directors over the years. Panel A shows that the number of independent and non-independent directors has remained steady, and Panel B shows no discernable trends in the composition of non-independent directors.

Table 4 shows more detail on the directors' backgrounds. Panels A and B summarize hand-collected information on occupation, industry, and academic degrees for 305 directors in 20 randomly selected nonprofit hospitals. The picture that emerges from these alternative data sources is consistent with the earlier results: we find that among the employed hospital directors, the most common occupation is a clinician (47%) and the most common type of degree is a medical degree (60%).

[28] The IRS form 990 does not explicitly flag the different types of directors, so we approximate these groups using information on the director's compensation and on his/her role as an 'officer' provided in the form. Officers include executives but may also include independent directors with a leadership position on the board (such as the board's chair, treasurer, or secretary). We confirm this by investigating the titles of officer directors listed in the form. Thus, we define a director as an executive if he/she is flagged and an officer and earns compensation of more than $50,000. This requirement helps us filter out officers that are independent directors. We treat all other directors that receive pay in excess of $50,000 but are not officers as non-executive employees. We treat the remaining independent directors as non-employees. The details of the estimation are in Appendix A.

[29] A closer examination of the non-executive directors' titles reveals that a vast majority have no additional title (other than "trustee" or "director"). Examples of non-independent non-employee directors are former executives, directors with business relationships with the company, or the personal lawyer of the CEO.

Executives and directors with management degrees (including MBA) comprise the second largest groups (34% and 28%). Among non-employee directors, the financial and medical industries are more equally represented, both with respect to the directors' occupations and their educational backgrounds. To compare director backgrounds across organizational forms, we hand-collect data on occupation, industry, and academic degrees for 127 directors of the 14 for-profit systems in our sample and 255 directors of the 14 large nonprofit systems. This data is summarized in Panel C of Table 4. We split the directors into affiliated and non-affiliated groups based on whether the data sources indicate an employment or contractual relationship with any of the system entities. Consistently with the earlier results, we find that affiliated directors in nonprofit systems are significantly more likely to be medical doctors (39% vs. 0%) and less likely to be executives or hold management degrees (though the latter differences are not statistically significant). The strongest pattern for non-affiliated directors is that they are significantly less likely to have a finance background in nonprofit vs. for-profit systems.

It is possible that the relatively high number of non-executive employees and directors with medical expertise on nonprofit boards reflects these boards' greater demand for firm-specific knowledge that these employees bring to the table. Consistently with this interpretation, Table A1 shows that hospitals that belong to systems (in which demand for internal expertise may be higher due to their greater organizational complexity) have more inside directors than standalone hospitals. Another explanation, derived from Glaeser (2003) and Newhouse (1970), is that, in the absence of owners, nonprofit employees acquire outsized influence in their firms, and that board participation is one way in which this influence is being exercised.[30] In either case, our evidence suggests that employee interests may feed more strongly into board decisions in nonprofit than for-profit firms.

Finally, Table 3 highlights an important difference between the independent directors of nonprofits and for-profits, namely, their compensation. Examining proxy statements of the for-profit systems, we find that a median non-employee director in our sample earns basic compensation of $270.0 thousand per year, which includes salary and equity awards, and holds a $594.3 stake in the firm (Panel B of Table 3).[31] While nonprofits are not required to disclose director pay directly, we estimate these amounts using the information provided in Part VII (see details of estimation in

[30] It is also worthwhile to note that most state laws impose no constraints on insider participation of nonprofit boards (see discussion in Section 2.2). In contrast, for-profit publicly traded firms are subject to requirements imposed by the U.S. stock exchanges to maintain a certain fraction of independent directors.

[31] We report director compensation that includes the cash retainer and the fair value of option and restricted stock awards but excludes additional director compensation, for example, for serving as a board chair or a committee chair. Means for compensation and ownership are $229.5 thousand and $2,482.0 thousand, respectively.

Appendix A). We find that nonprofit directors are much less likely to receive retainers, and when they do, the amounts are much lower (by definition, nonprofit directors hold no ownership stakes). An average retainer in a large nonprofit system (middle panel of Panel B) is $10,750 annually, the 90th percentile is $36,000 and the maximum is $45,000 (Banner Health System in 2014). The average retainer in the full sample of non-profit systems is $1,100 and the 90th percentile is zero. Based on these findings, nonprofit directors have weaker financial incentives to exert effort on behalf of their principals compared to for-profit directors.

In sum, we find that nonprofit boards tend to be unusually large and have higher numbers of both independent and non-independent directors than for-profits. Compared to for-profits, nonprofit non-independent directors are more likely to include non-executive employees or other non-employee directors with conflicts of interest. While for-profit independent directors receive compensation and hold significant equity stakes, nonprofit directors receive no comparable financial rewards. Based on these findings, nonprofit boards score relatively poorly on attributes that the governance literature considers desirable from a monitoring perspective.

6 Market for corporate control

6.1 Background

The idea that takeover threat disciplines incumbent managers and, thus, serves as a governance tool has been examined extensively in the literature (the early studies include Grossman and Hart (1980), Jensen and Ruback (1983), Jensen (1988), Scharfstein (1988)). Takeovers create large value gains for target shareholders and are more likely when the targets underperform (Palepu (1986), Morck, Shleifer, and Vishny (1988, 1989), Andrade, Mitchell, and Stafford (2001)). There is also evidence that target managers lose their jobs after takeovers, and that their careers suffer as a result.[32] Thus, while mergers are motivated by a variety of factors, such as technological synergies or market power, they often result in a replacement of an underperforming management team. Consistently, many researchers interpret the widespread use of antitakeover measures as evidence that insiders resist takeovers to protect their careers. In a similar vein, the use of golden parachutes suggests that shareholders try to counteract this resistance and incentivize managers to give up control.[33] In more recent years, additional pressure on managers has come from activist investors (Fos (2017)). Brav et

[32] Martin and McConnel (1991), Agrawal and Walkling (1994), Hartzell, Ofek, and Yermack (2004).
[33] See Knoeber (1986), Harris (1990), and Eisfeldt and Rampini (2008) for models of golden parachutes.

al. (2008) find that activist interventions are more likely after poor performance and that announcements of activist campaigns are good news for shareholders.

Because nonprofits have no shareholders, they are not subject to the market for corporate control in the traditional sense. However, nonprofit hospitals are often acquired by other hospitals or hospital systems. A large literature in health economics investigates these events but focuses mostly on their effects on market power or operational efficiency. In contrast, the perspective in this paper is that acquisitions also represent a transfer of control and, thus, serve as a governance mechanism analogous to that available to for-profits. While these transactions do not transfer ownership from one set of shareholders to another, they do pass on decision rights regarding the target's assets from the target to the acquirer board. In the case of system acquisitions, the target board is often (at least initially) retained with more limited authority; in the case of mergers, the target board is entirely dissolved (see further institutional details in Section 2).

Viewing hospital acquisitions as control events, raises the question of how powerful they are as a means to discipline managers. To investigate this, in Section 6.2, we compare the frequencies of the various change-of-control events when the target is nonprofit vs. for-profit and test how strongly they respond to measures of target performance, both financial and non-financial. In Section 6.3, we document changes in the target's management and board following the change-of-control events to gauge the extent to which these events represent a threat to the insiders' careers.

Our premise is that the nonprofit status likely weakens the power of takeovers as a governance tool. First, any disposition of nonprofit assets, including through a merger, triggers legal challenges (see discussion in Section 2.3). This imposes costs on the target and the acquirer, so that some otherwise attractive transactions will not take place. Second, the lack of target shareholders means that the decision to give up control rests entirely with the target managers (whose careers may suffer as a result) and its (potentially coopted) board. Thus, career concerns may play a bigger role when nonprofits are involved. Third, nonprofit acquisitions by for-profits are subject to additional legal hurdles and may be less attractive to both parties due to the organizations' poorer fit (though, in principle, for-profits may be better incentivized to improve the efficiency of an underperforming target).[34]

[34] It is also interesting to consider the incentives of nonprofit acquirers. On the one hand, the nonprofits' weaker focus on profits might imply less interest to engage in these transactions. On the other hand, the private incentives of acquirer

6.2 Predicting changes-in-control events

To investigate these questions, Table 5 and Figure 2 compare the frequencies and determinants of the various control events within the for-profit and nonprofit samples. The table distinguishes four types of events, defined in Section 3.5: *System acquisitions*, *PE events*, *Closures*, and *Mergers*. For each event, we estimate a regression within the full AHA panel with the dependent variable equal to one for the firm-years in which the event takes place and zero otherwise. In each panel, the key dependent variable is a dummy indicating that the target is nonprofit, a measure of hospital performance, and an interaction of *Nonprofit* with performance. Each regression includes state-year fixed effects and time-varying controls, and some regressions also include firm fixed effects. We consider four measures of nonprofit hospital performance: profit margin (*Margin)* in Panel A, the proportion of Medicaid patients on total admission (*Medicaid*) in Panel B, spending on charity care as a fraction of operating expenses (*Charity*) in Panel C, and the measure of service quality that combines patient mortality, readmissions, and patient satisfaction (*Quality*) in Panel D. The performance measures are motivated by the theories of nonprofits discussed in Section 3: profit margins measure the hospitals' financial performance, and the latter three measures capture the extent to which hospitals delivers high-quality care and provides services to lower-income patients at prices below marginal costs.

The results are striking. Starting with Panel A, all regressions show that non-profit hospitals are significantly less likely to experience each of the four types of control events. Moreover, the likelihood of each event is substantially less sensitive to the financial performance of nonprofits. Based on the first three columns, the probability of a system acquisition in a given year is 2.1 percentage points lower for nonprofits, compared to the baseline likelihood for for-profits of 4.8% reported in Table 2. The gap in the frequencies of these events between for-profits and nonprofits is especially large after poor performance: decreasing *Margin* by 0.1 increases the gap by 1.1 percentage point (column (3)).[35] These effects are illustrated in Figure 2, Panel A.

The results are even stronger for the PE events, which we define as acquisitions by for-profit firms with private equity involvement or private equity infusions by private equity to hospitals owned by

managers (such as empire building) are less clear, and if boards exert less control, these incentives could have stronger effects on corporate decisions.

[35] One potential concern when interpreting this result is that nonprofits may be more resilient to local economic conditions and, thus, less likely to be acquired during a downturn. To examine this possibility, we augment the baseline specification by including county-year fixed effects and the interaction of country-level income with nonprofit status. We find that nonprofit system acquisitions are less sensitive to county-level income fluctuations, but the coefficient of the interaction between nonprofit status and margins remains of similar magnitude and statistical significance. Hence, resilience to local economic conditions cannot explain the lower sensitivity of nonprofits' control events to margins.

privately held firms (see details in Section 4). Based on column 4, the probability of being a PE target is 3.6 percentage points lower for nonprofits, compared to the baseline likelihood of 4.1% for a for-profit, so most PE events involve for-profit targets. This is to be expected as by construction, nonprofit hospitals cannot receive PE infusions, although a PE firm can acquire them. Again, the gap between for-profits and nonprofits increases by 1.2 percentage points with every 0.1 decline in margins (column (6)). Hospital mergers, that is, events in which one or both hospitals are dissolved, are generally less frequent in our sample (the likelihoods in Table 2 are 0.2% for nonprofits and 0.3% for for-profits), but their frequency is also significantly lower for nonprofits.

The final event we consider is hospital closures. We include closures in the analysis because they also constitute negative career outcomes for managers and directors and, thus, could have an incentive effect. Moreover, given the lower likelihood of acquisitions, closures could play a bigger role as exit events for nonprofits than for-profits. Table 5 and Figure 2 show that this is not the case. Hospital closures are substantially more likely for for-profits, particularly after poor financial performance. On average, 1% of for-profit hospitals close each year (based on Table 2), and this frequency is 0.7 percentage points lower for nonprofits (based on column (10)). The gap is driven mostly by hospitals with poor financial performance, as illustrated in Figure 2, Panel B.

The lower sensitivity of nonprofit events to profit margins is to be expected if financial performance is a poor indicator of how a nonprofit is achieving its goals. For example, acquisitions could still be an important governance tool if they respond to underperformance along other relevant dimensions. To investigate this, the regressions in Panels B, C, and D replace *Margin* with *Charity*, *Medicaid*, and *Quality*. The results do not support this hypothesis. *Medicaid* and *Quality* are not reliably associated with corporate events, and neither are their interactions with the nonprofit dummy. A notable exception is the negative and significant coefficient on *Quality* in the PE regression in Panel D (columns (4) and (5)), indicating that PE firms are more likely to intervene when service quality is poor. The positive and significant interaction with the nonprofit dummy suggests that this effect applies only to acquisitions of for-profit hospitals, contrary to the hypothesis that quality matters more for nonprofits. However, this effect vanishes when including firm fixed effects.

The results on charity care in Panel C are more nuanced but are generally consistent with the other two panels. The regressions show that hospitals are more likely to be a target (both of systems acquisitions and PE investors) when their charity provision is *high*. This is contrary to the hypothesis that disciplinary takeovers target nonprofits that 'under-deliver' on non-financial goals (see, for

example, the coefficient of 0.28 on *Charity* in column (1)). Note, however, that this effect is driven almost entirely by for-profit targets, with non-profit targets exhibiting no significant effects. For example, in column (2), the coefficient on *Charity* is 0.72, and the coefficient on the interaction of *Charity* with *Nonprofit* is -0.62, both significant at the 1% level.[36] These effects are illustrated in Figure 2, Panel C which plots the predicted probabilities of system acquisitions as a function of the hospital charity care separately for nonprofits and for-profits. The left panel shows no significant association for nonprofits; the right panel shows a large spike in system acquisitions for for-profits in the top quintile of charity care (the likelihood of acquisition increases from close to 4% across quintiles 1-4 to over 8% in quintile 5). This suggests that takeovers play a disciplinary role for for-profits (in the sense that for-profits that 'over-supply' charity from shareholders' perspective are being acquired), but that they have no analogous effect for nonprofits that diverge from their non-financial goals. This interpretation is supported in Figure 3, Panel C. The figure shows that charity care declines abruptly following acquisitions of for-profit targets (consistent with it being 'too high' prior to the event) but exhibit no change for nonprofit targets. Finally, columns (7) to (9) of Table 5, Panel C (illustrated in Figure 2, Panel D) show that charity provision has no significant effect on nonprofit closures, but that for-profits in the bottom quintile of charity provision are somewhat more likely to be closed.

Table 5 estimates the frequencies of control events as a function of the previous-year performance. For completeness, Figure 3 illustrates the performance patterns in the years -3 through +3 around the event (to do so, we must limit the events to system acquisitions, for which the post-event performance can be observed). The results are generally consistent with those in Table 5: both, nonprofit and for-profit targets show declining profit margins leading up to the acquisition and a steady improvement thereafter. The non-financial measures show no consistent patterns for nonprofit targets: there is some evidence of declining quality after acquisitions though the decline begins already before the event. In contrast, for-profit targets exhibit discrete improvements in service quality accompanied by cuts in charity provision immediately after the event. This suggests that the (predominantly for-profit) acquirers of for-profit hospitals engage in major turnarounds to restore the financial viability of their targets. It is important to keep in mind that the performance changes after the events reflect a combination of selection and causal effects and, thus, cannot be interpreted as entirely causal.

[36] Charity care has no significant effect nonprofit system acquisitions.

Moreover, the selection effects may be stronger for acquisitions of nonprofits because of the greater legal challenges that these transactions must overcome.[37]

In sum, we show that the likelihood of the control events is significantly lower for nonprofits, particularly after poor financial performance, suggesting that changes in control are less important in nonprofit governance. The events appear to be triggered by declines in profits, with drops in charity or service quality having no effect on events involving nonprofit targets. One reason for the lower takeover frequencies may be that, in the absence of shareholders, nonprofit insiders are better able to resist acquisitions to protect their careers. In addition, a transfer of control over a nonprofit may be more difficult to accomplish, particularly when it results in a change in the target's mission or organizational form. In either case, the threat to incumbent managers will be less severe.

6.3 What happens to boards and CEOs after corporate events?

In this section, we provide evidence on CEO and director turnover following the control events. The corporate finance literature has documented significant increases in executive turnover at target firms after merger announcements, ownership changes, and bankruptcies for for-profit firms. There is also evidence that CEOs that lose their jobs during such events are unlikely to find a comparable executive position in the future, suggesting a permanent setback in their careers. The literature (discussed in Section 6.1) has cited these findings to argue that acquisitions impose personal costs on executives, implying that the threat of being acquired has a disciplining effect.

The existing evidence on target executives' careers comes entirely from shareholder-owned firms, and in this section, we ask whether similar patterns are observed for nonprofits. The answer is not obvious as there are reasons to expect nonprofit hospital insiders to experience no (or more muted) career effects compared to a broad sample of for-profit firms. In the absence of shareholder pressure, nonprofit insiders might be better able to resist takeovers and, thus, gain personal concessions (such as job security) in exchange for willingness to give up control. It is also possible that governance

[37] As we explain in Section 2, any transfer-of-control event involving a change in a nonprofit's mission (or in the use of its restricted assets) is generally subject to the cy pres doctrine and, in most states, requires an approval by the court. To grant such approval, the court must conclude that carrying on the original mission (or the donor's original intent) is no longer practical for the nonprofit, implying that the change would occur anyway. For nonprofit acquisitions that pass the cy pres test, one would therefore expect some scaling back of the charitable purpose even if the transaction itself has not caused the decline. In Table A2, we show that conversions of nonprofits to for-profits (typically associated with acquisitions of nonprofit targets by for-profit systems) are associated with declines in *Medicaid* and *Quality*. This is consistent with the nonprofit targets being unable to meet their non-financial goals while remaining nonprofit, and with for-profit acquirers shifting the targets' strategy towards the shareholder-driven goals.

considerations play a more limited role in hospital acquisitions undertaken for competitive reasons: based on evidence in health economics, market power appears to be a strong motive for takeovers in the healthcare space (Gowrisankaran et al., 2015; Barrette et al., 2022).

