

Earnings Management through Real Activities Manipulation: Evidence from Nonprofit Hospitals

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Abstract

Managers have opportunities to manage earnings through real operating decisions. However, providing evidence of this behavior has been difficult because researchers lack data about internal decision-making. We use regulatory data from a sample of California nonprofit hospitals to investigate this issue. We partition our sample hospitals based on their incentives to increase or decrease earnings and compare changes in their expenditures and asset sales. We find that expenditures on non-revenue-generating activities appear to decrease in hospitals that would benefit from such behavior. Further, hospitals with incentives to decrease earnings to avoid regulatory scrutiny appear to sell fewer assets than other hospitals. These results provide evidence of the use of real operating decisions to manage earnings. We contribute to the earnings management literature by extending the analysis to nonprofit organizations and also by providing insight into the types of expenditures that change when such earnings management occurs.

Key words: real operating decisions, earnings management, nonprofit organizations

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I. Introduction

Earnings management through manipulation of firms' accounting accruals has been extensively investigated by accounting researchers (e.g., Healy 1985; Jones 1991; Teoh et al. 1998a, 1998b). A subset of the earnings management literature examines real earnings (activity) management,¹ in which earnings are managed by taking actions that alter firms' underlying operations (Baber et al. 1991; Dechow and Sloan 1991; Bushee 1998; Roychowdhury 2006). Earnings management has typically been studied in for-profit settings, with a focus on meeting or beating a benchmark (e.g., analysts' forecasts).

While for-profit firms focus on meeting or beating external benchmarks to increase stock price, these objectives are not relevant in the nonprofit sector. Instead, nonprofits have incentives to reduce the cost of debt capital (since they have no publicly traded shares), to allay creditors' concerns, and to maintain or increase the organization's donation base. Nonprofit organizations are allowed to earn profits (often called surplus), but these profits cannot be directly distributed to residual claimants. This does not diminish the importance of profits for these organizations, however. Leone and Van Horne (2005) examine accruals management in nonprofit hospitals using a benchmark of zero operating income to provide evidence that nonprofit hospital managers manipulate accruals to manage to this benchmark.

Because of their tax-exempt status, nonprofit organizations are subject to scrutiny, not only by their religious or charitable sponsoring organizations to insure viability, but also by

¹ We use the term "real activity management" rather than "real earnings management" to emphasize the idea that this type of earnings management is accomplished by changing the underlying economic activities of the firm, whereas accruals management is accomplished by the choice of accounting methods used to represent those underlying activities.

government regulators to insure that they meet requirements for tax-exempt status. If profits are too large, these organizations are subject to more careful scrutiny, particularly with regard to their tax-exempt status. Unlike for-profit organizations, when profits greatly exceed the benchmark, nonprofit organizations have incentives to manage earnings downward.²

In this study, we use a rich set of regulatory data from California hospitals to determine whether and how managers use real operating decisions to manage earnings. Our sample is comprised of 844 hospital years spanning the period 1998-2003. These data include detailed expenditures³ at the department level and allow us to identify whether managers are engaging in real activity management and also to determine specific areas where this occurs. We are thus able to gain insight into the extent to which managers change firms' operations to achieve specific income benchmarks. Given the absence of detailed data about operations in publicly traded companies, the analysis in prior research has been limited to a small set of operational activities (primarily research and development expenditures).

Our results indicate that real activity management occurs for both expenditure reduction and revenue enhancement. We find evidence that hospitals with pre-managed earnings slightly below zero appear to manage expenditures downward in non-operating activities such as office space rental to physicians and retail activities that are unrelated to patient care. In addition, managers decrease expenditures in non-revenue generating areas, such as general services, research and administration, and public relations. We also find that hospitals with pre-managed earnings well above zero have relatively lower asset sales, resulting in comparatively lower levels of revenue and correspondingly lower levels of profit.

² While managers of for-profit firms may have bonus-based incentives to manage earnings downward (Healy 1985), market incentives to increase earnings are likely to counter such incentives.

³ Throughout the paper, we use the term "expenditure" rather than "expense" to emphasize that we are focusing on direct expenditures, absent any accruals.

This paper contributes to the accounting research stream that investigates real earnings management. We extend the enquiry to the nonprofit setting and provide evidence of specific areas where real activity management appears to be taking place. We also find evidence that managers not only manage income upward to achieve a positive net income, but also manage income downward to avoid regulatory scrutiny. To the extent that tax exemption is a tool that can be used to accomplish governmental purposes, regulators may be interested in these indirect costs associated with the pressure put on nonprofit hospitals to decrease reported profits.

The remainder of the paper is organized as follows. Section 2 reviews the extant literature and develops hypotheses. Section 3 details our methodology, presents our results and provides sensitivity analysis. In section 4, we discuss the results and conclude.

2. Literature Review and Hypothesis Development

Earnings management research has a long and rich history. Schipper (1989) was one of the first to consider real activity management as part of the “earnings management” literature. A more recent stream examines real activity management in for-profit firms. Most of this research focuses on manipulation of research and development expenditures (Baber et al. 1991, Dechow and Sloan 1991, Bushee 1998). Roychowdhury (2006) finds that firms reporting small positive earnings use techniques such as price discounts (to increase sales), overproduction (to spread fixed costs over more units, thus reducing COGS) and reduction of discretionary expenses to avoid reporting annual losses and negative changes in earnings. Gunny (2005) provides evidence that real activities management has an economically significant impact on future operating performance. Bartov (1993) provides evidence consistent with managers selling fixed assets to avoid reporting negative earnings and debt covenant violations.

Herrmann, Inoue and Thomas (2003) investigate Japanese managers' use of income from the sale of assets to manage earnings. They find that firms increase (decrease) earnings through the sale of fixed assets and marketable securities when current operating income falls below (above) management's forecast of operating income.

Graham et al. (2005) survey 401 financial executives regarding causal factors of decisions made with respect to measuring financial performance, with a focus on reported earnings. Results of the survey show that accounting earnings is a more important benchmark than cash flows and that managers want to meet or beat earnings benchmarks because they are concerned about subsequent effects on stock price, their careers, and any benefits to external reputation. The majority of managers interviewed preferred smooth earnings patterns, were willing to sacrifice economic value for smooth earnings, and preferred to manage earnings through real actions as opposed to accounting actions. Most managers in the survey would also avoid initiating a positive NPV project if the current quarter's consensus earnings forecast would be missed.

Although Graham et al. (2005) provide survey evidence that executives are willing to manage several types of expenditures, such as research and development, advertising, travel and maintenance, prior literature on real activity management primarily focuses on opportunistic reductions in research and development expenditures—most likely because this expense is usually disclosed separately in the financial statements of publicly traded companies, whereas expenditures on advertising and travel do not require separate disclosure and are usually aggregated in selling, general and administrative expense. An advantage of our data is that California hospitals are required to disclose a large amount of information about

operations, so we do not face similar aggregation issues and are able to examine many types of expenditures that may be susceptible to real activity management.

Few researchers have examined earnings management in nonprofit organizations. Leone and Van Horn (2005) test for the existence of earnings management through accruals in a sample of U.S. nonprofit hospitals and find that the patterns of earnings management are similar in both nonprofit and for-profit institutions. Using charity care as an expenditure over which managers have some discretion, they provide evidence of a positive association between levels of income before charity expense and charity care expense. While this is not a precise test of earnings management, it indicates that as more resources are available for this discretionary item, hospitals spend more.

