Expenditure Management and Regulatory Financial Targets in Public Healthcare Organizations

Abstract

This study investigates the impact of regulatory financial target on expenditure management in public sector, using healthcare organisations as our setting. We look at how non-clinical and clinical expenditures respond to the regulatory financial risk rating. In line with earlier research, we discover that non-clinical expenditure is significantly decreased when the regulatory risk rating is just below the intervention triggering threshold. When the risk rating is well above the threshold a significant increase in non-clinical abnormal expenditure is observed. We also find evidence that such increase/decrease is driven more by certain individual financial metric ratings, including I&E margin and EBITA margin. Surprisingly, we also find evidence of management in clinical expenditure when risk rating is just below the regulatory intervention triggering level, and that it is increased when risk rating is well above the intervention triggering level. Finally, we find a moderation effect for both non-clinical and clinical expenditure management when trusts faced with potential intervention. Our paper contributes to the limited research in public sector real earnings management and adds to the discussion of how public service delivery are affected by regulatory environment.

Key words: real earnings management, public sector, publicness, regulatory performance monitoring, healthcare

Expenditure Management and Regulatory Financial Targets in Public Healthcare Organizations

1. Introduction

Studies have shown that managerial decisions are influenced by stakeholders' expectations for financial performance, especially when a financial target is not met and there is an incentive for the exercise of managerial discretion (Healy and Wahlen, 1999; Dechow et al. 2010). Extant literature provides evidence that managers take advantage of accounting discretion mechanisms to manipulate accounting accruals and adjust reported financial performance. Real activities, on the other hand, which influence long-term profitability and strategic capacity (Xu et al., 2007), are also evidence of being managed for the purpose of meeting financial targets. Due to data limitation, real activities are limited to a few categories such as research and development expenditures, disposal of assets, and inventory sales, etc. (Roychowdhury 2006; Cohen et al., 2010; Graham et al. 2005; Herrmann et al., 2003). In addition, research on public sector organisations is far less prevalent than in the private sector.

This paper provides additional insights into real earnings management (hereafter REM) by investigating public sector healthcare organisations. Analysis of REM in public sector or non-profit organisations is valuable because real activities can lead to long term consequences and influence service and quality (Leone and Van Horne 2005). Non-profit organisations have weak incentives to enhance corporate efficiency but are concerned mainly about negative impact of real activity management on service quality, as service quality, rather than financial targets, is the primary objective of not-for-profit public sector entities. We analyse activities across 147 NHS Foundation Trusts in England from 2011 to 2015. NHS Foundation Trusts are self-governing publicly funded healthcare entities in which private sector management and governance are referenced as models of best practise, inspired by the doctrines of "New Public Management" (Hood 1991, 1995; Lapsley 2008). This leads to the notion of publicness, which looks at to which extent public value and interests are retained when delivering public services (Bozeman, 1987), and research into how accounting and accountability can address the challenges resulted from changing publicness (Cooper, 2005; Steccolini, 2019; de Villiers et al., 2014). This paper adopts perspectives of 'publicness' to investigate the existence of REM in the provision of healthcare services under regulatory monitoring.

Empirical evidence has suggested that discretionary non-operating expenditures are the main tool to manage earnings in non-profit organisations (Eldenburg et al. 2011, Ibrahim et al. 2019), and public service core expenditures are regarded as less likely to be managed due to their close relation to service quality (Eldenburg et al. 2011). However, due to data limitation, little empirical evidence has been provided to examine the service-related activities in public or non-profit organisations. The only exception is Eldenburg et al. (2011), which investigated the daily hospital service operating expenditures. This paper contributes

to literature by extending clinical service expenditures to include the purchase of clinical services and staff costs. Due to the absence of a regulatory framework regulating and monitoring the purchases of clinical services, an analysis of the purchasing activities is of great help to better understanding the effectiveness of health services and value for money in NHS organisations.

This paper also extends the literature by considering REM from regulatory target incentives. Incentives for REM are mainly explored in capital market settings in prior literatre, including analyst forecast (e.g., Ayers et al., 2006) and small positive earnings (e.g., Beaver et al., 2003; Gunny 2010), incentives for real activity management in public sector or nonprofit organisations are limited to zero profit benchmark (Leone and Van Horne, 2005; Eldenburg et al., 2011; Ibrahim et al. 2019) and compensation incentives (Eldenburg et al. 2011). Greenwood et al. (2017) found a link between regulatory framework and the incentives of accruals management in NHS Foundation Trusts in England. We contribute to literature by extending to the responsiveness of real activity manipulations to regulatory framework and contributes to the limited empirical evidence about possible effect of regulatory framework on health service quality through REM.