To investigate the frequencies with which nonprofit CEOs and directors lose jobs around changes in control, we construct a sample of nonprofit hospitals that are both in our AHA events sample and for which we have governance data from the IRS. Within this sample, we restrict it to hospitals that have either experienced no system acquisition (1,176 hospitals) or to hospitals that experienced at least one system acquisition (488 hospitals). If a hospital experienced multiple acquisitions, we only consider the observations around the first event. We focus on system events because in these cases, we can observe the CEO after the event. In this panel, we present regressions of CEO or board turnover on dummy variables indicating years from –3 to +3 and more than +3 around the acquisition event. The regressions also include hospital fixed effects and state-year fixed effects. Figure 4 shows coefficients on the year dummies. Based on the figure, both the CEO and board turnover increase sharply and significantly in the acquisition year and remain elevated for the subsequent two years. For example, the 'excess' CEO turnover is close to 10 percentage points in years 0 through 2, constituting a two-third increase relative to the sample average of 12 percentage points (Table 7). The increase is also large for board turnover: in year 0, an additional 5.5% of board members are replaced, compared to the average replacement rate of 13% (Table 7).

In Section 6.2, we show that system acquisitions are significantly more likely after poor financial performance, and prior literature has linked poor performance to increased CEO and director departures (we examine this relationship in detail in Section 7). To account for this, Table 6 reports turnover regressions that include financial performance as a control, alongside indicators for years –3 to 0 and 0 to +3 relative to the acquisition year. As expected, low profits are associated with significantly higher turnover frequencies for both the CEO and the board. Interestingly, however, the coefficients on the post-event dummies remain large and statistically significant: they indicate increases in CEO turnover by 8.7 percentage points and board turnover of 3.7 percentage points immediately after the change-of-control events.

These results support our premise that acquisitions of nonprofits can, in principle, play a disciplining role. This assumes that the events accelerate the insiders' departures from the target firms, and that such departures are personally costly to the insiders. The patterns we document support this interpretation: the departures of CEOs and board members increase sharply in the acquisition year

and the increases exceed what would be expected based on the target's financial performance. It is worthwhile to note that our results are based the subset of events (system acquisitions) after which the target survives as a corporate entity, and that the effects may be stronger for mergers or closures, which result in a dissolution of the target and its board.

7 CEO compensation and turnover

As discussed in Section 4, nonprofit boards deal with complex objectives and, compared to for-profits, take on additional duties. In Section 5, we show that they are large (compared to for-profits), include large numbers of both independent and non-independent directors, and rarely compensate their directors. Based on Section 6, nonprofit boards face relatively weak external discipline from the market for corporate control. This section explores the nonprofit boards' decision making, focusing on their two key responsibilities: CEO compensation and turnover.

7.1 CEO compensation

7.1.1 Background

CEO pay has been subject to extensive research, but the focus has been almost exclusively on for-profits. The standard view is that compensation contracts help incentivize and attract CEOs, and that boards design them to maximize shareholder value. A prominent set of theories focuses on the incentive effects of CEO pay (Holmström and Milgrom (1987)). The key premise is that CEOs can create value by undertaking personally costly actions unobserved by the board. (For example, they can work harder, make better investment decisions, or consume fewer perks.) The boards can induce CEOs to take efficient actions by tying their pay directly to value. Empirically, the structure of CEO pay is broadly consistent with these theories: annual pay responds positively to the firm's financial performance, and CEOs' stock-and-option portfolios gain automatically when firm value goes up (Edmans, Gabaix, and Jenter (2017)).[38]

An important strand of the literature explores how CEO pay levels are determined in competitive labor markets, in which firms compete for CEOs with varied abilities (Gabaix and Landier (2008) and Terviö (2008)). A key prediction, supported by the data, is that pay levels should increase with firm

[38] For example, Edmans, Gabaix, and Jenter (2017) report that in 2014, an average CEO of a S&P 500 firm owns $67 million, and the numbers are $24 and $13 million for the mid-cap and small-cap firms.

size: the more talented CEOs match with larger firms, in which they are more productive and earn higher pay (Gabaix and Landier (2008), Falato et al. (2015), Engelberg et al. (2013)).

A competing stream of research focuses on the deviations from these efficient contracting (or labor market) benchmarks. These studies emphasize that board members are not fully aligned with shareholders, particularly if they benefit personally from a good relationship with the CEO, and that external pressures – coming from outside shareholders, takeovers, or labor markets – are too weak to ensure efficient outcomes (Bertrand and Mullainathan (2001), Bebchuk et al. (2002), Bebchuk and Fried (2003, 2004)). Several studies provide evidence consistent with this view and suggest that contracting and labor market frictions can result in excessive CEO pay and distorted incentives.[39] Poor incentives are especially costly to the firm as they can lead to insufficient effort and bad investment decisions, such as short-termism or empire building.

7.1.2 Implications for nonprofit firms

While most of the literature on CEO pay deals with shareholder-owned corporations, the basic ideas can be applied to nonprofits. Taking the efficiency perspective as a baseline, a nonprofit board should set CEO pay in a way that maximizes the nonprofit's objectives. Thus, compensation contracts should encourage CEOs to pursue these objectives, and labor markets should ensure competitive pay and efficient matching between hospitals and CEOs.

The specifics of the compensation contract will depend on the nonprofit's objectives, which differ across the competing views of nonprofits, summarized in Section 2. According to the altruism-based view, represented by Fama and Jensen (1985), nonprofits act in the interest of the donors and taxpayers who finance them. In the case of hospitals, the donors' (or taxpayers') preferences are often interpreted as a desire to provide services to low-income patients at prices below marginal costs (which we denote as 'charity'). A direct implication is that boards representing these external stakeholders should pay attention to the provision of charity services when evaluating and rewarding CEOs.

The competing view is that nonprofits emerge as a response to information frictions in the product markets (Arrow (1963), Easley and O'Hara (1983), Glaeser and Shleifer (2001)). When product (or service) quality is difficult for consumers to observe, shareholder-owned firms have an incentive to skim on quality to increase short-term profits. Nonprofits can commit to higher quality because they retain free cash flow instead of paying it out. Assuming that boards represent the interests of patients

[39] See, for example, evidence on perk consumption (Yermack (2006) and option backdating (Lie (2005)).

and that, as insiders, have more information to assess quality, this framework suggests that they should consider service quality (in addition to financial performance) when evaluating their CEOs.[40]

Finally, both theories outlined above suggest that the link between CEO pay and financial outcomes should be weaker in nonprofits than for-profits. The information-friction theories assume that shareholder-owned firms put too much emphasis on profits in some industries (such as healthcare), so a weaker link is a natural implication. The donor-based theories assume that donors and taxpayers want nonprofits to use the free cash flow to finance charity care, again implying lower sensitivities. This is not to say that a nonprofit's weight on financial performance should be zero. High profits could result from better management (rather than skimping on quality or charity care), and thus, could be a useful indicator of CEO talent. Needless to say, CEOs should be encouraged to run firms efficiently (i.e., to minimize waste), regardless of their other objectives: the resulting gains today translate into more charity (or to increase quality) in the future.

In short, these theories suggest that CEO compensation contracts of well-governed hospitals will put some weight on profits, but that they will also include other non-financial measures of performance that reflect the hospitals' goals, such as measures of charity care and service quality. The theory offers no guidance as to the relative weights on these factors in an 'optimal' incentive contract. What emphasis hospitals place on the different goals is therefore an empirical question.

7.1.3 Evidence

Table 7, Panel A shows descriptive statistics on CEO compensation in nonprofit hospitals. In 2008, the IRS changed reporting requirements for CEO compensation, so that starting in 2009, hospitals are required to report separately compensation the CEO receives from its own organization and related organizations, and also 'other' compensation that includes deferred compensation and other non-taxable benefits.[41] Panel A shows that an average hospital CEO earns $628.3 thousand in the post 2008 period ($717.7 thousand including 'other' compensation).

To examine the hypotheses outlined in the previous sections, we regress the log of CEO annual pay on measures of hospital performance, using the compensation for the full sample. We present the results in Table 8 and Figure 5. All regressions include state-by-year fixed effects to control for

[40] This class of theories abstracts from governance and assumes that insiders maximize their own utilities subject to a zero-profit constraint. However, assuming that boards of directors represent the interests of patients, the models suggest that they should pay attention to service quality among other goals.
[41] See instructions to Form 990: https://www.irs.gov/pub/irs-pdf/i990.pdf.

regional-level shocks and the 2008 change in reporting requirements. Panel A of Table 8 shows results with and without firm fixed effects, whereas Panel B and Figure 5 only present results including firm fixed effects for brevity. Consistently with the merger analysis, we use profit margin *(Margin)* as a measure of the hospital's financial performance, and we use *Medicaid*, *Charity*, and *Quality* as measures of non-financial objectives. The number of observations in Panel B is smaller, as we include performance metrics with more limited data, such as *Quality* as measures and *Charity*. Some regressions also include separately the three components of the quality index: patient mortality (*Mortality (low)),* readmissions *(Readm. (low))*, and patient satisfaction *(Not recom. (low))*. All variables are described in Section 4.4, and the definitions are in Appendix A. All performance measures are lagged by one year relative to the measurement of salaries.

Based on Table 8, Panel A, CEO pay responds significantly to the hospital's profit margin. An increase in lagged margin by 1 percentage point is associated with an increase in CEO pay by 0.57 log points (column 2), and the effect is significant at the 1% level. (As a baseline, *Margin* has a mean of 4% and a standard deviation of 7% (Table 1)). Based on Figure 5, increasing the margin from the bottom to the top quintile increases pay by 12 log points. Table 8, Panels A and B also show that the link to non-financial measures of performance is either weaker or close to zero. One exception is *Medicaid*: in column (2) of Panel A, an increase in Medicaid admissions by 1 percentage point increases CEO pay by 0.14 log points, and the effect is significant at 5% level (Medicaid has a mean of 20% and standard deviation of 16% (Table 1)). In Panel B, the regressions show no evidence that charity or quality affects CEO pay: the relevant coefficients are small and insignificant. In contrast, the coefficients on *Margin* remain highly significant and have similar magnitudes to those in the full sample, while the coefficients on *Medicaid* remain positive but are not statistically significant.

We repeat the tests after splitting hospitals based on whether they are standalone or part of systems as CEOs of standalone hospitals may have more autonomy and, thus, more high-powered incentives. We find that this is not the case: Figure A2 in the Appendix shows that pay-for-performance sensitivities are remarkably similar across system and non-system hospitals. Moreover, based on Table 8, Panel A, CEOs of hospitals that belong to systems earn *higher* pay, consistent with them retaining significant autonomy. Finally, it is worthwhile to note that CEO pay is related to other firm and CEO characteristics in predictable ways. Based on Table 8, Panel A, pay increases with hospital size, CEO tenure, and the number of positions the CEO has within the system.

The next interesting question is how CEO incentives differ across for-profit and nonprofit firms. Answering this question is challenging because for-profit hospitals generally do not disclose information on CEO pay. Importantly, the vast majority of for-profit hospitals are part of systems, so their CEO incentive structures may not be representative of those in standalone for-profit firms. Therefore, to gain insight into these differences, we compare for-profit and nonprofit CEO pay on the level of hospital systems rather than on the level of individual hospitals. In Table 7, Panel B, we report statistics on CEO pay for nonprofit systems (left panel) as well as for subsets of for-profit and nonprofit systems of comparable size (middle and right panels).[42] Focusing on the systems of comparable size, that table shows that CEO pay in nonprofits is, on average, $3.7 million vs. $5.6 for for-profits (the medians are $3.1 vs. $4.6 million). In addition, an average for-profit CEO holds an equity stake in the firm worth $18.9 million (estimated as the sum of the value of the stock and in-the-money options).

The sample sizes for systems do not allow us to estimate the sensitivity of annual CEO pay to performance as we do in Table 8 for individual hospitals. However, the evidence in Table 7, Panel B suggests that for-profit CEOs have stronger overall pay-for-performance incentives than nonprofit CEOs. The main source of the difference is that for-profit CEOs tend to hold equity in their firms, so their wealth responds automatically to changes in firm value. For example, assuming a portfolio delta of 0.8 for the average CEO, a 1% increase in shareholder value increases the value of his equity by $179 thousand (=0.8*1%*$22.4 million). This effect is absent for nonprofit CEOs. It is also worth noting that, based on our data, for-profit CEOs' annual pay is, on average, 98% higher than nonprofit CEOs ($7.1 vs. $3.7 million). This suggests that the dollar sensitivity of annual pay to firm performance is likely also higher.[43]

It is important to note that the pay arrangements we describe are not necessarily sub-optimal for nonprofits. First, because of the nonprofits' non-financial objectives, we would expect their emphasis on financial performance to be weaker. Second, non-financial performance is harder to measure,

[42] For consistency with the board analysis, the nonprofit hospitals in the middle panel are limited to those with the number of beds exceeding 4000 and for which we have CEO compensation data. In the right panel, we include all for-profit hospital systems with compensation data, excluding the three largest systems based on number of beds. Including the three largest systems results in higher average CEO compensation and equity holdings: CEO compensation is 9,611 (mean) and 7,941 (median), and CEO equity is 145,794 (mean) and 31,545 (median).

[43] Assuming that the effect of an increase in margins on the CEO's log(annual pay) we estimate in Table 8 applies also to for-profit and nonprofit systems, a 1% increase in margins translates into $18.5 thousand increase in annual pay for a nonprofit system CEO (=0.005*$3.7 millions) and into $35.5 thousand increase in annual pay for a for-profit CEO (=0.005*$7.1 millions).

which makes its use in contracting difficult. Our point is, however, that, precisely because of these frictions, the 'automatic' alignment of CEOs with their 'principals' is harder for nonprofits to achieve, and as a result, nonprofit boards need to rely more on direct monitoring to discipline their CEOs. This, in turn, is challenging given these boards' larger size and, arguably, weaker and conflicting incentives, which we document in Section 5.

7.2 CEO and board turnover

Hiring and firing of CEOs are one of the key responsibilities of corporate boards, including in nonprofits, and a large literature examines turnover in shareholder-owned firms. The pervasive finding is that CEO departures are often preceded by poor financial performance, such as low profitability and stock returns, suggesting that turnover is a meaningful source of CEO incentives (Jenter and Lewellen (2021)). While these incentive effects received some attention in the literature, a more common approach is to view turnover as a consequence of the board's search for the 'ideal' CEO for its firm. The board hires a CEO of uncertain quality and learns it over time by observing firm performance. The turnover occurs once the board's estimate of quality drops below a certain threshold, determined, among other things, by the search costs and the pool of available candidates (Hermalin and Weisbach (1998), Taylor (2010)).

Whether turnover is primarily a source of incentives or a consequence of the board's learning process, the implication is that turnover frequency should increase after performance declines. This reasoning applies equally to for-profits and nonprofits, assuming that nonprofit boards care about their firms' objectives. Guided by this framework, we estimate the sensitivity of CEO turnover in nonprofit hospitals to measures of hospital performance. As with compensation, we expect that well-functioning nonprofit boards would make turnover less responsive to financial metrics, compared to for-profits, but that they will put some weight on nonfinancial measures of performance, such as the provision of charity and service quality.

The CEO turnover regressions are reported in Table 9 and illustrated in Figure 6. Table 9, Panel A includes a probit regression (column 1) and OLS regressions with and without hospital fixed effects (columns 2 and 3). For the probit regression, we report marginal effects and their standard errors. Panel B -which includes *Quality* measures and *Charity* - presents only OLS regressions with hospital fixed effects for brevity. Based on Panel A, CEO turnover responds significantly to the hospital's financial performance. The magnitudes are illustrated in Figure 6: moving from the top to the bottom

performance quintile, the likelihood of CEO turnover increases from 10.8 to 15.5%.[44] We obtain similar turnover-performance sensitivities for standalone hospitals and hospitals that are part of systems though the overall turnover level is higher for system CEOs, possibly because of job switches within systems (Figure A2, Panel B).

As with CEO compensation, we find no significant relation between turnover and most non-financial performance metrics (Table 9, Panel A for Medicaid and Panel B for other measures). However, in contrast to CEO compensation, CEO turnover responds significantly to a measure of customer satisfaction (column 3 in Panel B). A one-standard-deviation decline in the fraction of the surveyed patients dissatisfied with the hospital is associated with a 2.1 percentage point decline in the likelihood of CEO turnover.

Finally, in Table 10 and Figure 7, we repeat the tests with director turnover instead of CEO turnover as the dependent variable. Following, Eldenburg et al. (2003), we measure director turnover in year t as the sum of the number of new directors in year t and the outgoing directors in year t-1, scaled by (2 * the number of all directors in year t-1). We find qualitatively similar results to those for CEO turnover though the magnitudes of the effects are much more muted.[45] Based on Figure 7, hospitals in the bottom quintile of financial performance exhibit an increase in director turnover of 1 percentage point relative to those in the top quintile (the average director turnover in Table 7 is 13%). These estimates suggest that the possibility of dismissal is not a significant source of nonprofit director incentives. Interestingly, when we split hospitals based on whether they belong to a system, we find that the turnover-performance sensitivity is close to zero for system directors, but it doubles relative to that of non-system directors. This is consistent with the boards of system hospitals giving up some of the control to the parent boards.

In sum, we find that nonprofits dismiss CEOs (and, to some degree, directors) in response to poor financial performance and patient dissatisfaction, but that other non-financial measures have limited or no effect on turnover. Three implications are worth noting. First, the fact that turnover is strongly linked to financial measures suggests that nonprofit boards pay close attention to their hospitals' ability to generate 'sufficient' profits (that is, profits above a relatively low threshold) and

[44] We do not attempt to classify turnovers as forced and voluntary based on public announcements or CEO age because, as shown in Jenter and Lewellen (2021), these classifications are often misleading. Instead, following their approach, we interpret the spread between the total turnover at the low vs. high levels of performance as measuring the extent to which turnover is induced by poor performance.

[45] Yermack (2004) also estimates more muted turnover-performance sensitivities for directors vs. the CEOs within a large sample of public for-profit firms.

are willing to punish CEOs who do not deliver them. Second, nonprofit CEO turnover is an important source of CEO incentives. The reliance on the threat of dismissal suggests that nonprofit boards incentivize CEOs to avoid financial losses while offering relatively weak rewards for above-average gains. Such asymmetry may be consistent with a nonprofit's mission: while too-low profits jeopardize a firm's survival, too-high profits may be a sign that the CEO under-delivers charity or extracts rents from patients. A potential unintended consequence of this policy is, however, that CEOs will be reluctant to take risks, even when doing so is desirable from the nonprofit's perspective. The third observation is that direct measures of the non-financial performance (with the exception of one measure) have no effect on the boards' decisions to fire a CEO. This reinforces our earlier point that these nonfinancial goals are more difficult to incorporate into a nonprofit's governance practices. The consequence might be that, absent active engagement from the board, these non-financial goals will receive less weight in the CEOs' decision making.