Nonprofit hospitals include those governed by universities, communities, and religious organizations. Examples include Scripps Healthcare and Catholic Healthcare West. Mission statements for nonprofit hospitals often articulate social objectives. Thus, unlike for-profit hospitals, profit is not the only (or perhaps primary) objective for hospital managers. However, nonprofit hospitals and their sponsoring charities are self-sustaining and cannot rely on governmental subsidies for operations. In addition, for the most part, donor support is much too limited to fund on-going operations. Revenue from operations must fund these costs, so profit is an important part of their overall objective function. If nonprofit hospitals incur losses, their managers have similar pressures as for-profit managers, i.e., a need to return to profitability.

A number of researchers suggest that financial performance incentives in for-profit and nonprofit hospitals are very similar. For example, Brickley and Van Horn (2002) examine data from nonprofit and for-profit hospitals over fiscal years from 1991 to 1995 and find that CEO turnover and compensation are significantly related to financial performance (measured by

return on assets). They provide evidence that the turnover/performance relation in nonprofit hospitals is stronger than in for-profit hospitals and other for-profit corporations. In another similar study, Eldenburg, Hermalin, Weisbach and Wosinska, (2004) use California hospital data from 1980 through 1996 and find that both board and CEO turnover are related to poor financial performance in for-profit and nonprofit hospitals.

Nonprofit hospitals have increasingly begun to use performance-based compensation contracts that encourage managers to improve profitability (i.e., enhance revenues and reduce cost) and better align hospital and managerial incentives (Lambert and Larcker 1995; Eldenburg and Krishnan 2005). Leone and Van Horn (2005) suggest that with increases in incentive contracting, nonprofit managers begin to act more like managers of for-profit hospitals. Glaeser (2001) suggests that behavior of nonprofit and for-profit hospitals converges when commercialism increases in nonprofits as a response to declining rents and a rise in returns to commercialism.

In response to these incentives to focus on financial performance, we expect nonprofit hospital managers to manage accounting performance to achieve benchmarks. We examine real activity management rather than accruals management, which was the primary focus of Leone and Van Horn (2005). Managers may prefer real activity management because accruals management takes place at the end of the fiscal year and managers face uncertainty as to which accounting treatments auditors will allow at that time. In contrast, managers have a great deal of control over expenditure decisions and the timing of asset sales.

The notion behind earnings management is that at some point during the period, a manager realizes that accounting performance will miss the benchmark. The manager then either manages discretionary accruals or changes some real activity, resulting in a boost (or

decrease) to accounting performance for that period.⁴ For real activity management to affect accounting performance in a manner similar to accruals management, the real activity must have two characteristics. First, it must be in an area where accounting performance-enhancing changes can be implemented over the short term. This means that activities such as reengineering operations to reduce cost would not constitute real activity management—these types of activities take time to design and implement and would simply be a part of good management. Second, the impact on accounting performance must be essentially immediate. For example, changing collection policies may be relatively simple and quickly implementable, but the impact on accounting performance would not occur in the short term. Thus, management of this activity might be part of an overall management strategy, but is unlikely to be used to manage period-end accounting performance.

We examine forms of real activity management that can be quickly implemented and that would affect accounting performance in a relatively short period of time. We focus on management associated with non-revenue-generating and non-operating activities, because most revenue-generating activities within hospitals (such as patient board and room functions and diagnostic tests) include a large portion of fixed costs that might be difficult to manage. Another consideration is that revenue-generating activities are part of the hospital's core services and competencies; any reduction could have quality implications. For example, one way to reduce nursing cost would be to substitute cheaper, lesser-skilled licensed vocational nurses for more expensive, highly-skilled registered nurses. While this provides cost savings, there is a potential for reducing the quality of care, with concomitant long-term increases in cost or losses in revenues.

⁴ Unlike real activity management, accrual management can occur after year-end, but prior to release of accounting reports.

Non-revenue-generating activities, on the other hand, are part of the hospital's overall operations but not directly related to patient care efforts. Changes in these activities are less likely to negatively impact the quality of patient care and thus are better candidates for reductions. In addition, many of them are somewhat lumpy and can be reduced in the short term. Examples of non-revenue-generating activities that could be managed include public relations and governing board costs. Advertising expenditures could be cut back or postponed until the following period, thus reducing current period expenditures. Governing board expenditures include meeting costs and hospital-related activities such as travel and fees paid for special seminars. These expenditures could be reduced fairly easily. Non-operating activities include retail operations such as renting office space to physicians and other clinical personnel, operating a nearby hotel for patient families, and any other activities that are not directly related to the nonprofit mission of providing patient care. Expenditures for annual maintenance, such as painting and refurbishing, can easily be deferred when hospital operating income is likely to fall below the benchmark. Accounting performance can also be boosted by increasing revenues through sale of assets. As long as the asset is not directly related to the hospital's core activities, this activity can increase accounting performance without compromising quality. We hypothesize:

H1a: When companies' accounting performance is likely to be below benchmark, managers will decrease spending on non-operating and non-revenue-generating activities.

H1b: When companies' accounting performance is likely to be below benchmark, managers will increase asset sales that result in net gains.

Unlike for-profit organizations, however, nonprofits also have incentives to moderate their profits. When nonprofit hospitals are highly profitable, they come under a great deal of scrutiny. The media has targeted specific hospitals when their profits are excessive. For example, the Wall Street Journal featured a front page article about Baptist Hospital in Nashville Tennessee titled “Really operating: nonprofit hospitals sometimes are that in little but name...” The article took the hospital to task for the size of its profits (\$20 million) in addition to a number of other excesses (Langley, 1997). Political scrutiny also focuses on nonprofit hospitals and healthcare organizations with large profits. In June 2006, Sen. Charles Grassley (R-Iowa), chair of the Senate Finance Committee, called for increased scrutiny by the IRS of nonprofit organizations and specifically hospitals, because of concerns about pricing, billing and debt collection, use of tax-exempt bond proceeds, excessive executive compensation, and the definition and calculation of charity care and community benefit (Sandrick 2006). Because of this type of scrutiny from many different constituents, Charles Goheen, CFO of the Fallon Community Health Plan (a nonprofit healthcare organization) said that “...they are trying to manage the organization to be in the middle range of their competitors to ensure that there is not a special story about them either making too little money or too much money” (McPherson 2005 pg. 211).

The level of scrutiny for nonprofit hospitals has been steadily increasing. The Federal Government and individual states have been pressuring nonprofit hospitals to provide more community benefits and charity care so they can maintain their tax-exempt status. For example, lawmakers in Illinois have proposed that to maintain tax-exempt status, hospitals need to provide charity care levels of at least 8% of their operating revenues. The Illinois Attorney General appears to be following through on the legislation; a state appeals court

recently denied property tax exemption to a Rock Island community health center, even though it provided charity care levels of 27% of operating revenues (Taylor, 2006A). In addition, the IRS has increased its monitoring of nonprofit hospitals with a focus on compensation practices and the manner in which they define community benefits (Hopkins, 2006, Fong, 2005). At the request of the chairman of the House Ways and Means Committee, the GAO is surveying nonprofit hospitals about executive compensation practices (Taylor, 2006B) because of concern about the abuse of tax-exempt status. While inviting regulatory scrutiny (at all levels of government), high profits may also alienate donors and conflict with aspects of the hospital's mission (i.e., to provide community benefit such as charity care or high quality care at low prices).

Hospital managers may want to reduce scrutiny by lowering income. This could be accomplished by increasing some types of expenditures, but only when income is potentially high. Increasing one-time expenditures would be relatively straightforward for such non-revenue-generating activities as public relations and governing board expenditures. For example, a new community outreach and education program could be launched, and board retreats could be scheduled at resort areas. For non-operating activities, office space rented to physicians could be remodeled or refurbished to increase expenditures.