8 Conclusions

The nonprofit organizational form is prevalent in the healthcare sector, but compared to for-profits, nonprofit governance has received little attention in corporate finance. The goal of this paper is to gain a better understanding of the governance tools nonprofits use to align the interests of their decision makers with those of their principals: patients, donors, and tax payers. We examine both, the internal governance mechanisms (boards of directors, CEO incentive pay and turnover), and the external mechanisms (the market for corporate control). Nonprofit boards have similar monitoring and advising responsibilities to for-profit boards but must deal with multi-dimensional objectives and often take on fundraising tasks. The boards' large size, employee involvement, lack of incentive pay for directors, and weak external oversight (other than by the states' attorneys general and the IRS) suggest greater impediments to effective monitoring compared to for-profit boards.

In addition to boards, we examine the role of the market for corporate control in disciplining managers of nonprofit firms. While nonprofits have no owners, they are subject to takeover threats in the sense that an 'acquirer' can gain de-facto control over the target's board. Such transactions can, in principle, have disciplining effects: we find that they are followed by spikes in CEO and director departures at the target firms. However, the market for corporate control is less active for nonprofits: a financially underperforming nonprofit is half as likely to be acquired or closed than a similar for-profit, and underperformance based on non-financial measures triggers no disciplining events.

Acquirers of nonprofits face significant legal hurdles and may also experience greater insider resistance, both of which could contribute to the lower acquisition frequencies.

Finally, we study incentive compensation and turnover of nonprofit CEOs. While these tools play an important role in nonprofit governance, they both have limitations. The key challenge is that aligning CEO wealth with nonprofit objectives is difficult because these objectives are less well defined and harder to measure. We find that nonprofit CEO pay and turnover are linked to their firms' financial performance but exhibit no (or weak) sensitivity to non-financial measures: for the latter, we consider the quality of medical services, patient satisfaction, and provision of charity. In contrast, the pay-for-performance sensitivity of for-profit CEOs in the healthcare sector (with respect to measures relevant for shareholders) is strong, in large part because for-profit CEOs hold significant stakes in their firms.

It is important to note that nonprofits exist for a reason, and many authors have argued that they are the preferred organizational form in some industries, such as healthcare. In the same vein, the governance structures we observe can be viewed as an efficient response to the constraints nonprofits face. Our analysis suggests, however, that the governance structures that emerge in nonprofits lack the traditionally 'desirable' features, such as, nimble boards, active market for corporate control, and a tight link between the managers' wealth and the interests of the firms' principals. We find little evidence that a relative weakness in one area is offset by a relative strength in another. Within the traditional governance framework, a weaker incentive alignment implies that the firm will have a harder time achieving its goals.

9 References

Adams, Renée B. and Daniel Ferreira, 2007. A theory of friendly boards. *Journal of Finance* 62, 217-250.

Aggarwal, Rajesh K., Mark E. Evans, and Dhananjay Nanda, 2012. Nonprofit boards: Size, performance and managerial incentives. *Journal of Accounting and Economics* 53, 466-487.

Beaulieu, N. D., L. S. Dafny, B. E. Landon, J. B. Dalton, I. Kuye, and J. M. McWilliams. 2020. Changes in quality of care after hospital mergers and acquisitions. *New England Journal of Medicine* 382, 51-59.

Aghamolla, C., P. Karaca-Mandic, X. Li, and R. Thakor. 2021. Merchants of the death. *Working paper*, University of Minnesota.

Agrawal, Anup, and Ralph Walkling, 1994. Executive careers and compensation surrounding takeover bids. *Journal of Finance* 49, 985-1014.

Andrade, Gregor, Mark Mitchell, and Erik Stafford, 2001. New evidence and perspectives on mergers. *Journal of Economic Perspectives* 15, 103-120.

Arrow, Kenneth J., 1963. Uncertainty and the welfare economics of medical care. *The American Economic Review* 53, 943-973.

Barrette, Eric, Gautam Gowrisankaran, and Robert Town. 2022. Countervaling Market Power and Hospital Competition. *Review of Economics and Statistics*, forthcoming.

Bebchuk, Lucian A., Jesse M. Fried, and David I. Walker, 2002. Managerial power and rent extraction in the design of executive compensation. The University of Chicago Law Review 69. 751-846.

Bebchuk, Lucian A. and Jesse M. Fried, 2003. Executive compensation as an agency problem. *Journal of Economic Perspectives* 17, 71-92.

Bertrand, Marianne and Kevin F. Hallock. 2001. The gender gap in top corporate jobs. *Industrial and Labor Relations Review* 55, 3-21.

Brav, Alon, Wei Jiang, Frank Partnoy, and Randall Thomas, 2008. Hedge fund activism, corporate governance, and firm performance. *Journal of Finance* 63, 1729-1775.

Brickley, James A. and R. Lawrence Van Horn, 2002. Managerial incentives in nonprofit organizations: evidence from hospitals. *The Journal of Law and Economics* 2002, 227-249.

Brickley, James A., R. Lawrence Van Horn, and Gerard J. Wedig, 2010. Board composition and nonprofit conduct: Evidence from hospitals. *Journal of Economic Behavior & Organization* 76, 196-208.

Coles, Jeffrey L., Naveen D. Daniel and Lalitha Naveen, 2008. Boards: Does one size fit all? *Journal of Financial Economics* 87, 329-356.

Conover, Christopher J. and Frank A. Sloan, 1998. Does removing certificate-of-need regulations lead to a surge in health care spending? *Journal of Health Politics, Policy and Law* 23, 455-481.

Cooper, Z., S.V. Craig, M. Gaynor, and J. Van Reenen. 2019. The price ain't right? Hospital prices and health spending on the privately insured. *Quarterly Journal of Economics* 134, 51-107.

Cooper, Z., J. Doyle, J.A. Graves, and J. Gruber. 2022. Do higher-prices hospitals deliver higher-quality care? *NBER Working paper* 29809.

Denis David J., Timothy A. Kruse, 2000. Managerial discipline and corporate restructuring following performance declines. *Journal of Financial Economics* 55, 391-424.

Dranove, David, Craig Garthwaite, and Christopher Ody, 2016. Uncompensated care decreased at hospitals in Medicaid expansion states but not at hospitals in non-expansion states. Health Affairs 35, 1471-1479.

Dranove, David, Craig Garthwaite, and Christopher Ody, 2017. How do nonprofits respond to negative wealth shocks? The impact of the 2008 stock market collapse on hospitals. *RAND Journal of Economics 48*, 485-525

Dranove, David and William White, 1998. Medcaid-dependent hospitals and their patients: how have they fared? *Health Service Research* 33, 163-185

Duggan, Mark, 2000. Hospital ownership and public medical spending. *The Quarterly Journal of Economics* 115, 1343-1373.

Duggan, M., Goda, G.S., Jackson, E. 2019. The effects of the affordable care act on health insurance coverage and labor market outcomes. *National Tax Journal* 72, 261-322.

Duggan, M., Gupta, A., Jackson, E., Templeton, Z. 2023. The impact of privatization: Evidence from the hospital sector. *NBER working paper 30824*.

Easley, David and Maureen O'Hara, 1983. The economic role of the not-for-profit firm. *The Bell Journal of Economic* 14, 531-538.

Edmans, Alex, and Xavier Gabaix. 2016. Executive compensation: a modern primer. *Journal of Economic Literature* 54, 1232-1287.

Edmans, Alex, Xavier Gabaix, and Dirk Jenter, 2017. Executive compensation: A survey of theory and evidence. *The Handbook of the Economics of Corporate Governance*, Volume 1.

Eisfeldt, Andrea L. and Adriano A. Rampini, 2008. Managerial incentives, capital reallocation, and the business cycle. *Journal of Financial Economics* 87, 177-199.

Eldenburg, Leslie G., Gaertner, Fabio B. and Goodman, Theodore H., 2015. The influence of ownership and compensation practices on charitable activities. *Contemporaneous Accounting Research* 32, 169-192.

Eldenburg, Leslie, G., Benjamin E. Hermalin, Michael S. Weisbach, and Marta Wosinska, 2004. Governance, performance objectives and organizational form: Evidence from hospitals. *Journal of Corporate Finance* 10, 527-548.

Engelberg, Joseph, Pengjie Gao and Christopher A. Parsons, 2013. The price of a CEO's rolodex, *The Review of Financial Studies* 26, 79–114.

Falato, Antonio, Dan Li and Todd Milbourn, 2013. Which skills matter in the market for CEOs? Evidence from Pay for CEO Credentials. *Management Science* 61, 2845-2869.

Fama, Eugene F. and Michael C. Jensen, 1985. Organizational forms and investment decisions. *Journal of Financial Economics* 14, 101-119.

Feldstein, Martin, 1971. Hospital cost inflation: A study of nonprofit price dynamics. *American Economic Review*, 61(5):853-872.

Fisman, Raymond R. and Glenn Hubbard, 2005. Precautionary savings and the governance of not-for-profit organizations. *Journal of Public Economics* 89, 2231-2243.

Frakt, Austin, 2011. "How much do hospitals cost shift?" A review of the evidence. *The Milbank Quarterly* 89(1): 90-130.

Fos, Vyacheslav, 2017. The disciplinary effects of proxy contests. *Management Science* 63, 655-671.

Fremont-Smith, Marion R. 2004. Governing nonprofit organizations. Federal and state law regulation. The Belknap Press of Harvard University Press, Cambridge MA and London, England.

Gabaix, Xavier and Augustin Landier, 2008. Why has CEO pay increased so much? *Quarterly Journal of Economics* 123, 49-100.

Gao, Pengjie, Chang Lee and Dermot Murphy, 2022. Good for your fiscal health? The effect of the affordable care act on healthcare borrowing costs. *Journal of Financial Economics* 145 464-488.

Gao, J., Y. Kim, and M. Sevilir. 2022. Private equity in the hospital industry. *Working paper*, Indiana University.

Gaynor, Martin, Kate Ho, and Robert J. Town, 2015. The industrial organization of health-care markets. *Journal of Economic Literature* 53, 235-284.

Glaeser, Edward L., 2003. The governance of not-for-profit organizations. Chicago: The University of Chicago Press.

Glaeser, Edward L, and Andrei Shleifer, 2001. Not-for-profit entrepreneurs. *Journal of Public Economics* 81, 99-115.

Goriswankaran, Gautam, Aviv Nevo, and Robert Town. 2015. Mergers when prices are negotiated: Evidence from the hospital industry. *American Economic Review* 175, 172-203.

Grossman, Sanford J. and Oliver D. Hart, 1980. Takeover bids, the free-rider problem, and the theory of the corporation. *The Bell Journal of Economics* 11, 42-64.

Gupta, Atul, Sabrina T. Howell, Constantine Yannelis, and Abhinav Gupta, 2021. Does private equity investment in healthcare benefit patients? Evidence from nursing homes. University of Chicago, Becker Friedman Institute for Economics Working Paper No. 2021-20.

Hansmann, Henry B., 1980. The role of nonprofit enterprise. *Yale Law Journal* 89, 835-901.

Hartzell, Jay, Eli Ofek, and David Yermack, 2004. What's in it for me? CEOs whose firms are acquired, *Review of Financial Studies* 17, 37-61.

Harris, Ellie G., 1990. Antitakeover measures, golden parachutes, and target firm shareholder welfare. *Rand Journal of Economics* 21, 614-625.

Harris, Milton and Artur Raviv, 2008. A theory of board control and size. *The Review of Financial Studies* 21, 1797-1832.

Hazen, Thomas Lee and Lisa Love Hazen, 2012. Punctilios and nonprofit corporate governance - a comprehensive look at nonprofit directors' fiduciary duties. *University of Pennsylvania Journal of Business Law* 14, 347-416.

Hermalin, Benjamin and Michael Weisbach, 1988. The determinants of board composition. *RAND Journal of Economics* 19, 589-606

Hermalin, Benjamin E. and Michael Weisbach, 1998. Endogenously chosen board of directors and their monitoring of the CEO. *American Economic Review* 88, 96-118.

Hermalin, Benjamin E. and Weisbach, Michael S., 2003. Boards of directors as an endogenously determined institution: A survey of the economic literature. *FRBNY Economic Policy Review* 4, 7-26.

Holmstrom, Bengt and Paul Milgrom, 1987. Aggregation and linearity in the provision of intertemporal incentives. *Econometrica* 55, 303-328.

Jensen, Michael C. and Richard S. Ruback, 1983. The market for corporate control: The scientific evidence. *Journal of Financial Economics* 11, 5-50.

Jensen, Michael C., 1988. Takeovers: their causes and consequences. *Journal of Economic Perspectives* 2, 21-48.

Jenter, Dirk and Katharina Lewellen, 2021. Performance-induced CEO turnover. *Review of Financial Studies* 34, 569-617.

Kindermann, Dana, Ryan Mutter, and Robert Houches, Marguerite Barrett, and Jesse Pines, 2015. Emergency department transfers and transfer relationships in United States hospitals. *Academic Emergency Medicine* 22(2), 157-165.

Knoeber, Charles R., 1986. Parachutes, shark repellents, and hostile tender offers. *American Economic Review* 76, 155-167.

Lakdawalla, Darius and Tomas Phillipson, 2006. The nonprofit sector and industry performance. *Journal of Public Economics*, 90, 1681-1698.

Lerner, Josh, Antoinette Schoar and Jialan Wang, 2008. Secrets of the academy: the drivers of university endowment success. *Journal of Economic Perspectives*, 22, 207-22.

Lie, E. 2005. On the timing of CEO stock option awards. *Management Science* 51, 802-812.

Linck, James S., Jeffry M. Netter and Tina Yang, 2008. The determinants of board structure. *Journal of Financial Economics* 87, 308-328.

Martin, Kenneth, and John McConnell, 1991. Corporate performance, corporate takeovers, and management turnover. *Journal of Finance* 46, 671-687.

Molk, Peter and D. Daniel Sokol, 2021. The challenges of nonprofit governance. *Boston College Law Review* 62 1497-1553.

Morck, Randall, Andrei Shleifer, and Robert Vishny, 1988. Characteristics of targets of hostile and friendly takeovers, in A. Auerbach, Ed.: Corporate Takeovers: Causes and Consequences (University of Chicago Press, Chicago).

Natch, Jacob, Marlow Match, and Adit Ginde, 2013. Interhospital transfers from U.S. emergency departments: Implications for resource utilization, patient safety, and regionalization. *Academic Emergency Medicine* 20(9), 888-893.

Morck, Randall, Andrei Shleifer, and Robert W. Vishny, 1989. Alternative Mechanisms for Corporate Control. *American Economic Review* 79, 842-852.

Newhouse, Joseph P., 1970. Towards a theory of not-for-profit institutions: an economic model of a hospital. *The American Economic Review* 60, 64-74.

O'Regan, Katherine, Sharon M. Oster, 2005. Does the structure and composition of the board matter? The case of nonprofit organizations. *The Journal of Law, Economics, and Organization* 21, 205-227.

Palepu, Krishna G., 1986. Predicting takeover targets: A methodological and empirical analysis. *Journal of Accounting and Economics* 8, 3-35.

Pauly, Mark and Michael Redisch, 1973. The not-for-profit hospital as a physicians' cooperative. *American Economic Review* 63, 87-99.

Raheja, Charu G., 2005. Determinants of board size and composition: a theory of corporate boards. *Journal of Financial and Quantitative Analysis* 40, 283-306.

Rose-Ackerman, Susan, 1996. Altruism, not-for-profits, and economic theory. *Journal of Economic Literature* 34, 701-728.

Scharfstein, David, 1988. The disciplinary role of takeovers. *Review of Economic Studies* 55, 185-199.

Sloan, Frank A., 2000. Not-for-profit ownership and hospital behavior. In: *Handbook of Health Economics*, Volume 1, Edited by Anthony J. Culyer and Joseph P. Newhouse.

Taylor, Lucian, 2010. Why are CEOs rarely fired? Evidence from structural estimation. *Journal of Finance* 65, 2051-2087.

Terviö, Marko, 2008. The difference that CEOs make: an assignment model approach. *American Economic Review* 98, 642-68.

Urban, Mark, 2003. The challenge of for-profit health care conversions. *Journal of Law, Medicine, and Ethics* 31, Special Supplement, 49-50.

Venkatesh, Arjun, Shih-Chuan Chou, Shu-lia Li, Jennie Choi, Joseph Ross, Gail D'onofrio, Harlan Krumholz, and Kumar Dharmarajan, 2019. Association between insurance status and access to hospital care in emergency department disposition. *JAMA Internal Medicine* 179(5), 686-693.

Yermack, David, 2006. Flights of fancy: Corporate jets, CEO perquisites, and inferior shareholder returns. *Journal of Financial Economics* 80, 211-242.

Appendix A: Variables definition.

Financial variables from Form 990	
Revenue	Total program service revenues (Part I).
Assets	Total assets (Part I).
Margin	(Total revenues – Total expenses) / Lagged total revenues (Part I).
Performance Quintiles	Quintiles dummies formed based on *Margin*. Ranking is done within year and hospital size bin, with hospitals split into size bins each year at the median of service revenues.
Investment	Growth rate of fixed assets. Fixed assets is Land, buildings, and equipment less accumulated depreciation (Part X).
Rev. Growth	Growth rate of service revenues.
Variables from the AHA database and corporate events	
Admissions	Total hospital admissions.
Medicaid	Fraction of Medicaid inpatient days to total inpatient days.
Dummy system	Equals one for hospitals that are part of systems and zero otherwise.
Dummy rural	Equals one for hospitals located in rural areas and zero otherwise.
System acquisition	Equals one for the last year before a target hospital is acquired by a system and zero otherwise. Our initial list of system acquisitions comes from Gao et al. (2022) who extend the sample from Cooper et al. (2019). Cooper et al. (2019) gather a sample of system acquisitions from 2001 to 2014 from the AHA annual surveys and complement it with information from FactSet, SDC, and Irving-Levin Associates. Gao et al. (2022) extend this list to 2018 using various sources, including SDC, FactSet, and Becker's Hospital Review. We initially determine whether the acquiring system is for-profit or nonprofit based on the organizational form of the majority of its hospitals in the year of the transaction. Finally, through internet searches, we manually cross-check all the acquisition years and the ownership status (nonprofit/for-profit) of both the target and the acquiring system.
PE acquisition	Equals one for the last year before a target hospital is subject to a private-equity event and zero otherwise. Our initial list of private-equity events follows from Gao et al. (2022). Through internet searches, we manually classify PE-events into system events and non-system events. A PE system event is where a target hospital is acquired by a PE-backed hospital system (i.e., this is a subset of the for-profit system acquisitions described above). A non-acquisition PE event is where a for-profit hospital, or its parent system, receives a private-equity capital infusion without being fully acquired.
Merger	Equals one in the last year the target hospital appears on the AHA file, and the AHA lists "Merged" as the reason for deletion (and zero otherwise). In cases in which neither of the merging hospitals survive the merger (i.e., a newly merged entity is formed), we label the smaller merging hospital (based on total beds or, if not available, total personnel) as the target.
Closure	Equals one in the last year the target hospital appears on the AHA file, and the AHA lists "Closed" as the reason for deletion (and zero otherwise).
Financial variables from HCRIS (for M&A analysis)	

Revenue	Net patient revenue (Worksheet G3, Line 3).
Assets	Total assets (Worksheet G, Line 36).
Margin	Net income / Total revenue. Net Income comes from Worksheet G3, Line 29. Total revenue is the sum of net patient revenue and other revenue (Worksheet G, Lines 3 and 25).
Asset growth	Growth in total assets.
Charity	Cost of charity care / Total operating expenses. Cost of charity care comes from Worksheet S-10, Line 23, and is reported consistently since 2011. Total operating expenses come from Worksheet G-2, Line 43.
CEO and board variables for nonprofits from Form 990	
Directors	Number of directors (see details in Appendix B.)
Non-independent directors	Non-independent directors based on Part I of Form 990.
Executives	Directors that are executives (estimated; see Appendix B).
Non-exec. employees	Non-executive employee directors (estimated; see Appendix B).
Other non-independent	Other non-independent directors (estimated; see Appendix B).
Director compensation	Estimated annual basic retainer for non-officer directors ($ thousands). We estimate it as follows: (1) Create a list of persons flagged as individual trustees or directors and non-officers in Part VII of the Form 900 and compute their total compensation as listed in Part VII. (2) Compute the number of directors on that list that receive each specific amount as total compensation in a given year. (3) Select the amount received by the largest number of directors as an estimate of the basic retainer, requiring a minimum of three directors. Step (3) assumes that the number of directors who receive the basic retainer (if any) is larger than the number of directors who receive any other amount, for example as a compensation for other services or employment.
CEO turnover	Dummy variable =1 for the last year of CEO tenure.
Director turnover	Director turnover (t) = (Number of new directors (t) + Number of outgoing directors (t-1)) / (2 * (Number of directors (t-1)) (see, Eldenburg et al. (2003)). Director turnover is estimated for the full sample period of 2000-2018. Because Form 990 incudes indicators for trustees and directors consistently only starting in 2009, we identify directors for the full sample using titles provided in the form for the full sample period.
CEO comp.	CEO compensation as reported on the IRS 990 filing ($ thousands). The statistics for compensation in Table 7 are reported separately for years 2009-2008 and 2009-2018 to account for the change in the IRS reporting requirements in 2008. *CEO comp. pre 2009* includes CEO compensation reported in the pre-2009 filings. *CEO comp. post 2008* includes CEO compensation received from own organization and related organizations as reported in the post-2008 filings; *CEO comp. post 2008 (incl. other)* includes also other compensation such as deferred compensation and non-taxable benefits. *CEO comp full sample* (used in all regressions) combines CEO comp. pre 2009 and CEO comp. post 2008. CEO compensation variables are set to missing if they are either missing or zero on the 990 filing.
Tenure	Number of years from the year the CEO took office or, if this information is not available, from the first year the CEO appears in the database.

Multiple Positions	Dummy set to one if the CEO holds the position in more than one organization in that year.
CEO and board variables for for-profits	
Directors	Number of directors reported on BordEx.
Non-independent directors	Non-independent directors as reported in the proxy statement, except that directors associated with private-equity investors are coded as independent.
Executives	Directors that are executives based on the proxy statements.
Non-exec. employees	Non-executive employee directors based on the proxy statements.
Other non-independent	Other non-independent directors based on the proxy statements.
CEO comp.	CEO compensation corresponding to the Execucomp variable Total Compensation (*TDC1*), which includes salary, bonus, the value of option and stock awards, deferred compensation, non-equity incentive plan compensation, and other compensation.
CEO equity	CEO stock and option holdings in the firm. Option holdings correspond to the sum of Execucomp variables Value Of In the-Money Unexercised Unexercisable Options ($)(*OPT_UNEX_UNEXER_EST_VAL*) and Estimated Value of In-the Money Unexercised Exercisable Options ($) (*OPT_UNEX_EXER_EST_VAL*). Stock holdings are calculated as the closing price for the fiscal year times Shares Owned - Options Excluded (*SHROWN_EXCL_OPTS*).
Director compensation	We hand-collect data on independent directors' compensation from the for-profit systems' proxy filings. We report director compensation that includes the cash retainer and the fair value of options and restricted stock awards but excludes additional director compensation, for example, for serving as a board chair or a committee chair.
Director ownership	We hand-collect the number of shares owned by each independent director from the beneficial ownership section of the form Def14A. We multiply the number of shares by the stock price on the date reported in the section to get the directors' ownership in dollar terms.
Quality variables	
Mortality (low) and Readm. (low)	The readmission and mortality data come from Center for Medicare and Medicaid Services (CMS). We use the 30-day risk-adjusted mortality and readmission rates for heart attacks (AMI), heart failures (HF) and pneumonia (PN). We average the mortality rates (or the readmission rates) across the three conditions by hospital-year and then normalize them by year (across all hospitals, including government owned) to have a mean of zero and a standard deviation of one. Mortality (low) and Readm. (low) are the normalized measures multiplied by -1
Not recom. (low)	Patient satisfaction data comes from the Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) data, administered by the CMS to a random sample of adult patients. Patient dissatisfaction is measured as the percent of surveyed patients that do not recommend the hospital. This measure is also normalized by year to have mean zero and standard deviation of one. Not recom. (low) is the normalized measures multiplied by -1. We exclude hospital-years with less than 20% response rates
Quality Index	Average of *Mortality (low)*, *Readm. (low)*, and *Not recom. (low)* by hospital-year.

Appendix B

Classification of nonprofit directors.

We classify nonprofit directors into non-independent, executives, non-executives employees, and other non-employee using information in Part VII and Part I of the Form 990 filings as follows.

1) We start with a list of an organization's *Directors*, defined as all persons listed in Part VII and flagged as "Individual Trustee or Director."

2) We obtain the number of *Non-independent* directors from Part I of Form 990 as the differences between the "Number of voting members of the governing body" and the "Number of independent voting members of the governing body." When this difference is less than zero (16 cases), we set it to zero; when it is larger than the number of all directors, we set it to *Directors* (6 cases).

3) We consider a director to be also the organization's *Executive* if he or she is flagged as a director and an 'Officer' in Part VII of the form, and if his/her total annual compensation exceeds $50,000. Based on the IRS definition and our inspection of director titles, 'Officers' include the organization's top executives, such as CEO, president, or CFO, but can also include directors who earn no compensation but hold titles of a board chair, treasurer, or secretary. We filter out these directors by imposing the compensation requirement. We label directors who earn over $50,000 but are not 'Officers' as *Non-executive employee* directors. We choose the $50,000 cutoff because our estimate of maximum retainer for a nonprofit board member in our sample is $45,000 (see Appendix A, Director compensation).

4) We sum up the numbers of all directors, executive directors, and non-executive employee directors by organization-year. We impose two additional filters on the data to eliminate reporting inconsistencies and errors: we drop observations where (1) *Directors* is smaller than the 1st percentile or larger than the 99th percentile of the overall sample; or (2) the absolute value of the difference between *Directors* and the "Number of voting members of the governing body" reported in Part I of Form 990 is larger than 20% of the average of the two variables. These two filters reduce the sample from 15,305 to 13,581. This number drops to 13,343 in Table 3, where we also require that we can identify the CEO for that organization-year.

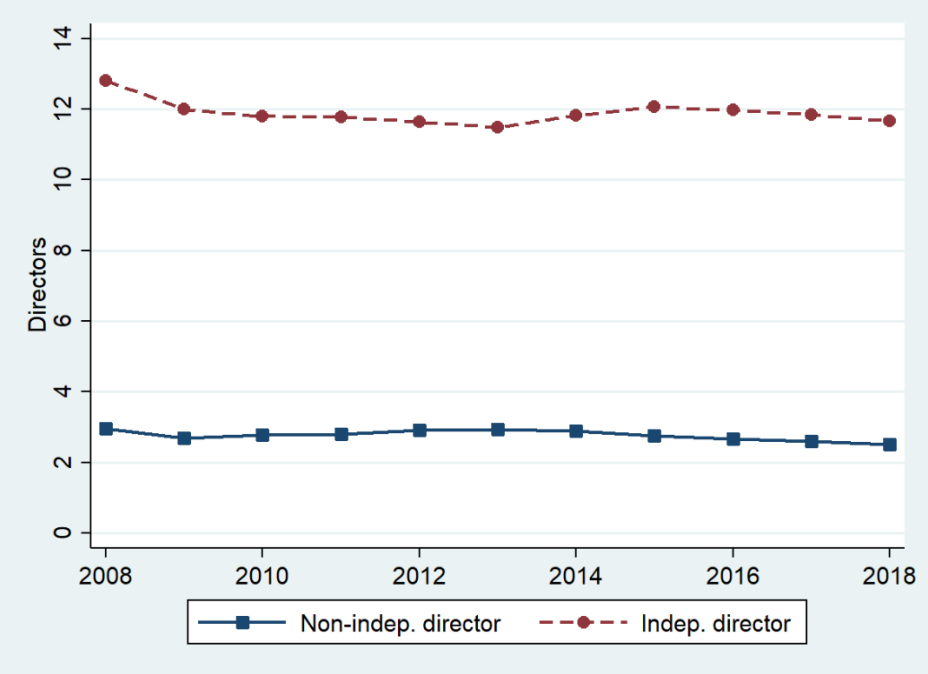
5) Finally, we estimate the number of *Other non-independent* directors as follows. (1) We start with the number of all independent directors and subtract from it the numbers of the other two categories (executive and non-executive employee directors). (2) In cases in which this number is less than zero (1,152 out of 15,305 observations), we reduce the number of non-executive employee directors and

executive directors (in that order), so that the sum of all three categories of non-independent directors is consistent with that disclosed in Part I (see step 2).

Figure 1: Board structure of nonprofit hospitals, 2008-2018

Panel A shows the average number of independent and non-independent directors on hospital boards during 2008-2018. Panel B shows the average fractions of non-independent directors on nonprofit hospital boards during 2008-2018. Non-independent directors are categorized into executives, non-executive employees, and other non-independent directors using the classification procedure described in Section 5 and Appendix B.

Panel A: Number of directors



Panel B: Fraction of non-independent directors

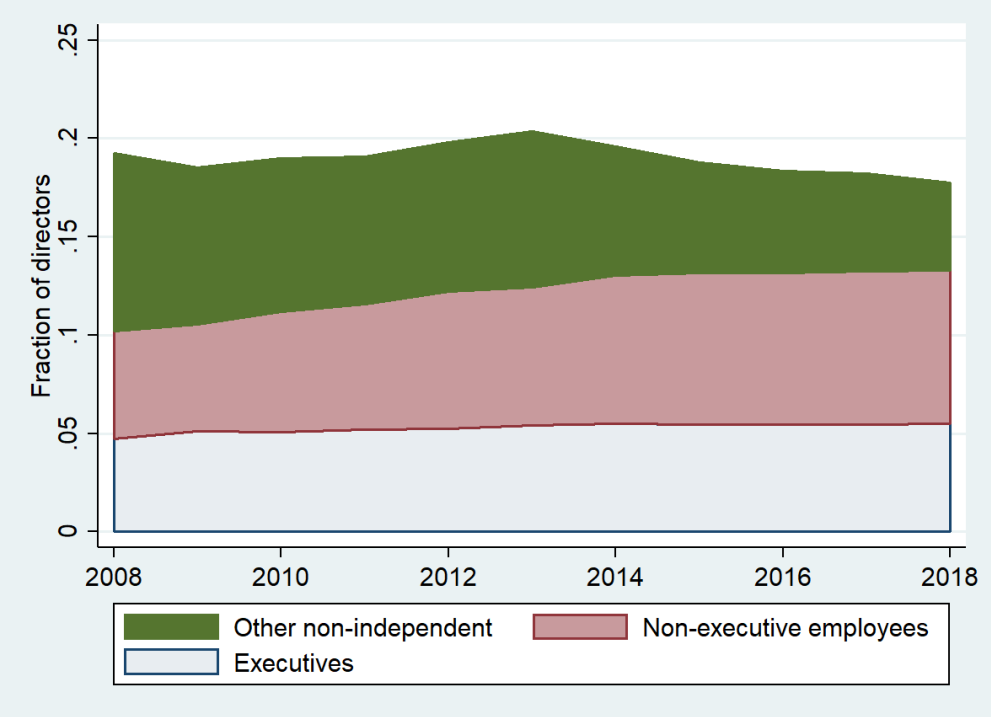
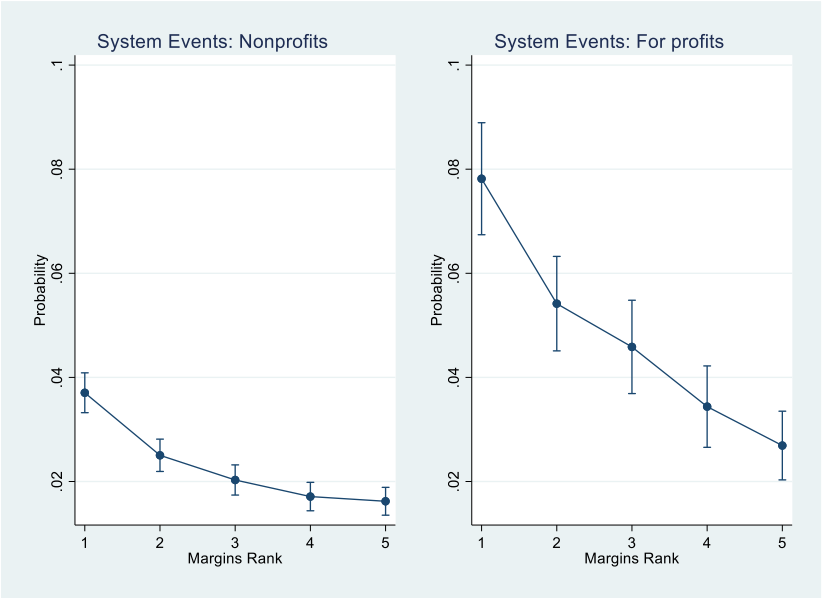


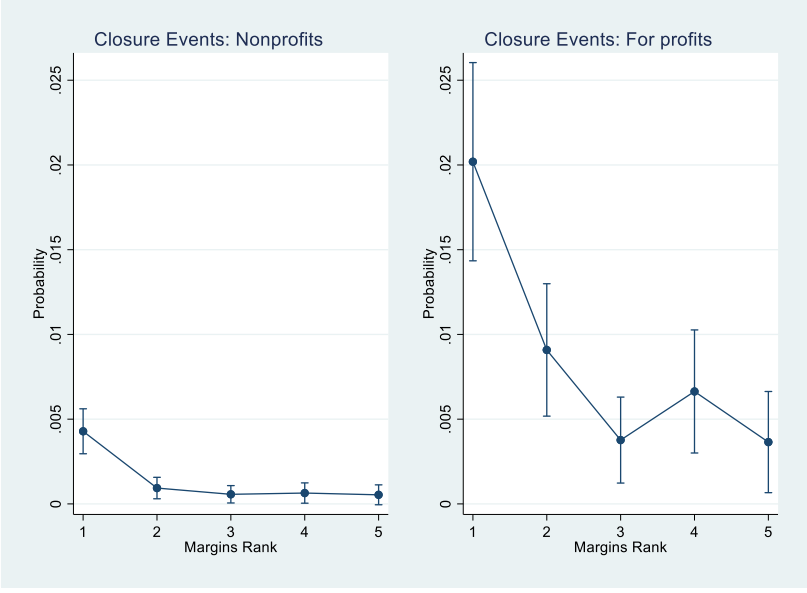
Figure 2: Predicted probabilities of corporate events

The figures show predicted probabilities of corporate events from a Probit model, estimated separately for for-profit and nonprofit hospitals. Panels A and C show probabilities of system acquisitions and Panels B and D of closures. Panels A and B show sensitivities to hospitals' margin rankings and Panels C and D to charity care rankings. To compute margin or charity care rankings, we sort hospitals into quintiles within hospital type (for-profit or nonprofit), year, and size ranking (for size ranking, hospitals are split at the median of revenues within hospital type and year). Controls in all regressions include log(*Revenue*), log(*Admissions*), *Medicaid*, *Revenue growth*, *Asset growth*, *Dummy system*, and *Dummy rural*. In Panels C and D, the controls also include *Margin*. Each circle in the graph represents the predicted probability with a capped spike showing the 95 percent confidence interval. All specifications include year fixed effects. Standard errors (in parentheses) are adjusted for heteroscedasticity and clustered at the firm level.