Hospital managers could also lower current income by deferring asset sales that result in gains. While this does not explicitly reduce current income in the same fashion as increasing expenditures, it lowers income relative to what it would be with the asset sale. In summary, we expect that nonprofit hospital managers with high levels of accounting performance will manage real activities to reduce performance, thereby reducing the risk of additional scrutiny.

H2a: When companies' accounting performance is likely to be above benchmark, managers will increase spending on non-operating and non-revenue-generating activities.

H2b: When companies' accounting performance is likely to be above benchmark, managers will decrease asset sales that would result in gains.⁵

3. Methodology

Descriptive Statistics

The sample for our study is all nonprofit hospitals in California over the years 1997-2003. Nonprofit hospitals include church-owned and community hospitals registered under IRS 501(c)(3). We analyze California hospitals because the Office of Statewide Health Planning and Development collects department-level financial and non-financial data for all California hospitals, which include a variety of hospital ownership types. The data include cost report information and sub-categories of aggregations used on financial statements. California requires that all of the reported data reconcile with the hospitals' financial statements, which must conform to U.S. Generally Accepted Accounting Principles. We exclude substance abuse and psychiatric hospitals and those that provide high quantities of long-term nursing care. Production functions and patient mix for these hospitals differ from those of acute care general hospitals. In addition, government reimbursement programs for specialty hospitals differ from reimbursement programs for general hospitals. Finally, we exclude 124 observations because of lack of data for specific variables. Overall, our sample consists of 191 hospitals and 844 hospital years.

⁵ Note that the benchmark referred to in hypotheses H1a and H1b may differ from the benchmark referred to in hypotheses H2a and H2b. For example, hospital managers may have an incentive to have non-negative return on assets for H1a and H1b, but may want to have a return on assets less than, say, 5% to avoid scrutiny.

Table 1 provides descriptive statistics for the sample hospitals. The mean (median) net revenue for the sample is \$104 million (\$70 million). The mean (median) net income for the sample is \$5.4 million (\$1.8 million). Mean (median) total assets are \$118.6 million (\$73.5 million). The skewness of these distributions suggests that the sample includes proportionately more small, rural hospitals than large, urban hospitals, typical of hospital demographics in Western states. Total expenditures for non-operating (non-revenue-generating) activities are on average 21% (112%) of net income, so it is likely that management of these expenditures could have a material effect on net income. The largest component of non-revenue generating activities is general services, with mean (median) expenditures of \$5 million (\$3.4 million). General services includes activities such as printing and duplicating, grounds, communications, plant maintenance, and support departments for basic operations such as laundry, pharmacy, and dietary. Only 25% of the sample incurs expenditures for research. These hospitals likely include teaching hospitals and large urban hospitals that provide training for student nurses and physicians. In addition, only 25% of the sample incurs expenditures for governing board activities. Many nonprofit organizations, especially small rural hospitals, do not pay board members, who serve as volunteers. The mean (median) gain on sale of property is \$80,000 (\$0). The range is large, however, with a maximum of \$7.2 million. Thus, while relatively uncommon, asset dispositions can have a material effect on net income.

Net Income as a Benchmark

Our hypotheses concern managerial decisions about expenditure levels that impact performance relative to a benchmark. It is thus crucial to identify a benchmark that managers will manage toward. Because nonprofit hospitals are not publicly traded, typical benchmarks such as analyst forecasts are unavailable. In their study, Leone and Van Horn (2005) use zero

operating income as the benchmark.⁶ They focus on accruals management, which would primarily impact accounts associated with revenue-generating activities and would be reflected in operating income. We focus on the effects of non-operating and non-revenue-generating activity expenditures, so our benchmark is net income.⁷

To validate net income as an appropriate benchmark, we follow the methodology in Burgstahler and Dichev (1997). We analyze the frequency distribution of net income, scaled by total assets and test for discontinuities around zero. A valid benchmark would exhibit a higher than expected frequency of net income/lagged total assets to the right of zero.

Figure 1 provides a plot of the frequency distribution. Each bar represents a bin width (interval) of 0.02. Casual observation of the distribution reveals an apparent spike in the distribution at bin 0 (net income/total assets ([0.0, 0.02])). Table 2 tabulates the frequency distribution and reports results of our statistical tests. Existence of earnings management relies on the assumption that the cross-sectional distribution of net income is smooth. The actual frequency reported in Table 2 is calculated as a percentage of the total sample. The expected frequency is the mean of the two adjacent partitions. Statistical significance of the difference in actual and expected frequency is determined using a Z-statistic (Burgstahler and Dichev 1997).⁸ The final column of Table 2 presents the associated Z-statistics. Other than the most negative partition (which includes all firms in intervals less than or equal to -15, or net income/total assets < -0.30), the only bins that deviate significantly from a smooth distribution are bins 0 and 1. The frequency of inclusion in bin 0 is significantly higher than expected ($p <$

⁶ They note, however, that net income would be a defensible alternative benchmark and tests using income after non-operating adjustments provides similar results as their tests using operating income.

⁷ We find a negative relationship between operating income and non-operating income. This is consistent with managers using non-operating income to manage net income.

⁸ To determine the bin width, we adopt $2(IQR)n^{-1/3}$ following Degeorge et al. (1999), where IQR is the sample interquartile range and n is the number of available observations.

0.0001) and the frequency of inclusion in bin 1 is significantly lower than expected ($p < 0.002$). A joint test of the statistical difference in expected frequencies within bins 0 and 1 is significant ($p < 0.0001$). These results suggest that zero net income provides a reasonable benchmark for our tests of real activity management.

Tests of Hypotheses H1a and H2a.

Hypotheses H1a and H2a concern the use of non-operating and non-revenue-generating activity expenditures to manage earnings, either upward (H1a) or downward (H2a) to reach a benchmark. We examine aggregate measures of both non-operating and non-revenue-generating activity expenditures as well as specific categories that offer managers more discretion.

We begin by calculating net income before spending on the category of interest (i.e., non-operating or non-revenue-generating activity). We then categorize the firm into one of three groups, corresponding to whether this “pre-managed” net income is above, below, or within the benchmark range. We classify a firm as being within the benchmark range if net income deflated by lagged assets is in the interval $[0.0, 0.04)$, which represents bins 0 and 1 in Figure 1.

We next determine desirable expenditure levels for managers in each of these categories. We argue that while the level of non-operating and non-revenue generating expenditures are discretionary, we realize that for many of these activities, a minimal expenditure level is necessary for the hospital to operate. We use the prior year’s expenditure as the basis from which managers increase or reduce expenditures.⁹ We examine net income relative to the benchmark if the hospital spent the same amount on these activities this period

⁹ We test for the sensitivity of our results to this choice in a later section. Specifically, we employ two alternative measures (1) the average of the prior 2 years expenditures and (2) the average expenditure level of the sample period.

as in the prior period (i.e., pre-managed net income minus prior year expenditures, referred to as “projected” income).

Table 3 provides a summary of our predictions. Hospitals with pre-managed income *above* benchmark range and projected income *below* the benchmark range have incentives to increase income to achieve the benchmark range. Thus for H1a, we expect managers to decrease expenditures relative to the prior period so that actual net income is more positive than projected income (see the top right box in Table 3).¹⁰ Similar incentives exist for hospitals with pre-managed income *within* benchmark range and projected income *below* benchmark range. Hospitals with pre-managed income *above* the benchmark range and projected income *above* the benchmark range (the top left box in Table 3), however, have incentives to reduce actual income to avoid additional scrutiny. We expect these managers to increase expenditures relative to the prior period, which would be consistent with hypothesis H2a. For hospitals with pre-managed income *above* benchmark and projected incomes *within* the benchmark range, we expect no change in expenditure levels relative to the prior year. We also expect no change in expenditures for hospitals with both pre-managed and projected incomes *within* benchmark range.

Three of the boxes in Table 3 contain x’s. These entries correspond to settings that cannot exist. For example, if pre-managed income is *below* the benchmark range, then it is impossible to have any expenditure level result in a projected income *above* the benchmark range. Finally, we have no prediction for hospitals with both pre-managed and projected incomes *below* benchmark range. In addition to maintaining expenditure levels similar to the prior year, managers of these hospitals might either: 1) decrease expenditures to move closer to

¹⁰ Of the firms we predict to have incentives to increase/decrease expenditures to meet a benchmark, about 30% actually end up meeting the benchmark.

the benchmark range, even though they cannot achieve the benchmark; or 2) shift future expenditures to the current period so that they have a better chance of achieving the benchmark in the next period (i.e., take a “bath”).

To test our predictions, we perform multivariate regressions using changes in expenditures for various non-operating and non-revenue-generating activity accounts (expenditures in period t minus expenditures in period t-1) with dummy variables reflecting our predictions. We estimate the following model (1):¹¹

$$\Delta Expend_{it} = \alpha + \beta_1 Decrease_{it} + \beta_2 Increase_{it} + \beta_3 Nopred_{it} + \beta_4 LogAsset_{it} + \beta_5 \Delta Sales_{it} + \sum_{j=1}^5 \beta_{5+j} Year_j + \varepsilon_{it}$$

where:

- $\Delta Expend$ = change in non-operating or non-revenue-generating activity expenditure from t-1 to t, deflated by assets;
- $Decrease$ = 1 if pre-managed income is *within* or *above* the benchmark range and projected income is *below* benchmark range, with benchmark range = income/total assets ([0, 0.04), 0 otherwise;
- $Increase$ = 1 if pre-managed income is *above* the benchmark range and projected income is *above* benchmark range, with benchmark range = income/total assets ([0, 0.04), 0 otherwise;
- $Nopred$ = 1 if pre-managed income is *below* the benchmark range and projected income is *below* benchmark range, with benchmark range = income/total assets ([0, 0.04), 0 otherwise;
- $LogAsset$ = log of total assets;
- $\Delta Sales$ = change in sales from t-1 to t, deflated by assets; and
- $Year$ = 1 if observation is in year j of the sample, 0 otherwise.

We use *LogAsset* to control for size and $\Delta Sales$ to control for changes related to ordinary operations. We employ gross charges as a measure of sales because this better reflects hospitals’ use of resources to provide patient care. Net reimbursement would ignore changes in

¹¹ The model is generally estimated via OLS, using Roger’s robust standard errors to control for hospital clustering (Petersen 2007). Models for dependent variables where there are a significant number of zero values for the dependent variable are estimated via Tobit (i.e., for research expenditures and governing board expenditures).

charity care and changes in resources used under capitation contracts.¹² We ignore the effects of accruals management in our models because our focus is on the use of operating decisions to manage earnings.

For both non-operating and non-revenue-generating activity expenditures, we first estimate model (1) using changes in total expenditures as our measures of $\Delta Expend$. We then re-estimate the model using components of non-operating and non-revenue-generating activity expenditures that represent areas where managers are likely to have more discretion in expenditure levels. Given the model structure, the variables *Decrease*, *Increase*, and *Nopred* represent incremental differences from the basis hospitals--those hospitals that we expect to have the same expenditure levels as the prior year.

Table 4 presents results of estimating model (1) for non-operating expenditures. The first column contains estimates with change in total non-operating expenditures (net of losses on asset dispositions) as the dependent variable. Consistent with hypothesis H1a, hospitals that could achieve the benchmark range by decreasing expenditures have changes in these expenditures that are significantly more negative than the other sample hospitals. The coefficient estimate on the decrease indicator variable is -0.008 and significant ($p < .02$). Therefore, non-operating expenditures decrease by 0.8% of assets or close to \$1 million (if we multiply by average total assets, \$119 million). The lack of statistically significant results for *Increase* indicates that hypothesis H2a is not supported. Remaining coefficients in the model are not significantly different from zero.

We next separate non-operating activities into its component accounts. We re-run the analysis using these accounts and present any significant results. The second column of Table

¹² As an alternative measure to control for changes in operations, we use Adjusted Patient Days. This industry standard measure is inpatient days adjusted for outpatient volume. Results are similar using this alternative control variable.

4 presents results of estimating model (1) with other non-operating expenditures as the dependent variable. Other non-operating expenses include those for liability settlements, among others. The timing of these settlements is likely to be somewhat discretionary, in that managers could manage payment schedules, or time settlements earlier or later if they are believed to be inevitable. In this model, we find support for both hypothesis H1a and H2a. The coefficient on *Decrease* is negative and highly significant ($p < .01$) and the coefficient on *Increase* is positive and significant ($p < .02$). The coefficient on *NoPred* is positive and significant ($p < .054$) which provides weak evidence that firms with both pre-managed and projected incomes *below* benchmark range shift future “other operating” expenditures to the current period so that they have a better chance of achieving the benchmark in the next period (i.e., take a “bath”).

Table 5 presents results for model (1) with non-revenue-generating expenditures as dependent variables. In the first column, an aggregation of these expenditures is the dependent variable.¹³ For sensitivity analysis, we disaggregate these expenditures into the specific categories that we believe managers could most easily manipulate. Prior research indicates that expenditures on research and development are altered to smooth earnings (Baber et al. 1991, Dechow and Sloan 1991, Bushee 1998), so we analyze research expenditures separately. In addition, we analyze public relations and governing board expenditures. Hospitals typically centralize their public relations activities. However, the California reports includes reclassification of expenses from specific areas that may arise in several departments, for example pharmacy, so that costs more accurately reflect each department’s activities.

Although many hospitals advertise to increase patient volumes, third party payors often

¹³ We exclude total administrative and fiscal services from total non-revenue-generating activities because these categories have large components that are unlikely to be discretionary (such as nursing administration in administrative services and patient accounting and admitting in fiscal services).

encourage patients to use specific hospitals they consider to be low-cost providers. This reduces the effectiveness of advertising, so advertising expenditures could be cut with little impact on patient volumes. Governance board expenditures are also fairly discretionary. Most board positions in nonprofit organizations are voluntary, but hospital managers may choose to hold board retreats or dinner meetings. These expenditures could be increased or decreased with discretion. Results columns 2-5 in table 5 present results for these specific non-revenue-generating activities.¹⁴ The models for research and governing board expenditures are estimated using Tobit analysis because a large number of hospitals have no change in expenditures for these categories.

With the exception of governing board expenditures, we provide evidence of support for hypothesis H1a; the coefficients in table 5 on *Decrease* are negative and significant. For example, the coefficient on *Decrease* for the non-revenue producing expenditure equation is -0.005 ($p < 0.02$). Therefore, non-revenue producing expenditures decrease by 0.5% of assets or close to \$600,000. Most of the coefficients on *Increase* are insignificant, except for governing board expenditures. In addition, all of the models reported in Table 5 except for public relations and research expenditures have significant positive coefficients for *Nopred*. These results are consistent with those in table 4 and provide further evidence of managers shifting expenditures to the current period to increase the likelihood of making future earnings targets.

As indicated above, results for the model with change in governing board expenditures (ΔGBE) do not support hypothesis H1a. The coefficient on *Increase* in that model is significantly positive ($p < 0.04$), however, which provides modest support for hypothesis H2a. It is likely that the result holds because governing board expenditures can be easily increased,

¹⁴ These categories were identified through conversations with hospital accountants.

for example a retreat could be set up at a resort for the board to work on a specific problem and it would not be surprising if subsequent retreats took place in less costly venues.