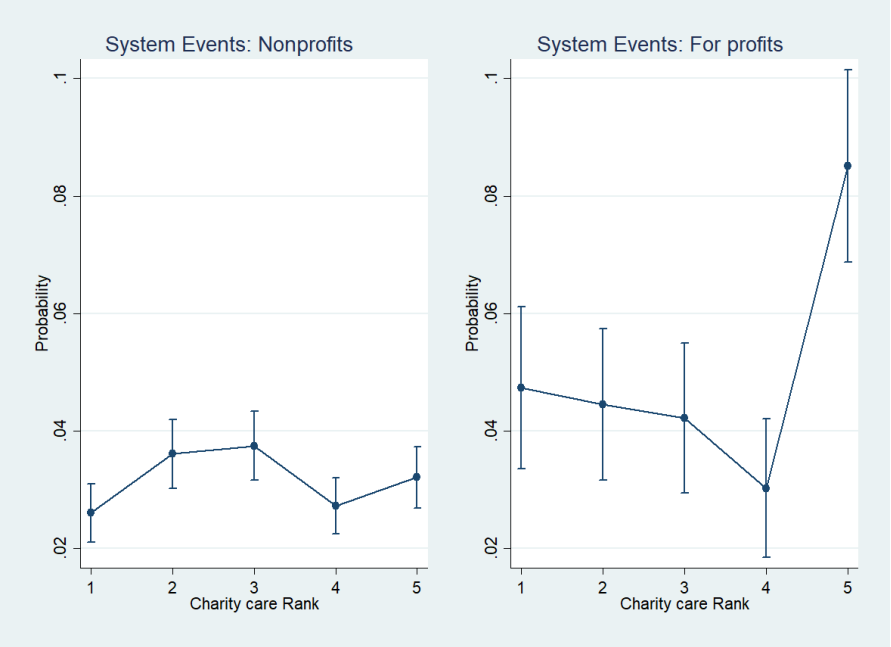
Panel A: System event sensitivity to margins



Panel B: Closure events sensitivity to margins



Panel C: System event sensitivity to charity care



Panel D: Closure event sensitivity to charity care

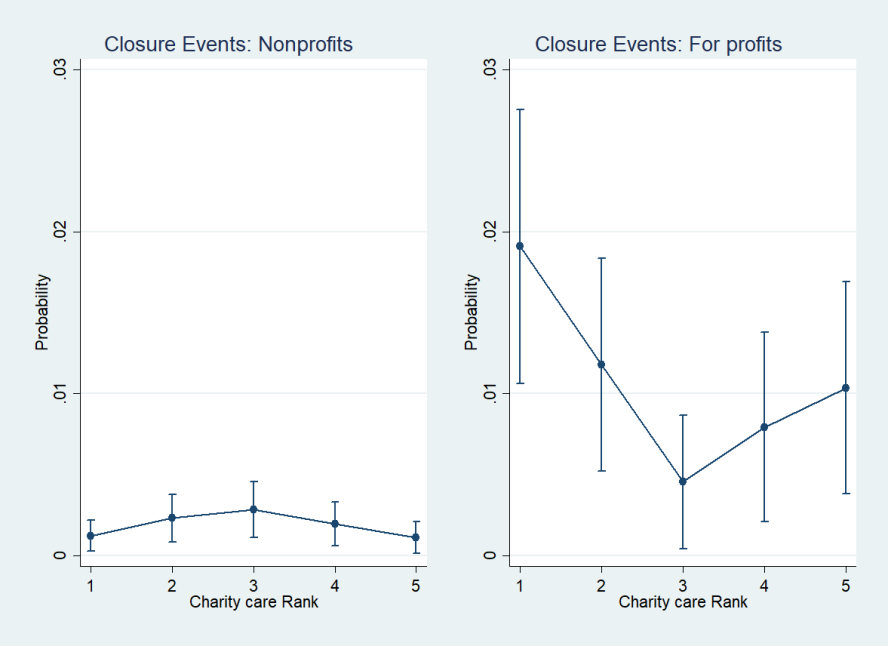
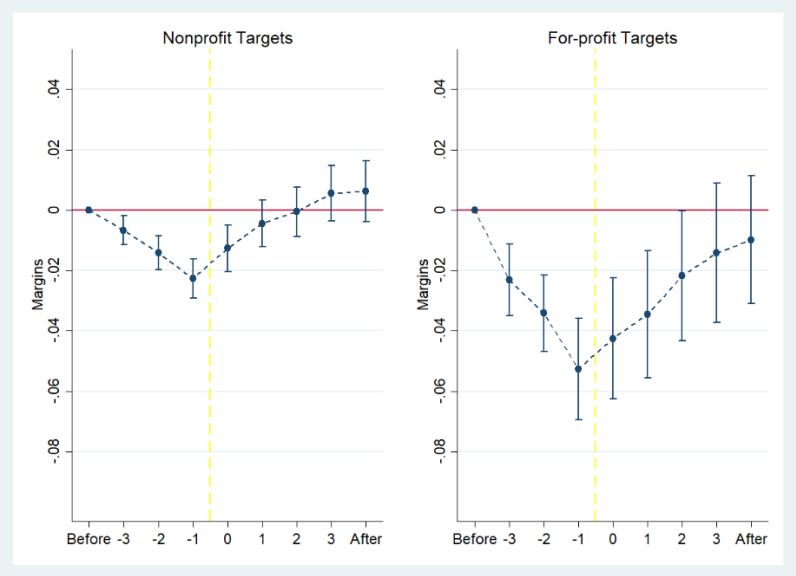


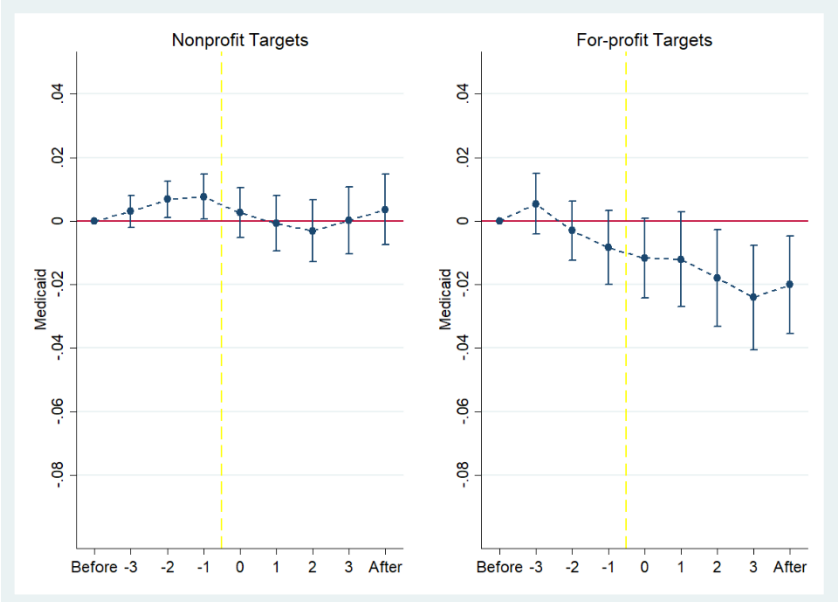
Figure 3: Hospital outcomes around system acquisitions

The figures show coefficients and 95% confidence intervals for changes in hospitals' outcomes around system acquisitions. For hospitals with multiple events, we exclude observations beginning the second event in the sample (343 acquisitions and 1,429 observations). The estimated regression is: $y_{it}=\beta^{NPT}\Sigma D_{i\tau}*NPT_i+\gamma^{NPT}After_{i\tau}*NPT_i+\beta^{FPT}\Sigma D_{i\tau}*FPT_i+\gamma^{FPT}After_{i\tau}*FPT_i+\phi_i+\varphi_{st}+e_{it}$, where i stands for hospital, t for calendar year, τ for event year, and s for state. Event years $D_{i\tau}$ take the value of 1 for event years $\tau=\{-3,+3\}$ around the acquisition event. $After_{i\tau}$ takes the value of 1 for event years greater than 3 after the acquisition. *Before* is the default period for for-profit and nonprofit targets. *NPT* and *FPT* are mutually exclusive dummies taking the value of 1 when the target is nonprofit or for-profit at the time of the acquisition and zero otherwise. This allows us to estimate separate coefficients by target type. ϕ_i are hospital fixed effects, and φ_{st} are state-by-year fixed effects. The dependent variables in Panels A to D are: *Margin*, *Medicaid*, *Charity*, and *Quality Index*. All variables are defined in Appendix A. Standard errors (in parentheses) are adjusted for heteroscedasticity and clustered at the firm level.

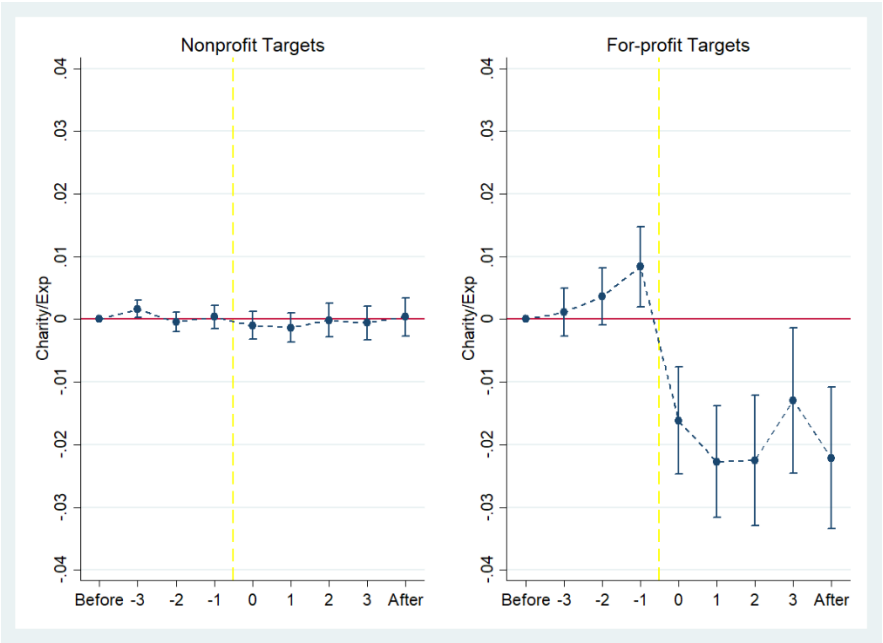
Panel A: Margins around system acquisitions



Panel B: Medicaid around system acquisitions



Panel C: Charity care around system acquisitions



Panel D: Quality around system acquisitions

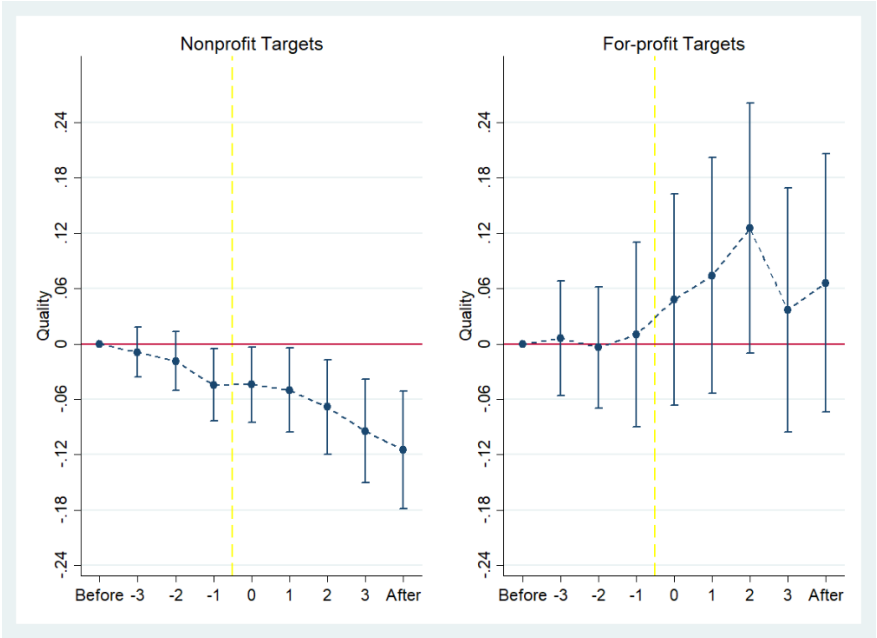
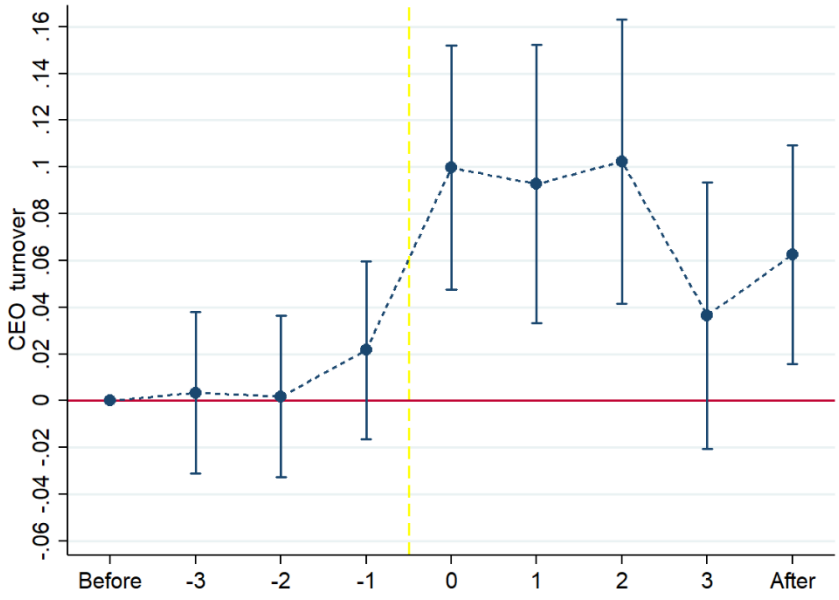


Figure 4: Nonprofit turnover around system acquisitions

The figures show estimates and 95% confidence intervals for the likelihood of CEO and board turnover around system events. We restrict the sample to nonprofit hospitals with data in the AHA and IRS samples. For hospitals with multiple system events, we exclude observations beginning the second event in the sample. The estimated regression is: $y_{it} = \Sigma\beta D_{i\tau} + \gamma After_{i\tau} + \phi_i + \varphi_{st} + e_{it}$, where i stands for hospital, t for calendar year, τ for event year, and s for state. The dependent variables in Panels A and B are CEO and director turnover, respectively (the variables are defined in Appendix A). Event years $D_{i\tau}$ take a value of 1 for event years for τ={-3,+3} around the event. $After_{i\tau}$ takes a value of 1 for event years greater than 3 after the event. *Before* is the default period for for-profit and nonprofit targets. ϕ_i represents hospital fixed effects, and φ_{st} represents state-by-year fixed effects. Standard errors (in parentheses) are adjusted for heteroscedasticity and clustered at the firm level.

Panel A: CEO turnover around system acquisitions



Panel B: Director turnover around system acquisitions

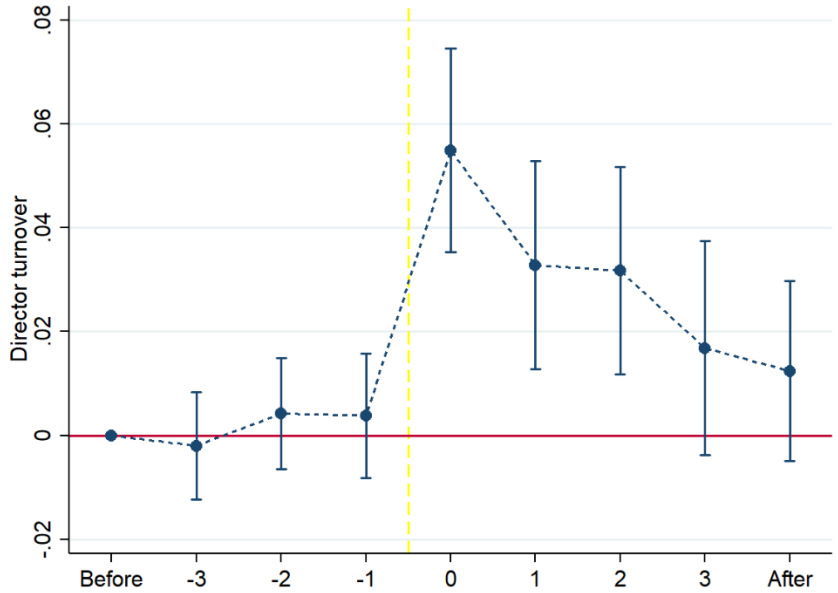


Figure 5: Nonprofit CEO pay sensitivity to hospital outcomes

The figures show the estimates and 95% confidence intervals for predicted changes in CEO pay as a function of lagged outcomes: *Margin*, *Medicaid*, *Charity*, and *Quality index*. To compute hospital ranking on each measure (x-axis), we sort hospitals into quintiles by year and size ranking (for size ranking, hospitals are split at the median of *Revenue* by year). All regressions include firm and state-by-year fixed effects. Controls include *CEO tenure*, *Multiple positions*, and lagged Log(*Revenue*), log(*Admissions*), *Investment*, and *Revenue growth*. We also include lagged *Margin* and *Medicaid* as controls when the ranking of interest is not based on the same variable. Standard errors are adjusted for heteroscedasticity and clustered at the hospital level.

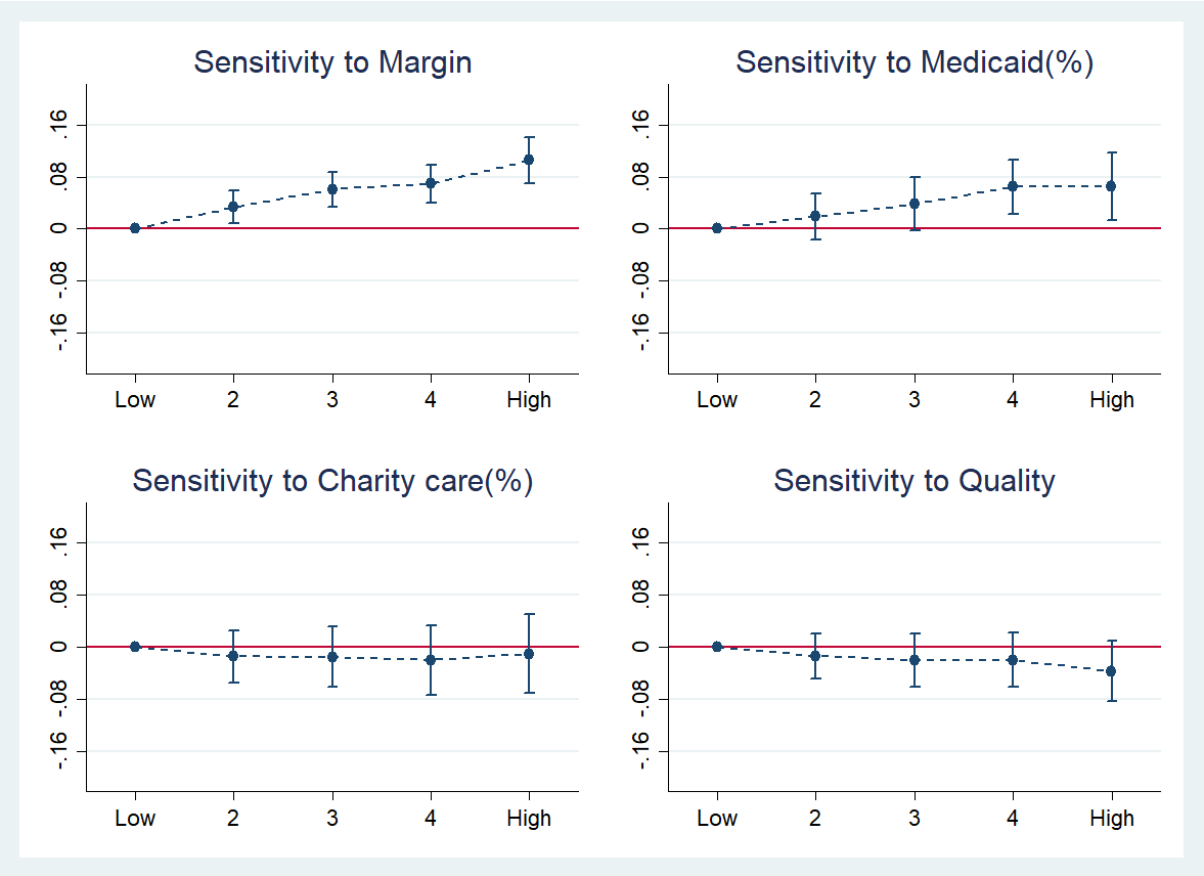


Figure 6: Nonprofit CEO turnover as a function of hospital outcomes

The figures show estimates and 95% confidence intervals for predicted probabilities of CEO turnover from a Probit model as a function of lagged outcomes: *Margin*, *Medicaid*, *Charity*, and *Quality index*. To compute hospital ranking on each measure (the x-axis), we sort hospitals into quintiles by year and size ranking (for size ranking, hospitals are split at the median of *Revenue* by year). Controls include *CEO tenure*, *Multiple positions*, lagged Log(*Revenue*), log(*Admissions*), *Investment*, *Revenue growth*, *Dummy system, and Dummy rural*. All regressions include year fixed effects. We also include lagged *Margin* and *Medicaid* as controls when the ranking of interest is not based on the same variable. Standard errors are adjusted for heteroscedasticity and clustered at the hospital level.