Tests of Hypotheses H1b and H2b.

Hypotheses H1b and H2b concern the use of fixed asset dispositions to manage earnings toward the net income benchmark. Net funds received from asset dispositions increase hospital net income. For all of the observations in our sample, asset dispositions resulted in net gains, so we examine only the effects of gains on earnings. Following the arguments associated with hypothesis H1b, hospitals with net income before asset dispositions (“pre-managed” income¹⁵) below the net income benchmark range are likely to increase net income by disposing of assets. Hospitals with pre-managed income within the benchmark range do not have this incentive. Finally, hospitals that are above the benchmark range might delay asset dispositions that would be part of the normal course of business to minimize the increase in net income from asset dispositions. We test our hypotheses using a logistic regression to model the relation between the likelihood of reporting a gain on property sales in the current year and a hospital’s ability to meet or beat the current year’s net income benchmark, based on pre-managed income.

Our investigation here differs somewhat from our approach for hypotheses H1a and H2a. In our earlier models, we compare changes in expenditures relative to the prior year. This implies that prior year expenditures provide an appropriate expectation for current year expenditures. Asset dispositions differ from expenditures, however. As table 1 indicates, asset dispositions are relatively rare, so using prior year dispositions as a benchmark is impractical.

We also need to consider asset dispositions that would occur during the normal course of

¹⁵ Note that this “pre-managed” income differs from our earlier definition because we are interested in use of asset dispositions, rather than non-operating or non-revenue-generating expenditures, as the means of managing earnings.

operations. Accordingly, we analyze asset dispositions for hospitals with pre-managed income above and below the benchmark range, relative to hospitals in bins 0 and 1 (i.e., above benchmark range refers to firms in the intervals greater than or equal to 0.04; below the benchmark range refers to firms in the intervals less than 0.00). We expect hospitals with pre-managed earnings below benchmark to be more likely than other hospitals to have asset dispositions (H1b) and hospitals with pre-managed income above benchmark to be less likely to have asset dispositions (H2b).

We employ the following model (2):

$$Gain_{it} = \alpha + \beta_1 BelowZero_{it} + \beta_2 AboveZero_{it} + \beta_3 LogAsset_{it} + \beta_4 \Delta Sales_{it} + \beta_5 PPE_{it-1} + \sum_{j=1}^5 \beta_{5+j} Year_j + \varepsilon_{it} \quad (2)$$

where:

- Gain* = 1 if the hospital reports a net gain on the sale of property in year t, 0 otherwise;
- BelowZero* = 1 if pre-managed income/total assets is in a bin to the left of the benchmark range, (< 0.0), 0 otherwise;
- AboveZero* = 1 if pre-managed income/total assets is in a bin to the right of the benchmark range, (≥ 0.04), 0 otherwise;
- PPE* = property, plant, and equipment deflated by assets (excluding PPE); and other variables as defined above.

Similar to model (1), we control for size (*logAsset*) and performance (*ΔSales*) in model (2). We include lagged property, plant, and equipment (*PPE_{t-1}*) to take into consideration the availability of assets for disposal and year dummies to control for year-specific effects.

Table 6 presents results of estimating model (2). The coefficient on *BelowZero* is insignificant and therefore provides no support for hypothesis H1b. The coefficient on *AboveZero*, however, is negative and significant ($p < 0.02$), providing support for hypothesis H2b. The two coefficients differ significantly ($p < 0.04$). Accordingly, we find evidence that hospitals above the benchmark range are less likely dispose of assets than other hospitals. This

may be an attempt to either forego higher levels of income to avoid scrutiny, or to save asset sales for future boosts to income.

Results for control variables indicate that larger hospitals are more likely to dispose of assets ($p < 0.01$). The coefficient on $\Delta Sales$ is negative and significant ($p < .02$) indicating that hospitals are less likely to sell assets as performance increases. The coefficient on PPE_{t-1} is positive and significant ($p < .03$), indicating that hospitals with more assets to sell are more likely to do so.

Sensitivity Analysis

In this section we discuss the robustness of our results to alternative measures and explanations. First, we use alternative measures as the basis from which managers increase/decrease expenditures to examine the robustness of our results to our choice of the prior year's expenditures. We employ two measures: (1) the average of expenditures in years t-1 and t-2 and (2) the average expenditure level over the entire sample.

The results (untabulated) using average expenditures in the prior two years are qualitatively similar for every expenditure type except for governing board expense. This method eliminates hospital-years in which hospitals are predicted to decrease governing board expenditures, therefore we lack the data needed to estimate the regression. The results (untabulated) using average expenditures over the entire sample are qualitatively similar except the coefficients on the governing board regression are not significant and the *Increase* coefficient on public relations is positive and statistically significant.

Given the inherent difficulty in identifying earnings management without knowing manager's true intentions, a criticism of the earnings management literature is that any earnings management identified may be a result of an omitted variable or may be capturing

behavior other than intentional manipulation such as good management. We perform several analyses to rule out these concerns. First, we focus on hospitals with incentives to engage in earnings management (i.e., meet an earnings benchmark), which increases our confidence that the behavior is due to earnings management. Second, we provide results that shed light on whether the observed increases or decreases in expenditures around the earnings benchmark reverse in a subsequent period. If we observe a manager increasing (decreasing) a particular expenditure in the current period to reach a benchmark, we would expect that expenditure to decrease (increase) when incentive to manage earnings is no longer present. If the observed behavior is unrelated to earnings management (i.e., a good manager taking advantage of cost savings), we would not expect expenditures to reverse in the next period.

In an effort to examine whether expenditure increases/decreases are due to earnings management, we examine expenditure changes in year t+1 for firms that *do not* have an incentive to management earnings in t+1. We estimate model (1) for non-operating expenses using expenditure changes and control variables in the subsequent year, t+1 (i.e., the year after the firm is suspected of engaging in earnings management).

$$\Delta Expend_{it+1} = \alpha + \beta_1 Decrease_{it} + \beta_2 Increase_{it} + \beta_3 Nopred_{it} + \beta_4 LogAsset_{it+1} + \beta_5 \Delta Sales_{it+1} + \sum_{j=1}^5 \beta_{5+j} Year_j + \varepsilon_{it} \quad (1a)$$

where variables are as defined previously.

Results in table 7 provide evidence that if a hospital had an earnings management incentive to increase non-operating expenses in year t and no earnings management incentive in t+1, the increase reverses in year t +1 (the coefficient on *Increase* is -0.003, p<0.05). Similarly, we find evidence that when a manager has an incentive to increase other non-operating expenditures in period t and no earnings management incentive in t+1, the increase appears to reverse in period t+1 (the coefficient on *Increase* is -0.005, p<0.01).

Table 8 presents results of estimating model (1a) for non-revenue-generating expenditures using expenditure and control variable data in t+1. The first column presents results using the change in the aggregation of research, general services and total education expenditures in t+1. The coefficient on *Decrease* is positive and significant ($p < 0.03$), indicating that if the hospital had an incentive to decrease expenditures in year t and no incentive to manage earnings in t+1, the decrease reverses in year t+1. There is similar evidence of reversals in the disaggregated expenditures. The results for general service expenditures provide evidence of a decrease reversal and the results for public relation expenditures provide evidence of an increase reversal. The results using research and governing board expenditures do not provide evidence of reversals. Overall, table 7 and 8 provide evidence that the observed behavior, with respect to expenditures, is due to earnings management rather than alternative explanations such as good management.

Lastly, we focus on management associated with non-revenue-generating and non-operating activities, because most revenue-generating activities within hospitals include a large portion of fixed costs that might be difficult to manage. Given the fixed cost structure, we would not expect to find management associated with operating expenditures. We re-estimate model (1) using five measures of operating expenditures: total operating, total operating less purchases, daily hospital service, ambulatory service and ancillary service. With the exception of ambulatory expenditures, the coefficients on *Decrease* and *Increase* are not significant in any model. For ambulatory expenditures, the coefficient on *Decrease* is negative and significant ($p < 0.001$) and *Increase* is not significant. One explanation for this finding on ambulatory expenditures is that this classification may contain items with a smaller portion of fixed costs relative to other operating expenditures. For example, ambulatory expenditures

include clinics, satellite clinics, outpatient chemical dependency services, home health care services and adult day health care services. It may be possible for managers to cut these programs in the short-run. Overall, we do find the same real activities manipulation associated with operating activities as we do with non-operating and non-revenue generating activities.

Table 6 provides evidence that hospitals above the benchmark range are less likely dispose of assets than other hospitals. This is consistent with hospitals (1) foregoing higher levels of income to avoid scrutiny or (2) saving asset sales for future boosts to income. To rule out alternative explanations for asset dispositions that would occur during the normal course of operations our sensitivity analysis limits the analysis to hospitals in the bin widths around the benchmark. These hospitals should have similar reasons to dispose of assets except for the position relative to the benchmark range. We estimate equation (2) and define *BelowZero* as the bin width just to the left of 0 (i.e. in the interval [-0.04,0.00)) and *AboveZero* as the bin width just to the right of 0 (i.e. in the interval [0.04,0.08)). Our results are robust to this specification. Hospitals in the bin width just to the right of zero are less likely to dispose of assets ($p < .01$) than hospitals in the bin width at zero.

4. Discussion and Conclusions

Managers of both for-profit and nonprofit organizations have incentives to avoid negative net income because of contractual and reputation pressures. Additionally, in nonprofit hospital settings, managers are likely to have incentives to avoid high levels of net income to decrease the probability of scrutiny by government and other stakeholders. We investigate whether nonprofit hospital managers change real activities to manage net income toward a benchmark of zero. Focusing on hospitals with “pre-managed” incomes within a narrow band

around zero net income, we find evidence consistent with management of expenditures associated with non-operating and non-revenue-generating activities to achieve positive income and with management of asset dispositions to avoid large positive net incomes.

There are several limitations in our analysis. We cannot fully distinguish between good management practices and decisions made specifically to manage earnings. However we do provide evidence of reversals of these activities, suggesting that they are likely to be related to earnings management rather than operational improvements. Although we examine California hospitals, the results should be generalizable to nonprofit hospitals across the United States. State regulations vary from state to state. However, rate setting regulation that limits profits is no longer used in most states, although a few state continue to monitor and regulate hospital expansion and closure plans (Tieman and Fong 2003).

Understanding the incentives faced by nonprofit organizations is important for several reasons. First, if pressure to maintain tax-exempt status or to avoid low net income provides incentives for managers to engage in value-decreasing activities (e.g., overspending on governing board meetings) or activities that do not maximize community benefit (e.g., underspending on public relations and education), then stakeholders (taxpayers and members of the organization's community) will suffer. Second, to the extent that tax exemption is a tool that can be used to accomplish governmental purposes, regulators may be interested in the indirect costs associated with pressure on nonprofit organizations to minimize profits. Third, stakeholders of nonprofits need information about financial condition and performance to make informed regulation, contracting, donation, and investing decisions. Decisions based on financial information that has been altered by engaging in real activities manipulation may lead to inefficient resource allocation.

We contribute to the literature by providing evidence of real activity management. Earlier accounting research focused primarily on use of accruals or opportunistic reductions in research and development expense to manage earnings. Because of the rich data set from public disclosure requirements for California hospitals, we are not limited to a particular expenditure category and are able to analyze several different activities. Hospitals can also choose to engage in accruals management that could either complement or substitute for real activity management. Future research could examine the relation between accruals and real activity management.

Our analysis of real activity management required assumptions about benchmark thresholds for levels of net income that would be within benchmark range. Without access to explicit contracts, our bin-widths are subject to measurement error. This type of error is likely to work against our results, however.

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Figure 1
of Non-Profit Hospitals in each interval of Net Income deflated by lagged assets (interval width = 0.02).
Interval -15 (15) includes all firms in intervals less (greater) than or equal to -15 (15)

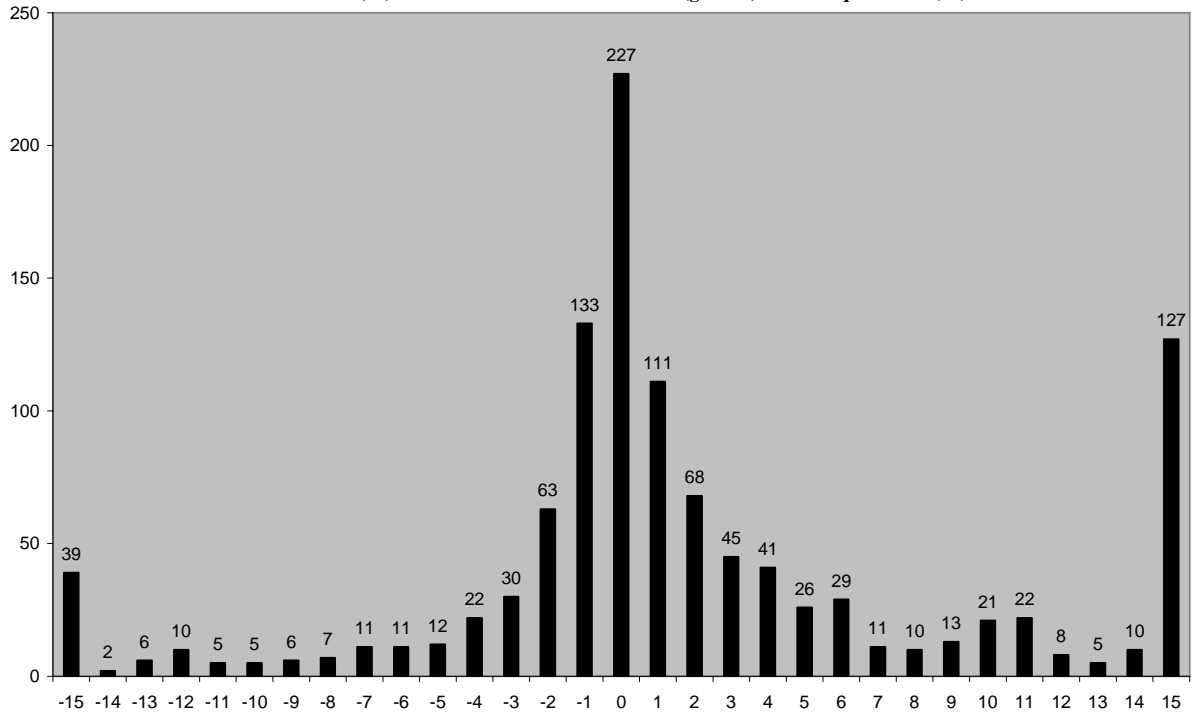


Table 1**Descriptive statistics for 844 california non-profit hospitals (1998-2003) with available data**

Variables (000s)	Mean	Median	Std.dev.	1st quartile	3rd quartile	Min	Max
Net revenues	104,306	70,061	114,157	35,862	134,478	1,869	1,004,136
Net income	5,352	1,786	16,972	-764	6,821	-49,825	138,235
Total assets	118,568	73,537	139,058	33,522	152,255	451	1,444,979
Non-operating activity expenditures	1,126	274	2,277	1	1,157	0	29,231
Other Non-operating activity expenditures	497	0	1,609	0	229	0	17,800
Non-revenue generating expenditures	5,977	3,541	8,553	1,737	11,319	59	113,499
General services	4,966	3,353	5,533	1,703	6,364	59	59,356
Research expenditures	165	0	1,905	0	0	0	47,130
Governing board expenditures	14	0	57	0	0	0	782
Public relations expenditures	670	300	1,180	54	770	0	8,871
Gain on sale of property	80	0	509	0	8	0	7,203