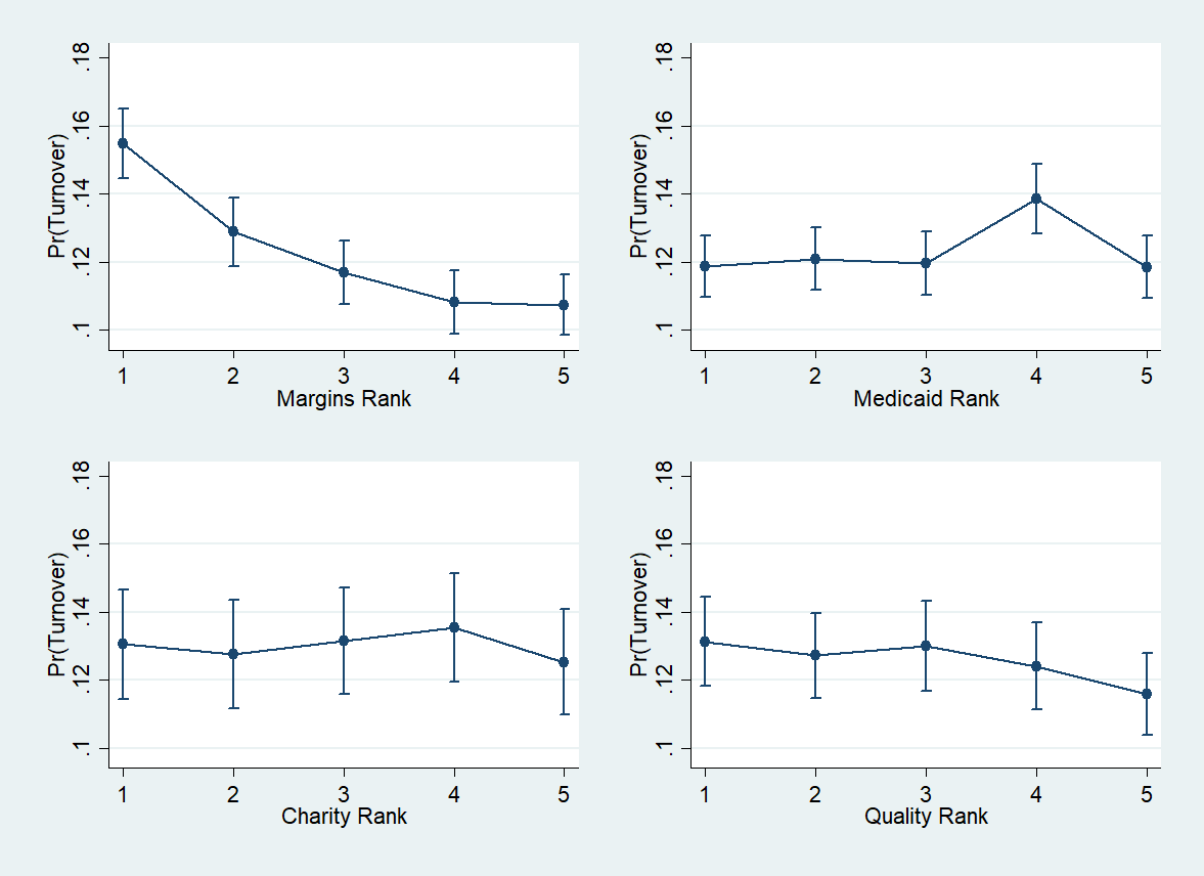


Figure 7: Nonprofit board turnover as a function of hospital outcomes

The figures show the estimates and 95% confidence intervals for director turnover as a function of lagged outcomes: *Margin*, *Medicaid*, *Charity*, and *Quality index*. Director turnover in year t is equal to (Number of new directors (t) + Number of outgoing directors (t-1)) / (2 * (Number of directors (t-1)) (see details in Appendix A). To compute hospital ranking on each outcome (x-axis), we sort hospitals into quintiles by year and size ranking (for size ranking, hospitals are split at the median of *Revenue* by year). All regressions include firm and state-by-year fixed effects. Controls include *CEO tenure*, *Multiple positions*, lagged Log(*Revenue*), log(*Admissions*), *Investment*, and *Revenue growth*. We also include lagged *Margin* and *Medicaid* as controls when the ranking of interest is not based on the same variable. Standard errors are adjusted for heteroscedasticity and clustered at the hospital level.

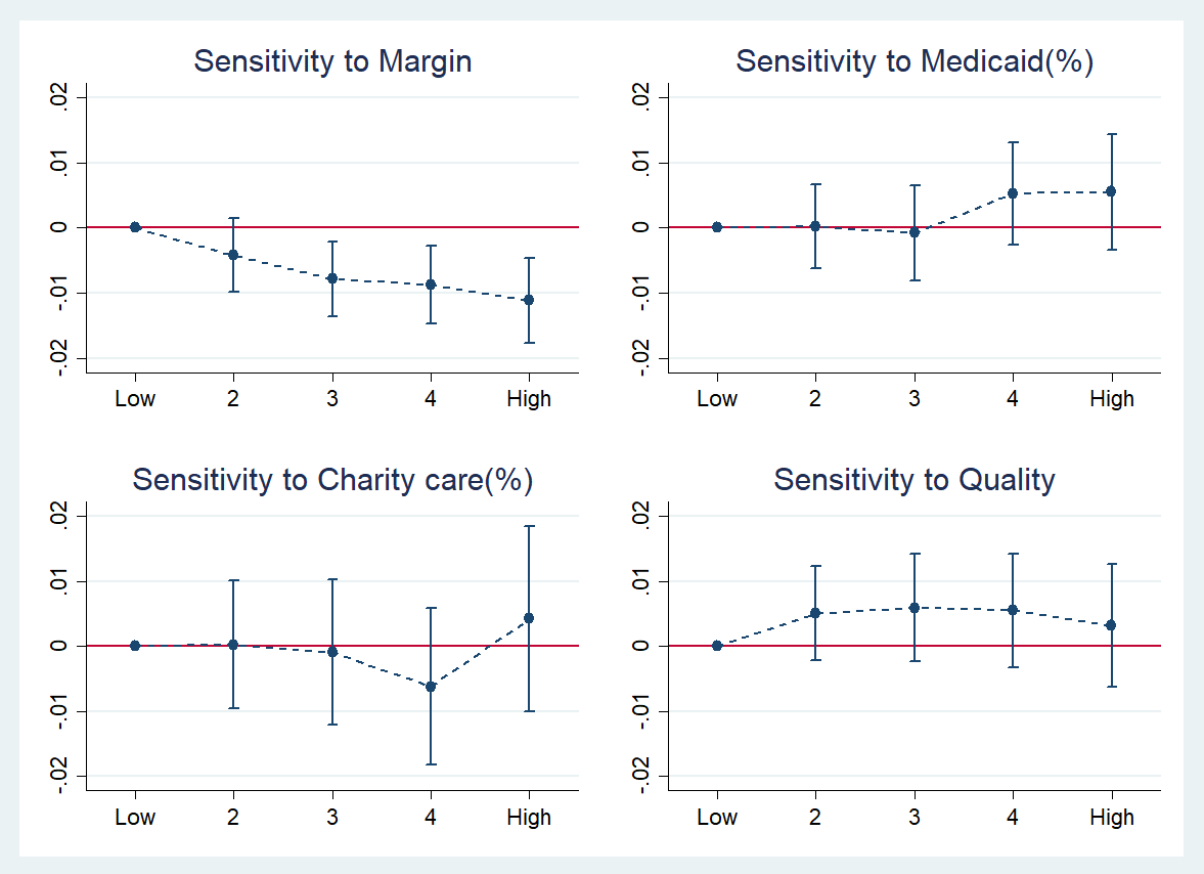


Table 1: Summary statistics: IRS sample

Panel A shows summary statistics for the hospital sample used in the analysis of internal governance for years 2000-2018 (described in Section 4.2). All variables' definitions are in Appendix A. The financial variables come from the IRS Form 990 filings while the data on patient admissions, Medicaid, system affiliation, and rural location come from the American Hospital Association (AHA) surveys. *Medicaid* is the fraction of inpatient days to total inpatient days. *Charity* is the cost of charity care scaled by total operating expenses from the hospitals' Medicare cost reports (it is available starting in 2011). Panel B shows summary statistics for measures of quality of medical treatment (*Mortality (low)* and *Readm. (low))* and patient satisfaction *(Not recom. (low)*) from the Center for Medicare and Medicaid Services (CMS), available starting in 2008 (or 2009 for readmissions). The measures are normalized, so that each variable has a mean of zero and a standard deviation of one within a hospital-year (using all hospitals, including government owned). Higher values imply better quality. Quality index is the average of the three quality measures within hospital-year.

Panel A: Financials

	Mean	P10	P50	P90	SD	Total
Revenue (MM)	184	14	89	441	287	27,868
Assets (MM)	215	10	86	507	443	27,869
Margin	0.04	-0.04	0.03	0.12	0.07	27,583
Investment	0.05	-0.08	0.00	0.24	0.19	27,047
Rev. growth	0.06	-0.04	0.06	0.16	0.11	27,569
Admission	8,121	533	4,939	19,925	9,177	27,869
Medicaid	0.20	0.05	0.16	0.44	0.16	27,869
Charity	0.01	0.00	0.01	0.04	0.02	9,949
Dummy system	0.46	0.00	0.00	1.00	0.50	27,869
Dummy rural	0.21	0.00	0.00	1.00	0.41	27,771

Panel B: Quality

	Mean	P10	P50	P90	SD	Total
Mortality (low)	-0.00	-0.98	0.01	0.95	0.76	14,113
Readm. (low)	0.06	-0.99	0.12	1.00	0.78	12,385
Not recom. (low)	0.13	-0.89	0.29	0.94	0.81	12,884
Quality Index	0.06	-0.58	0.10	0.65	0.50	14,303

Table 2: Summary statistics for nonprofit and for-profit hospitals: M&A sample

Panel A shows sample means and differences in means for nonprofit and for-profit hospitals used in the M&A analysis for years 2000-2018 (described in Section 4.3). All variables are defined in Appendix A. The financial variables come from the Healthcare Cost Report Information System (HCRIS) while the data on patient admissions, Medicaid, system affiliation, and rural location come from the American Hospital Association (AHA) surveys. Measures of quality of medical treatment (*Mortality (low)* and *Readm. (low))* and patient satisfaction *(Not recom. (low)*) are from the Center for Medicare and Medicaid Services (CMS). The bottom section of Panel A reports averages for the dummy variables indicating corporate events for the target hospital. Each event dummy equals one for the target in the year prior to the event (for mergers and closures, we use the last year the target appears in the database). Definitions of corporate events are in Appendix A. Significant at: *10%, **5% and ***1%. Panel B shows the numbers of system acquisition events by the type of target and acquirer. It also shows (in parentheses) the percent of hospital-years in which a hospital is a target, separately for nonprofit and for-profit targets.

Panel A: Sample means

Variable	Nonprofit	For-profit	(1)-(2)
Revenue (MM)	197.329	110.519	86.810***
Assets (MM)	234.794	81.864	152.929***
Margin	0.033	0.043	-0.010***
Revenue growth	0.066	0.068	-0.002
Asset growth	0.064	0.055	0.009***
Admission	8,957.506	6,856.151	2,101.355***
Medicaid	0.189	0.165	0.024***
Charity	0.017	0.018	-0.000
Dummy system	0.620	0.867	-0.248***
Dummy rural	0.202	0.124	0.078***
Mortality (low)	0.042	-0.031	0.073***
Readm. (low)	0.066	-0.187	0.252***
Not recom. (low)	0.143	-0.705	0.848***
Quality Index	0.083	-0.292	0.375***
System acq.	0.024	0.048	-0.025***
NP System acq.	0.019	0.011	0.008***
FP System acq.	0.005	0.037	-0.033***
PE event	0.003	0.041	-0.038***
Merger	0.002	0.003	-0.002***
Closure	0.002	0.010	-0.008***
Observations	45,040	11,344	
Hospitals	3,232	1,071	

Panel B: Number of system events by type of target and acquirer (% of sample)

		Acquirer		
		NP	FP	Total
Target	NP	854 (1.9%)	211 (0.5%)	1065 (2.4%)
	FP	127 (1.1%)	423 (3.7%)	550 (4.8%)
		981	634	1,615

Table 3: Board size and composition

The table shows board characteristics for nonprofit hospitals (Panel A) and nonprofit and for-profit systems (Panel B). The board data on nonprofit hospitals and systems come from the post-2008 Form 990 filings that list directors and officers and include the total number of independent directors. We use these disclosures, along with the data on the directors' pay, to categorize nonprofit directors into executives, non-executive employees, and other non-independent directors. The classification procedure is described in Section 5 and Appendix B. The sample of nonprofit hospitals includes years 2009-2018, and the sample of nonprofit systems includes years 2009-2014, for which we have system data from GuideStar. *Large Nonprofit Systems* are systems with more than 4.0 thousand beds. The board data on for-profit systems comes from BordEx and proxy filings. We classify for-profit directors into executives, non-executive employees, and other non-independent directors using director information in the proxy disclosures (see details in Appendix A). The sample of for-profit systems includes all firms on Compustat with SIC code 806 (Hospitals) in years 2009-2018 for which we have data from BoardEx. *Beds* is the number of hospital beds in thousands, *Admissions* is the number of total admissions in thousands.

Panel A: Nonprofit hospitals

	Mean	Median	P10	P90	SD	N
Numbers of directors						
All Directors	14.61	14.00	8.00	22.00	6.51	13,343
All non-independent dir.	2.77	2.00	0.00	6.00	2.51	13,337
Executives	0.74	1.00	0.00	2.00	0.86	13,343
Non-exec employees	1.02	0.00	0.00	3.00	1.45	13,343
Other non-independent	1.00	0.00	0.00	3.00	1.67	13,337
Fractions of All Directors						
All not independent dir.	0.19	0.17	0.00	0.40	0.17	13,337
Executives	0.05	0.04	0.00	0.13	0.08	13,343
Non-exec employees	0.07	0.00	0.00	0.20	0.10	13,343
Other not independent	0.07	0.00	0.00	0.20	0.11	13,337

Panel B: Nonprofit and forprofit systems

	All Nonprofit Systems		Large Nonprofit Systems		For-profit Systems	
	Mean	Median	Mean	Median	Mean	Median
Numbers of directors						
All Directors	17.64	16.00	20.69	16.00	9.00	9.00
All non-independent dir.	3.98	3.00	3.25	2.00	1.87	2.00
Executives	0.94	1.00	1.05	1.00	1.35	1.00
Non-exec employees	1.15	0.00	0.98	0.00	0.00	0.00
Other non-independent	1.84	1.00	1.11	0.00	0.52	0.00
Fractions of All Directors						
All non-independent dir.	0.23	0.21	0.14	0.12	0.21	0.20
Executives	0.06	0.06	0.06	0.06	0.16	0.13
Non-exec employees	0.06	0.00	0.03	0.00	0.00	0.00
Other non-independent	0.11	0.07	0.06	0.01	0.05	0.00
Director compensation	0.00	0.00	10.75	1.07	229.5	270.0
Director ownership	--	--	--	--	2,482.0	594.3
Beds	1.40	0.88	6.50	6.29	12.66	8.65
Admissions	65.52	40.75	310.70	288.79	514.33	362.39
N system-years	849		52		71	
N systems	182		13		14	

Table 4: Hospital director backgrounds

Panels A and B show occupation, employer industry, and academic degrees of 305 directors in 20 randomly selected nonprofit hospitals in 2018. The panels report statistics separately for directors employed and not employed by the hospital or related organization. Employed directors include executives and non-executive employees (see the algorithm for classifying directors in Appendix B). Panel C compares occupation, employer industry, and academic degrees of 109 directors of 14 for-profit systems and 204 directors of 14 large nonprofit systems. Information on director backgrounds comes from online sources, including hospital websites, articles, and LinkedIn.

Panel A: Trustees employed by the hospital or related organizations (N=73)

Occupation	Fraction	Industry	Fraction	Past Industry	Fraction	Degree	Fraction
Doctor (clinician)	0.47	Medical	1.00	Medical	0.60	Medical	0.60
Hospital executive	0.34			Education	0.25	MBA	0.12
Medical other	0.15			Consulting	0.04	Management, other	0.16
Finance	0.04			Accounting	0.04	Undergraduate	0.01
				Government	0.01	Other	0.08
				Lawyer	0.01	Missing	0.01
				Other	0.04		

Panel B: Trustees not employed by the hospital or related organizations (N=232)

Occupation	Fraction	Industry	Fraction	Past Industry	Fraction	Degree	Fraction
Retired	0.15	Finance	0.16	Medical	0.20	Undergraduate	0.19
Finance	0.12	Retired	0.15	Finance	0.14	Medical	0.16
Hospital executive	0.09	Medical	0.15	Education	0.10	MBA	0.11
Lawyer	0.09	Legal	0.08	Legal	0.06	Management, other	0.07
Doctor (clinician)	0.08	Consulting	0.06	Government	0.08	Ph.D., other	0.02
Consultant	0.06	Education	0.07	Accounting	0.02	Other	0.21
Education	0.06	Government	0.04	Consulting	0.02	Missing	0.25
Medical Other	0.03	Other	0.19	Other	0.29		
Government	0.04	Missing	0.11	Missing	0.09		
Other	0.17						
Missing	0.11						

Panel C: Directors of nonprofit and for-profit systems

	Fraction of directors		Diff (Nonpr. – For-pr)
	Nonprofit Systems	For-profit Systems	
Directors affiliated with the system (N = 51 nonprofit and 18 for-profit)			
Occupation			
Executive	0.37	0.72	-0.35
Medical Doctor	0.39	0.00	0.39***
Degree			
Medical Doctor	0.63	0.00	0.63***
MBA or other MGT	0.33	0.56	-0.22
Directors not affiliated with the system (N = 204 nonprofit and 109 for-profit)			
Occupation			
Retired	0.27	0.27	0.00
Finance	0.13	0.28	-0.16***
Management	0.19	0.13	0.06
Industry			
Finance	0.17	0.31	-0.14**
Retired	0.27	0.27	0.00
Medical	0.07	0.09	-0.02
Past Industry			
Medical	0.20	0.32	-0.13**
Finance	0.15	0.17	-0.02
Education	0.09	0.11	-0.02
Degree			
Undergrad	0.24	0.27	-0.03
Medical	0.11	0.16	-0.05
MBA	0.23	0.33	-0.10
Other MGT	0.07	0.08	-0.01
Ph.D., other	0.06	0.00	0.06***

Table 5: Predicting corporate events

The table shows estimates from the linear probability models of corporate events: *System acquisitions*, *PE events*, *Closures*, and *Mergers*. The events and control variables are defined in Appendix A. Panels A to D estimate the sensitivities of the events to *Margins, Medicare*, *Charity*, and *Quality Index*. The dependent variable in each regression is set to one for the target hospital in the year prior to the event (for mergers and closers, we use the last year in which the hospital is in the database). The sample includes nonprofit and for-profit hospitals. Controls in all regressions include the nonprofit indicator, log(*Revenue*), log(*Admissions*), *Medicaid*, *Revenue growth*, *Asset growth*, *and Dummy system*. In Panels B – D, the controls also include *Margin*. All specifications include state-by-year fixed effects. Columns 3, 6, 9, and 12 also include firm fixed effects. When firm fixed effects are not included, we include a dummy for hospitals in rural areas. Standard errors (in parentheses) are adjusted for heteroscedasticity and clustered at the firm level. Significant at: *10%, **5% and ***1%.

Panel A: Sensitivity to margins

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
VARIABLES	System acq.	System acq.	System acq.	PE event	PE event	PE event	Merger	Merger	Merger	Closure	Closure	Closure
Nonprofit	-0.021***	-0.023***		-0.036***	-0.037***		-0.001**	-0.001*		-0.007***	-0.009***	
	(0.003)	(0.003)		(0.002)	(0.002)		(0.001)	(0.001)		(0.001)	(0.001)	
Margin	-0.111***	-0.146***	-0.176***	-0.035***	-0.046***	-0.130***	-0.009***	-0.011*	-0.007	-0.038***	-0.067***	-0.045***
	(0.010)	(0.018)	(0.029)	(0.006)	(0.012)	(0.021)	(0.003)	(0.006)	(0.007)	(0.005)	(0.011)	(0.017)
Margin x Nonprofit		0.057***	0.109***		0.017	0.112***		0.002	0.006		0.047***	0.036**
		(0.020)	(0.032)		(0.013)	(0.022)		(0.006)	(0.008)		(0.012)	(0.017)
Observations	55,291	55,291	55,209	55,291	55,291	55,209	55,291	55,291	55,209	55,291	55,291	55,209
R-squared	0.063	0.063	0.131	0.099	0.099	0.157	0.018	0.018	0.134	0.029	0.031	0.149
Firm FE	No	No	Yes	No	No	Yes	No	No	Yes	No	No	Yes
State-Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Panel B: Sensitivity to Medicaid admissions

VARIABLES	(1) System acq.	(2) System acq.	(3) System acq.	(4) PE event	(5) PE event	(6) PE event	(7) Merger	(8) Merger	(9) Merger	(10) Closure	(11) Closure	(12) Closure
Nonprofit	-0.021***	-0.019***		-0.036***	-0.037***		-0.001**	-0.002		-0.007***	-0.008***	
	(0.003)	(0.004)		(0.002)	(0.003)		(0.001)	(0.001)		(0.001)	(0.002)	
Medicaid	0.000	0.011	-0.009	0.001	-0.004	-0.039	-0.001	-0.004	0.011	-0.002	-0.007	-0.015
	(0.005)	(0.019)	(0.032)	(0.002)	(0.015)	(0.025)	(0.001)	(0.005)	(0.007)	(0.002)	(0.009)	(0.013)
Medicaid x Nonprofit		-0.012	0.027		0.005	0.040		0.003	-0.014*		0.007	0.015
		(0.020)	(0.034)		(0.015)	(0.026)		(0.005)	(0.008)		(0.009)	(0.013)
Observations	55,291	55,291	55,209	55,291	55,291	55,209	55,291	55,291	55,209	55,291	55,291	55,209
R-squared	0.063	0.063	0.130	0.099	0.099	0.156	0.018	0.018	0.134	0.029	0.029	0.149
Firm FE	No	No	Yes	No	No	Yes	No	No	Yes	No	No	Yes
State-Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Panel C: Sensitivity to charity care

VARIABLES	(1) System acq.	(2) System acq.	(3) System acq.	(4) PE event	(5) PE event	(6) PE event	(7) Merger	(8) Merger	(9) Merger	(10) Closure	(11) Closure	(12) Closure
Nonprofit	-0.016***	-0.004		-0.032***	-0.019***		0.001	0.002*		-0.007***	-0.009***	
	(0.004)	(0.005)		(0.003)	(0.003)		(0.001)	(0.001)		(0.002)	(0.002)	
Charity/Exp.	0.275***	0.718***	1.209***	0.235***	0.715***	1.256***	-0.010	0.032	0.052	-0.047*	-0.125**	-0.050
	(0.088)	(0.183)	(0.231)	(0.062)	(0.168)	(0.210)	(0.018)	(0.041)	(0.055)	(0.025)	(0.048)	(0.055)
(Charity/Exp) x Nonprofit		-0.622***	-0.898***		-0.673***	-1.160***		-0.059	-0.054		0.109**	0.055
		(0.193)	(0.268)		(0.159)	(0.204)		(0.045)	(0.060)		(0.049)	(0.060)
Observations	24,094	24,094	23,990	24,094	24,094	23,990	24,094	24,094	23,990	24,094	24,094	23,990
R-squared	0.072	0.072	0.202	0.076	0.080	0.210	0.023	0.023	0.287	0.029	0.029	0.273
Firm FE	No	No	Yes	No	No	Yes	No	No	Yes	No	No	Yes
State-Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Panel D: sensitivity to quality

VARIABLES	(1) System acq.	(2) System acq.	(3) System acq.	(4) PE event	(5) PE event	(6) PE event	(7) Merger	(8) Merger	(9) Merger	(10) Closure	(11) Closure	(12) Closure
Nonprofit	-0.011***	-0.011***		-0.024***	-0.023***		-0.001	-0.002		-0.007***	-0.006***	
	(0.003)	(0.003)		(0.002)	(0.002)		(0.001)	(0.001)		(0.001)	(0.001)	
Quality Index	-0.003	-0.002	0.007	-0.003***	-0.008**	-0.000	-0.000	0.003*	0.002	-0.001	-0.002	-0.004
	(0.002)	(0.004)	(0.007)	(0.001)	(0.003)	(0.005)	(0.001)	(0.001)	(0.002)	(0.001)	(0.002)	(0.003)
Quality x Nonprofit		-0.001	-0.010		0.006*	-0.001		-0.004**	-0.002		0.001	0.004
		(0.005)	(0.008)		(0.003)	(0.006)		(0.002)	(0.002)		(0.002)	(0.003)
Observations	33,275	33,275	33,165	33,275	33,275	33,165	33,275	33,275	33,165	33,275	33,275	33,165
R-squared	0.064	0.065	0.162	0.070	0.070	0.172	0.019	0.019	0.244	0.029	0.029	0.218
Firm FE	No	No	Yes	No	No	Yes	No	No	Yes	No	No	Yes
State-Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table 6: Nonprofit turnover around System acquisitions

The table shows regression results for CEO and director turnover around system events. We restrict the sample to nonprofit hospitals with data in the AHA and IRS samples. For hospitals with multiple system events, we exclude observations beginning the second event in the sample. The regressions include three dummies indicating years relative to the event year ($\tau=0$): $\tau=[-3,-1]$, $\tau=[0,3]$, and *After* that stands for $\tau>3$. The regressions include hospital and state-by-year fixed effects. Regressions in columns 3 and 4 include as controls lagged values of *Margin*, log(*Admissions*), *Revenue growth*, and *Asset growth*, but only *Margin* is reported. Standard errors (in parentheses) are adjusted for heteroscedasticity and clustered at the hospital level. Significant at: *10%, **5% and ***1%.

	(1)	(2)	(3)	(4)
VARIABLES	CEO turn.	Director turn.	CEO turn.	Director turn.
t=[-3,-1]	0.003	0.002	-0.000	0.002
	(0.012)	(0.004)	(0.012)	(0.004)
t=[0,3]	0.081***	0.038***	0.087***	0.041***
	(0.016)	(0.005)	(0.016)	(0.005)
After	0.045**	0.020***	0.050**	0.023***
	(0.019)	(0.007)	(0.020)	(0.007)
Margin (t-1)			-0.216***	-0.085***
			(0.052)	(0.017)
Observations	21,023	20,639	20,599	20,009
R-squared	0.135	0.174	0.138	0.178
State-Year FE	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes
Controls	No	No	Yes	Yes

Table 7: Descriptive statistics for CEO compensation and turnover

Panel A shows descriptive statistics for CEO compensation and turnover for nonprofit hospitals. The statistics for compensation are reported separately for years 2009-2008 and 2009-2018 to account for the change in the IRS reporting requirements in 2008. *CEO comp. pre 2009* includes CEO compensation reported in the pre-2009 filings. *CEO comp. post 2008* includes CEO compensation received from own organization and related organizations as reported in the post-2008 filings; *CEO comp. post 2008 (incl. other)* also includes other compensation such as deferred compensation and non-taxable benefits. *CEO comp full sample* combines CEO comp. pre 2009 and CEO comp. post 2008. *CEO turnover* is a dummy variable for the last year of CEO tenure. *Director turnover* is the sum of the number of incoming directors in year t and the number of outgoing directors in year t-1 scaled by 2*the number of all directors in t-1. Panel B shows descriptive statistics for nonprofit and for-profit systems. Data for nonprofit systems come from the IRS 990 filings obtained from GuideStar for years 2009-2014. Data for for-profit systems come from Execucomp for years 2009-2018. CEO compensation for for-profit system is the Execucomp variable Total Compensation (TDC1), which includes salary, bonus, value of option and stock awards, deferred compensation, non-equity incentive plan compensation, and other compensation. *Beds* is the number of hospital beds in thousands, *Admissions* is the number of total admissions in thousands.

Panel A: Nonprofit hospitals

	Mean	Median	P10	P90	SD	N
CEO comp. pre 2009	329	251	104	578	1,160	8,421
CEO comp. post 2008	628	434	151	1,265	724	13,230
CEO comp. post 2008 (incl. other)	718	491	165	1,478	814	13,441
CEO comp full sample	512	340	125	1,005	930	21,651
CEO turnover	0.12	0.00	0.00	1.00	0.3	26,127
Director turnover	0.13	0.11	0.00	0.27	0.1	24,513

Panel B: Nonprofit and for-profit systems

	All Nonprofit Systems		Large Nonprofit Systems		For-profit Systems*	
	Mean	Median	Mean	Median	Mean	Median
CEO comp. (incl. other)	1,719	1,314	3,691	3,136	5,592	4,545
CEO equity	0	0	0	0	18,907	13,182
Beds	1.38	0.83	6.71	6.77	5.35	5.02
Admissions	64.66	38.21	322.12	310.00	201.18	84.72
N system-years	752		50		43	
N systems	176		12		11	

*Three largest systems are excluded to match the size of nonprofit systems. For all for-profit systems, CEO compensation is 8,504 (mean) and 7,356 (median) and CEO equity is 122,005 (mean) and 27,242 (median).

Table 8: Nonprofit sensitivities of CEO pay to hospital outcomes

The table shows results from regressions of nonprofit CEO pay as a function of hospital outcomes and controls. The dependent variable is log of *CEO comp. full sample*, defined in Appendix A. The regressions in Panel A include lagged *Margin* and *Medicaid* as the main independent variables. We report regressions with or without firm fixed effects. The regressions in Panel B include measures of charity and service quality as the main independent variables and always include firm fixed effects. Controls are included in both panels but only reported in Panel A. All specifications include state-by-year fixed effects. Standard errors (in parentheses) are adjusted for heteroscedasticity and clustered at the firm level. Significant at: *10%, **5% and ***1%.

Panel A: CEO Pay sensitivity

	(1)	(2)
VARIABLES	Log(CEO pay)	Log(CEO pay)
Margin (t-1)	0.591***	0.567***
	(0.109)	(0.086)
Medicaid (t-1)	0.038	0.139**
	(0.048)	(0.062)
Log(Revenue) (t-1)	0.340***	0.090***
	(0.032)	(0.033)
Log(Admissions) (t-1)	0.045	0.030
	(0.029)	(0.028)
Revenue growth (t-1)	-0.073	-0.028
	(0.049)	(0.042)
Investment (t-1)	0.061**	0.025
	(0.026)	(0.021)
CEO tenure	0.032***	0.034***
	(0.002)	(0.002)
Multiple positions	0.493***	0.346***
	(0.036)	(0.037)
Dummy system	0.066***	
	(0.016)	
Dummy rural	-0.102***	
	(0.026)	
Observations	19,712	19,683
R-squared	0.613	0.778
Firm FE	No	Yes
State-Year FE	Yes	Yes

Panel B: Including charity care and quality measures

VARIABLES	(1) Log(CEO pay)	(2) Log(CEO pay)	(3) Log(CEO pay)	(4) Log(CEO pay)	(5) Log(CEO pay)	(6) Log(CEO pay)
Margin (t-1)	0.329***	0.519***	0.522***	0.506***	0.505***	0.523***
	(0.118)	(0.102)	(0.111)	(0.112)	(0.103)	(0.120)
Medicaid (t-1)	0.070	0.036	0.047	0.110	0.070	0.118
	(0.080)	(0.075)	(0.082)	(0.075)	(0.073)	(0.083)
Charity (t-1)	-0.468					
	(0.767)					
Quality Index (t-1)		-0.022				
		(0.017)				
Not recom. (low) (t-1)			0.000			0.003
			(0.013)			(0.014)
Readm. (low) (t-1)				-0.012		-0.015
				(0.012)		(0.013)
Mortality (low) (t-1)					-0.013	-0.010
					(0.011)	(0.013)
Observations	7,518	11,339	10,238	9,977	11,196	9,231
R-squared	0.834	0.807	0.791	0.814	0.806	0.799
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
State-Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes

Table 9: Nonprofit sensitivity of CEO turnover to hospital outcomes

The table shows results from regressions of nonprofit CEO turnover as a function of lagged outcomes and controls. The dependent variable is a dummy equal to one in the year of CEO turnover and 0 otherwise. Panel A shows estimates from a Probit model (column 1) and linear probability model (OLS) with and without firm fixed effects (columns 1 and 2). The regressions in Panel A include lagged *Margin* and *Medicaid* as the main independent variables. The regressions in Panel B include measures of charity and service quality as the main independent variables and are estimated using OLS with firm fixed effects. Controls are included in both panels but only reported in Panel A. Standard errors (in parentheses) are adjusted for heteroscedasticity and clustered at the firm level. Significant at: *10%, **5% and ***1%.

Panel A: CEO Turnover sensitivity

VARIABLES	(1) CEO turn.	(2) CEO turn.	(3) CEO turn.
Margin (t-1)	-0.229***	-0.237***	-0.165***
	(0.032)	(0.033)	(0.047)
Medicaid (t-1)	-0.004	-0.004	0.015
	(0.014)	(0.013)	(0.032)
Log(Revenue) (t-1)	-0.011**	-0.011**	-0.043***
	(0.004)	(0.004)	(0.016)
Log(Admissions) (t-1)	0.003	0.003	0.001
	(0.004)	(0.004)	(0.014)
Revenue growth (t-1)	-0.017	-0.018	0.018
	(0.024)	(0.025)	(0.028)
Investment (t-1)	-0.021*	-0.020*	-0.016
	(0.012)	(0.012)	(0.013)
CEO tenure (t-1)	0.003***	0.003***	0.026***
	(0.001)	(0.001)	(0.001)
Multiple positions (t-1)	-0.006	-0.006	0.013
	(0.007)	(0.008)	(0.014)
Dummy system	0.049***	0.049***	
	(0.005)	(0.005)	
Dummy rural	0.001	-0.000	
	(0.006)	(0.007)	
Observations	22,200	22,200	22,134
R-squared		0.011	0.164
Firm FE	No	No	Yes
Year FE	Yes	Yes	No
State-Year FE	No	No	Yes
Model	Probit	OLS	OLS

Panel B: Including charity care and quality measures

VARIABLES	(1) CEO turn.	(2) CEO turn.	(3) CEO turn.	(4) CEO turn.	(5) CEO turn.	(6) CEO turn.
Margin (t-1)	-0.140	-0.167**	-0.186**	-0.175**	-0.171**	-0.182**
	(0.086)	(0.074)	(0.078)	(0.079)	(0.074)	(0.083)
Medicaid (t-1)	0.038	-0.046	-0.029	-0.045	-0.034	-0.035
	(0.061)	(0.047)	(0.054)	(0.051)	(0.047)	(0.057)
Charity (t-1)	0.572					
	(0.560)					
Quality Index (t-1)		-0.023**				
		(0.010)				
Not recom. (low) (t-1)			-0.021***			-0.019**
			(0.008)			(0.008)
Readm. (low) (t-1)				-0.009		-0.008
				(0.008)		(0.008)
Mortality (low) (t-1)					-0.010	-0.006
					(0.007)	(0.008)
Observations	8,108	12,123	10,872	10,693	11,963	9,826
R-squared	0.308	0.243	0.251	0.258	0.244	0.262
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
State-Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes

Table 10: Nonprofit sensitivity of board turnover to hospital outcomes

The table shows results from regressions of nonprofit director turnover as a function of lagged outcomes and controls. The dependent variable is a measure of director turnover in year t equal to (Number of new directors (t) + Number of outgoing directors (t-1)) / (2 * (Number of directors (t-1)) (see details in Appendix A). The regressions in Panel A include lagged *Margin* and *Medicaid* as the main independent variables and are estimated with or without firm fixed effects. The regressions in Panel B include measures of charity and service quality as the main independent variables and are estimated with firm fixed effects. Controls are included in both panels but only reported in Panel A. All specifications include state-by-year fixed effects. Standard errors (in parentheses) are adjusted for heteroscedasticity and clustered at the firm level. Significant at: *10%, **5% and ***1%.