Table 2**Frequency distribution of net income deflated by lagged total assets**

Partition	Net Income		
	Freq (%)	Expected Freq (%)	Z-stat
-15	0.00%	0.40%	-3.01
-14	0.00	0.00	-1.22
-13	0.01	0.01	0.00
-12	0.01	0.00	1.27
-11	0.00	0.01	-0.85
-10	0.00	0.00	-0.18
-9	0.01	0.01	0.00
-8	0.01	0.01	-0.45
-7	0.01	0.01	0.51
-6	0.01	0.01	-0.12
-5	0.01	0.01	-1.01
-4	0.02	0.02	0.18
-3	0.03	0.04	-1.79
-2	0.06	0.07	-1.90
-1	0.12	0.13	-0.92
0	0.20	0.11	6.93
1	0.10	0.13	-2.93
2	0.06	0.07	-1.01
3	0.04	0.05	-1.15
4	0.04	0.03	0.73
5	0.02	0.03	-1.39
6	0.03	0.02	1.72
7	0.01	0.02	-1.89
8	0.01	0.01	-0.50
9	0.01	0.01	-0.55
10	0.02	0.02	0.65
11	0.02	0.01	1.40
12	0.01	0.01	-1.44
13	0.00	0.01	-1.30
14	0.01	0.01	1.11
15	0.01	0.01	-0.73

Net income is deflated by lagged total assets. The frequencies are expressed as percentages of the total sample and the expected frequency is computed as the mean of the frequency in the two adjacent partitions. Only partitions with earnings scaled by total assets ranging from partition -15 to 15 are presented in the table. The Z-statistic is computed using the formula described in footnote 6 of Burgstahler and Dichev (1997).

Table 3
Incentives to manage non-revenue generating and non-operating expenditures to meet benchmarks

		"Projected Income"		
		Net Income relative to benchmark if the firm spent the same amount on the activity as in year t-1		
		Above Benchmark Range	Within Benchmark Range	Below Benchmark Range
"Pre-Managed Income" Net Income relative to benchmark before spending on activity	Above Benchmark Range	Increase expenditure relative to t-1	Similar expenditure as last year	Decrease expenditure relative to t-1
	Within Benchmark Range	X	Similar expenditure as last year	Decrease expenditure relative to t-1
	Below Benchmark Range	X	X	Unknown

The firm is included in the "Above Benchmark Range" category if net income deflated by assets is greater than or equal to .04 (represents intervals greater than 1 in Figure 1). The firm is included in the "Within Benchmark Range" category if net income deflated by lagged assets is less than .04 and greater than or equal to zero (represents intervals 0 and 1 in Figure 1). The firm is included in the "Below Benchmark Range" category if net income deflated by lagged assets is less than zero (represents intervals less than 0 in Figure 1).

Table 4

Regression analysis of the association between non-operating activity expenditures and incentives to increase or decrease expenditures to achieve a benchmark

Variable	Pred.	Dep. Variable: ΔNOCC_t	Dep. Variable: $\Delta\text{OtherNOCC}_t$
Intercept		0.000 (0.914)	-0.004 (0.205)
Decrease _t	-	-0.008 (0.022)**	-0.021 (0.008)***
Increase _t	+	0.001 (0.131)	0.002 (0.024)**
Nopred _t	?	0.001 (0.314)	0.002 (0.054)*
LogAsset _t		-0.003 (0.277)	-0.003 (0.156)
ΔSales_t		0.000 (0.900)	0.000 (0.224)
Year Dummies		Yes	Yes
No. of Observations		779	768
R ²		0.04	0.09

p-values in parenthesis. ***/**/* represent statistical significance at 1%/5%/10% levels one-tailed (two-tailed on Nopred and the control variables). The p-values are computed using Roger's robust standard errors correcting for hospital clustering. Hospitals for which the independent variable is zero in every year between 1998 & 2003 are deleted from the sample. All variables are winsorized at the 1% and 99% level.

ΔNOCC = The difference between non-operating cost center expenditures deflated by assets in year t and t-1
 $\Delta\text{OtherNOCC}$ = The difference between other non-operating cost center expenditures deflated by assets in year t and t-1
Decrease = An indicator variable that is set equal to 1 if the firm's net income (deflated by assets) before spending on the non-operating activity (i.e. NOCC, ect.) is greater than or equal to zero but net income would fall below zero if the firm spent the same amount on the non-operating activity as in year t-1, zero otherwise
Increase = An indicator variable that is set equal to 1 if the firm's net income (deflated by assets) before spending on the non-operating activity (i.e. NOCC, etc.) is greater than or equal to 0.04 and net income would not fall below 0.04 if the firm spent the same amount on the non-operating activity as in year t-1, zero otherwise
Nopred = An indicator variable that is set equal to 1 if the firm's net income before spending on the non-operating
LogAsset = The natural log of total assets
 ΔSales = Sales in year t minus sales in year t-1 deflated by total assets

Table 5
OLS and Tobit analysis of the association between non-revenue generating activity expenditures and incentives to increase or decrease expenditures to achieve a benchmark

Variable	Pred.	Tobit Estimation:				
		Dep. Variable: ΔEXP_t	Dep. Variable: ΔGS_t	Dep. Variable: ΔRPA_t	Dep. Variable: ΔGBE_t	Dep. Variable: ΔPR_t
Intercept		0.015 (0.102)	0.016 (0.060)*	0.0006 (0.176)	-0.0001 (0.759)	0.000 (0.921)
Decrease _t	-	-0.005 (0.013)**	-0.004 (0.014)**	-0.0027 (0.000)***	0.0007 (0.079)*	-0.002 (0.049)**
Increase _t	+	-0.001 (0.216)	-0.001 (0.102)	-0.0001 (0.103)	0.0001 (0.039)**	0.000 (0.250)
Nopred _t	?	0.006 (0.001)***	0.005 (0.003)***	0.0000 (0.644)	0.0001 (0.021)**	0.000 (0.639)
LogAsset _t		-0.020 (0.052)*	-0.021 (0.034)**	0.0000 (0.923)	0.0003 (0.109)	0.000 (0.943)
$\Delta Sales_t$		-0.001 (0.268)	-0.001 (0.172)	0.0000 (0.262)	0.0000 (0.983)	0.000 (0.801)
Year Dummies		Yes	Yes	Yes	Yes	Yes
No. of Observations		844	844	643	652	785
R ²		0.08	0.08			0.03
Model chi-squared				28.00	12.00	

p-values in parenthesis. ***/**/* represent statistical significance at 1%/5%/10% levels one-tailed (two-tailed on Nopred and the control variables). The p-values are computed using Roger's robust standard errors correcting for hospital clustering. Hospitals for which the independent variable is zero in every year between 1998 & 2003 are deleted from the sample. All variables are winsorized at the 1% and 99% level.