Panel A: Board turnover sensitivity

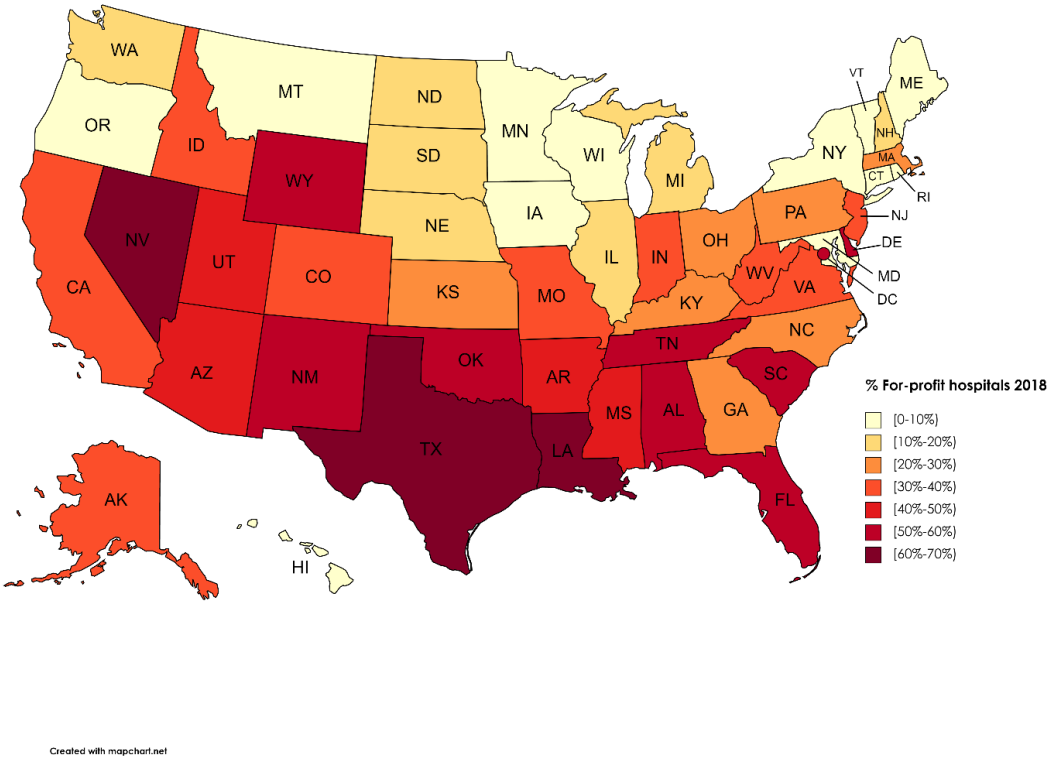
VARIABLES	(1) Director turn.	(2) Director turn.
Margin (t-1)	-0.036***	-0.069***
	(0.012)	(0.015)
Medicaid (t-1)	-0.003	0.014
	(0.006)	(0.010)
Log(Revenue) (t-1)	-0.000	-0.014**
	(0.002)	(0.005)
Log(Admissions) (t-1)	0.004**	0.007*
	(0.002)	(0.004)
Revenue growth (t-1)	0.009	0.018*
	(0.009)	(0.010)
Investment (t-1)	-0.016***	-0.015***
	(0.004)	(0.004)
CEO tenure	-0.003***	-0.003***
	(0.000)	(0.000)
Multiple positions	0.016***	0.012***
	(0.003)	(0.004)
Dummy system	0.012***	
	(0.002)	
Dummy rural	-0.000	
	(0.003)	
Observations	21,613	21,569
R-squared	0.075	0.180
Firm FE	No	Yes
State-Year FE	Yes	Yes

Panel B: Including charity care and quality measures

VARIABLES	(1) Director turn.	(2) Director turn.	(3) Director turn.	(4) Director turn.	(5) Director turn.	(6) Director turn.
Margin (t-1)	-0.057*	-0.048**	-0.045*	-0.048*	-0.048**	-0.045*
	(0.030)	(0.023)	(0.025)	(0.025)	(0.023)	(0.026)
Medicaid (t-1)	0.007	0.027*	0.027	0.028*	0.026*	0.028
	(0.020)	(0.015)	(0.018)	(0.017)	(0.015)	(0.018)
Charity (t-1)	0.103					
	(0.192)					
Quality Index (t-1)		0.004				
		(0.003)				
Not recom. (low) (t-1)			0.005**			0.005*
			(0.003)			(0.003)
Readm. (low) (t-1)				-0.003		-0.003
				(0.002)		(0.003)
Mortality (low) (t-1)					0.000	-0.000
					(0.002)	(0.002)
Observations	8,032	11,961	10,764	10,609	11,807	9,757
R-squared	0.267	0.233	0.243	0.244	0.235	0.250
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
State-Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes

Appendix Figure A1: Geography of nonprofit vs. for-profit hospitals

Fraction of for-profit/(for-profit+nonprofit) hospitals by state for 2018.

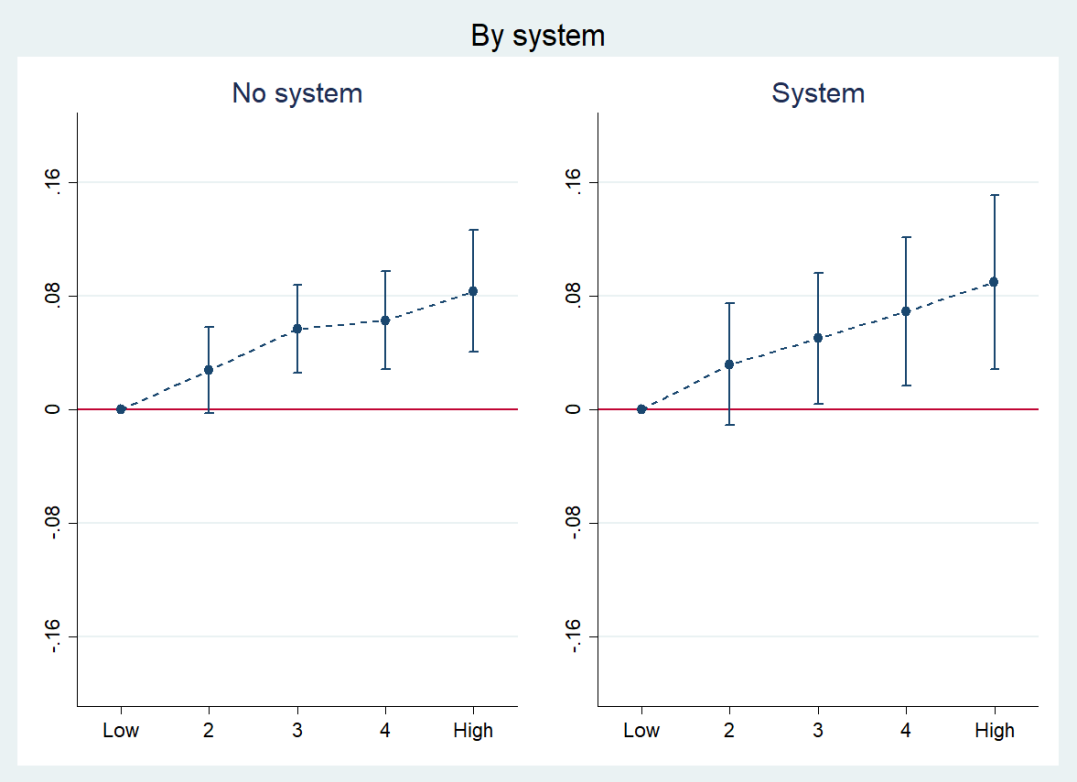


Created with mapchart.net

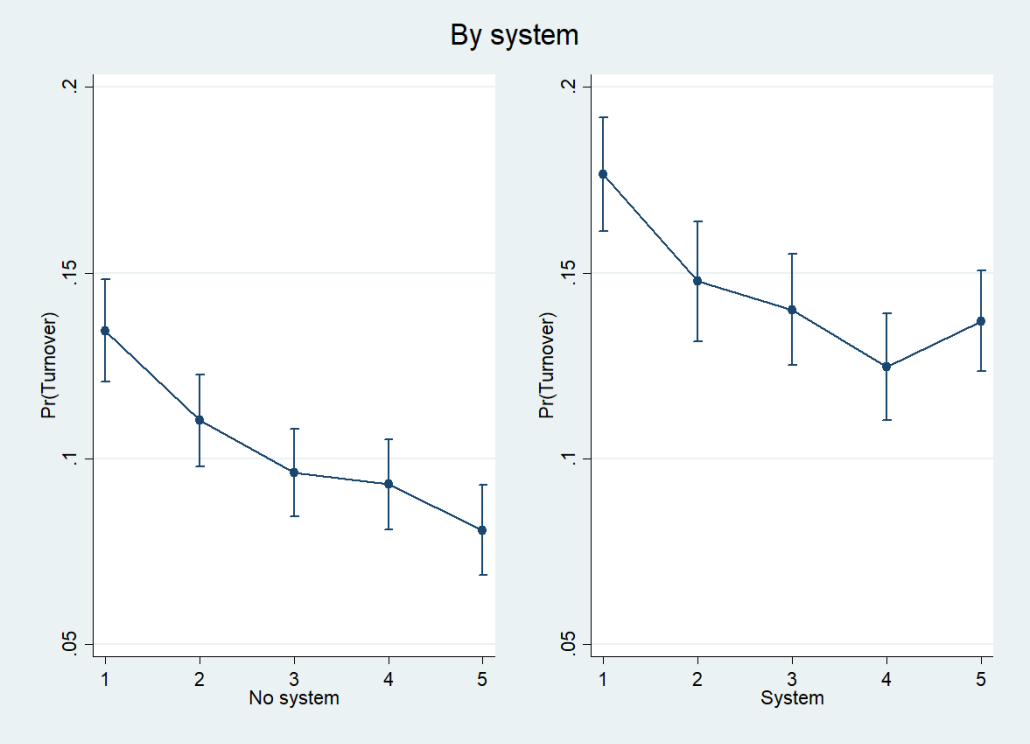
Appendix Figure A2: Nonprofit compensation and Turnover by System

Panels A-C present CEO salary, CEO turnover, and director turnover sensitivities to margins, separately for hospitals, according to whether they are part of a hospital system or not. The estimation method for Panel A follows figure 5, for Panel B follows Figure 6, and for Panel C follows Figure 7.

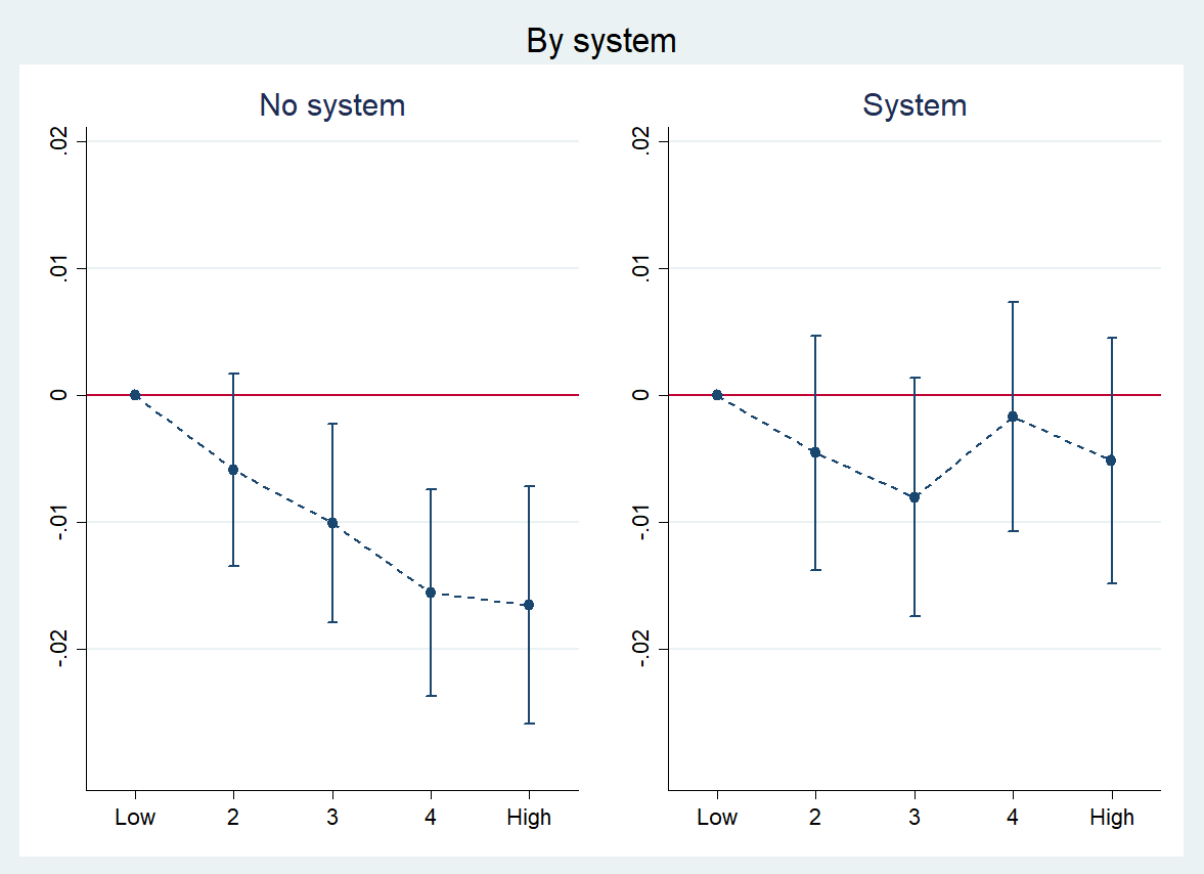
Panel A: CEO compensation



Panel B: CEO turnover



Panel C: Director turnover



Appendix Table A1: Nonprofit board size determinants

The table shows regression results for nonprofit hospitals' board size as a function of hospital characteristics during 2009-2018. All variables are described in Appendix A. Classification of directors into independent and non-independent is described in Appendix B. Standard errors (in parentheses) are adjusted for heteroscedasticity and clustered at the hospital level. Significant at: *10%, **5% and ***1%.

VARIABLES	(1) Log(# Directors)	(2) Log(# Indep dir.)	(3) Log(# Non-indep dir)
Log(Revenue) (t-1)	0.133***	0.114***	0.178***
	(0.007)	(0.009)	(0.013)
Margin (t-1)	0.012	-0.064	0.314**
	(0.081)	(0.096)	(0.137)
Revenue growth (t-1)	0.010	-0.002	-0.031
	(0.036)	(0.047)	(0.066)
Contributions (t-1)	1.205***	1.551***	-0.839***
	(0.240)	(0.268)	(0.290)
Dummy system	0.035***	-0.053***	0.307***
	(0.014)	(0.017)	(0.025)
Dummy rural	-0.068***	-0.069***	0.003
	(0.020)	(0.025)	(0.037)
Observations	12,790	12,784	12,784
R-squared	0.419	0.293	0.312
Hosp. FE	No	No	No
State-Year FE	Yes	Yes	Yes

Appendix Table A2: Hospital outcomes around ownership changes

The table shows results from regressions of hospital outcomes around changes in ownership status. For hospitals with multiple events, we exclude observations beginning the second event in the sample (343 acquisitions and 1,429 observations). The dependent variables are in the table heading. All variables are defined in Appendix A. All regressions include firm and state-by-year fixed effects. The regressions in columns 1-4 include the *Nonprofit* dummy which is set to 1 when a hospital is nonprofit and to 0 when it is for-profit. The coefficient is identified from 218 conversions from the nonprofit to for-profit status and 80 conversions from the for-profit to nonprofit status. The regressions in columns 5-8 include the dummy *For-profit Conversion* (*Nonprofit Conversion*) interacted with the dummy *Post*. *For-profit Conversion* (*Nonprofit Conversion*) takes a value of 1 for hospitals that transit into the for-profit (nonprofit) status from nonprofit (for-profit) status. The dummy *Post* takes a value of 1 for hospitals 1 for the event years after the conversion, and 0 otherwise. Standard errors (in parentheses) are adjusted for heteroscedasticity and clustered at the hospital level. Significant at: *10%, **5% and ***1%.

VARIABLES	(1) Margin	(2) Medicaid	(3) Charity	(4) Quality Index	(5) Margin	(6) Medicaid	(7) Charity	(8) Quality Index
Nonprofit	-0.000	0.008	0.003*	0.110***				
	(0.007)	(0.006)	(0.002)	(0.034)				
For-profit Conversion * Post					-0.005	-0.014*	-0.003	-0.152***
					(0.007)	(0.008)	(0.002)	(0.036)
Nonprofit Conversion * Post					-0.009	-0.003	0.005	-0.041
					(0.017)	(0.009)	(0.004)	(0.072)
Observations	54,495	54,503	22,899	31,842	54,495	54,503	22,899	31,842
R-squared	0.513	0.719	0.750	0.671	0.513	0.719	0.750	0.671
State-Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Controls	No	No	No	No	No	No	No	No