- ΔEXP = The difference between non-revenue producing expenditures (includes total research expenditures, total general services and total education expenditures) deflated by assets in year t and t-1
- ΔGS = The difference between general services (includes social work services, central services and supplies, pharmacy, purchasing and stores, grounds and plant maintenance) deflated by assets in year t and t-1
- ΔRPA = The difference between research expenditures deflated by assets in year t and t-1
- ΔGBE = The difference between governing board expenditures deflated by assets in year t and t-1
- ΔPR = The difference between public relation expenditures deflated by assets in year t and t-1
- Decrease = An indicator variable that is set equal to 1 if the firm's net income (deflated by assets) before spending on the non-operating activity (i.e. EXP, RPA, ect.) is greater than or equal to zero but net income would fall below zero if the firm spent the same
- Increase = An indicator variable that is set equal to 1 if the firm's net income (deflated by assets) before spending on the non-operating activity (i.e. EXP, RPA, etc.) is greater than or equal to 0.04 and net income would not fall below 0.04 if the firm spent the
- Nopred = An indicator variable that is set equal to 1 if the firm's net income before spending on the non-operating activity (i.e. EXP, RPA,
- LogAsset = The natural log of total assets
- $\Delta Sales$ = Sales in year t minus sales in year t-1 deflated by total assets

Table 6

Logit regression of net sale of property on pre-managed earnings intervals

Variable	Pred.	Dependent Variable NetPropGain _t	p-value
Intercept		-5.167	0.002
BelowZero	+	-0.176	0.432
AboveZero	-	-0.555	0.011
LogAsset _t		0.280	0.003
ΔSales _t		-1.895	0.011
PPE _{t-1}		0.009	0.026
P-value for the test:			
BelowZero = AboveZero		0.039	
Year Dummies		Yes	
# with Sale		256	
# without Sale		497	
Model Chi-squared		33.84	
% concordant pairs (+tied)		62.5	

All variables are winsorized at the 1% and 99% level. The p-values are computed using Roger's robust standard error correcting for hospital clustering.

NetPropGain = An indicator variable equal to one if the hospital reports a net gain on the sale of property in year t, 0 otherwise;

BelowZero = An indicator variable equal to one if pre-managed income/total assets is in a bin to the left of the benchmark range, (< 0.0), 0 otherwise;

AboveZero = An indicator variable equal to one if pre-managed income/total assets is in a bin to the right of the benchmark range, (≥ 0.04), 0 otherwise;

logAsset = The natural log of total assets

ΔSales = Total operating revenue in year t minus operating revenue in year t-1 deflated by total assets

PPE = Lagged property, plant and equipment deflated by lagged assets (excluding lagged property, plant and equipment)

Table 7
Reversal Regressions
Regression analysis of the association between *one-period-ahead* non-operating activity expenditures and incentives to increase or decrease expenditures to achieve a benchmark for firms with no incentive to increase or decrease expenditures in t+1.

Variable	Pred.	Dep. Variable: ΔNOCC_{t+1}	Dep. Variable: $\Delta\text{OtherNOCC}_{t+1}$
Intercept		0.003 (0.593)	0.001 (0.825)
Decrease _t	+	0.001 (0.201)	0.000 (0.476)
Increase _t	-	-0.003 (0.022)**	-0.005 (0.001)***
Nopred _t	?	0.000 (0.936)	0.000 (0.719)
LogAsset _{t+1}		-0.007 (0.047)**	-0.007 (0.028)**
ΔSales_{t+1}		0.0000 (0.869)	0.0001 (0.721)
Year Dummies		Yes	Yes
No. of Observations		429	424
R ²		0.05	0.07

p-values in parenthesis. ***/**/* represent statistical significance at 1%/5%/10% levels one-tailed (two-tailed on Nopred and the control variables). The p-values are computed using Roger's robust standard errors correcting for hospital clustering. Hospitals for which the independent variable is zero in every year between 1998 & 2003 are deleted from the sample. All variables are winsorized at the 1% and 99% level.

- ΔNOCC = The difference between non-operating cost center expenditures deflated by assets in year t and t-1
 $\Delta\text{OtherNOCC}$ = The difference between other non-operating cost center expenditures deflated by assets in year t and t-1
Decrease = An indicator variable that is set equal to 1 if the firm's net income (deflated by assets) before spending on the non-operating activity (i.e. NOCC, ect.) is greater than or equal to zero but net income would fall below zero if the firm spent the same amo
Increase = An indicator variable that is set equal to 1 if the firm's net income (deflated by assets) before spending on the non-operating activity (i.e. NOCC, etc.) is greater than or equal to 0.04 and net income would not fall below 0.04 if the firm spent the same
Nopred = An indicator variable that is set equal to 1 if the firm's net income before spending on the non-
LogAsset = The natural log of total assets
 ΔSales = Sales in year t minus sales in year t-1 deflated by total assets

Table 8
Reversal Regressions

OLS and Tobit analysis of the association between non-revenue generating activity expenditures and incentives to increase or decrease expenditures to achieve a benchmark for firms with no incentive to increase or decrease expenditures in t+1.

Tobit Estimation:						
Variable	Pred.	Dep. Variable: ΔEXP_t	Dep. Variable: ΔGS_t	Dep. Variable: ΔRPA_t	Dep. Variable: ΔGBE_t	Dep. Variable: ΔPR_t
Intercept		0.052 (0.019)**	0.047 (0.023)**	0.0007 (0.210)*	0.0002 (0.687)	-0.0007 (0.849)
Decrease _t	+	0.003 (0.027)**	0.001 (0.090)*	0.000 (0.392)	-0.0004 (0.001)**	0.0002 (0.326)
Increase _t	-	-0.001 (0.307)	-0.001 (0.370)	0.000 (0.406)	0.0000 (0.431)	-0.0010 (0.019)**
Nopred _t	?	0.005 (0.039)*	0.004 (0.052)*	0.000 (0.069)*	-0.0001 (0.218)	-0.0001 (0.888)
LogAsset _t		-0.015 (0.139)	-0.013 (0.158)	0.000 (0.344)	0.000 (0.148)	-0.001 (0.713)
$\Delta Sales_t$		-0.0025 (0.034)**	-0.0023 (0.039)**	0.0000 (0.311)	0.0000 (0.822)	0.0000 (0.946)
Year Dummies		Yes	Yes	Yes	Yes	Yes
No. of Observations		348	358	347	358	436
R ²		0.08	0.07			0.04
Model chi-squared				250.00	20.00	

p-values in parenthesis. ***/**/* represent statistical significance at 1%/5%/10% levels one-tailed (two-tailed on Nopred and the control variables). The p-values are computed using Roger's robust standard errors correcting for hospital clustering. Hospitals for which the independent variable is zero in every year between 1998 & 2003 are deleted from the sample. All variables are winsorized at the 1% and 99% level.

- ΔEXP = The difference between non-revenue producing expenditures (includes total research expenditures, total general services and total education expenditures) deflated by assets in year t and t-1
- ΔGS = The difference between general services (includes social work services, central services and supplies, pharmacy, purchasing and stores, grounds and plant maintenance) deflated by assets in year t and t-1
- ΔRPA = The difference between research expenditures deflated by assets in year t and t-1
- ΔGBE = The difference between governing board expenditures deflated by assets in year t and t-1
- ΔPR = The difference between public relation expenditures deflated by assets in year t and t-1
- Decrease = An indicator variable that is set equal to 1 if the firm's net income (deflated by assets) before spending on the non-operating activity (i.e. EXP, RPA, ect.) is greater than or equal to zero but net income would fall below zero if the firm spent the same
- Increase = An indicator variable that is set equal to 1 if the firm's net income (deflated by assets) before spending on the non-operating activity (i.e. EXP, RPA, etc.) is greater than or equal to 0.04 and net income would not fall below 0.04 if the firm spent the
- Nopred = An indicator variable that is set equal to 1 if the firm's net income before spending on the non-operating activity (i.e. EXP, RPA,
- LogAsset = The natural log of total assets
- $\Delta Sales$ = Sales in year t minus sales in year t-1 deflated by total assets