We analyse how both non-clinical and clinical spending decisions are affected by regulatory financial targets, with a particular interest in target thresholds that are linked to regulatory intervention. Consistent with previous literature (Eldenburg et al. 2011; Roychowdhury 2006), we find evidence that non-clinical discretionary expenditures[1] are reduced to improve financial performance when pre-managed financial performance is just below the intervention triggering threshold. When pre-managed performance is well above the intervention triggering threshold, these expenditures are increased to meet the contingencies against future performance. Surprisingly, we also find evidence that clinical expenditures, proxied by clinical service purchases, are reduced to avoid triggering regulatory intervention. Similar results are found when staff cost is used as a proxy. We include clinical negligence fee as control variable to investigate the extent to which service quality concerns affect spending decisions. We find a moderation affect exists for both non-clinical and clinical expenditures when they are managed to improve financial performance.

This paper contributes to the accounting literature in several ways. Firstly, it contributes to the understanding of earnings management choices in public sector and non-profit organisations, by providing empirical evidence of financial performance management in healthcare organisations through spending activities. Therefore our results also add to the limited literature in REM in public sector and non-profit organisations. More importantly, this paper extends the scope of Eldenburg et al. (2011) by challenging their conclusions that core operating expenditures or clinical expenditures are not manipulated. Our result strengthens the importance of the tension between complying with regulatory financial targets and service quality in public sector and non-profit organisations and stimulates consideration of

[1] We investigate the non-clinical expenditures including research and development expenditures, maintenance costs, premise costs, consultancy fee etc. Non-clinical activities, which may have little short-term impact on operation, have been widely used as tools to manipulate earnings in previous literature (Eldenburg et al. 2011; Roychowdhury 2006).

the competing interests of various stakeholders. Lastly, due to the growing interest in financial performance and value-for-money in public sector and non-profit organisations, our findings are crucial in advancing the conversation on the value-based public spending.

We proceed as follows, first prior literature is reviewed before institutional setting information is provided. Next hypothesis development is presented, which is followed by methodology and modelling. Then our results are discussed before we finally conclude.

2. Literature review

2.1 Theories of publicness

The emergence of new public management in the early 1980s and the introduction of concepts such as corporatization, marketization, and disaggregation into the public sphere led to the development of dimensional theories of publicness that included the dimensions of ownership, funding, and control in addition to those of ownership (Andrews et al., 2011). Bozeman (1987) conceptualised these in a two-dimensional space that is bounded by economic authority, where "private-ness" increases with the degree of financial decision-making freedom, and political authority, where "publicness" increases with the level of political control the organisation is subject to[2]. However, they do not tell us much about the capacity of organisations to produce public outcomes that capture public values, such as equity in service delivery (Andrews et al., 2011). Thus, recent advancements in theories of publicness have attempted to construct a theory of "realised publicness" by fusing dimensional theories with normative conceptions of public worth (Moulton, 2009). However, the idea of public value is generally represented in terms of market-based concepts of worth and is marked by ambiguity, diversity, and lack of consensus (Bozeman, 2002; Bozeman 2007). As a result, Bozeman (2002) offers a theory of public failure with the goal of addressing the fundamental question: Is it possible for a market to be efficient and still fail to supply a crucial public with good quality? The idea of public failure focuses on a certain kind of market failure, such as benefit hoarding, where public services are taken by some sectors at the expense of others. Another is substitutability, where services offered by the private sector are insufficient replacements for public services. In this paper, we look into these traits of publicness in relation to the existence of REM due to the regulatory financial performance monitoring.

2.2 Real Earnings Management

Studies in private sector have confirmed the existence of REM via the use of sales, expenditures and overproductions etc,. (Brown et al., 2015; Graham et al., 2005; Roychowdhury, 2006; Zang, 2012). Two opposing theoretical stances are commonly used to explain the managerial propensity for REM. According to the signalling approach, managers use REM to communicate sensitive information to participants in the capital markets. This is evidenced, among other things, by improved operating results in the future and lower debt financing costs (Gunny, 2010). The managerial opportunistic approach, which stems from

[2] See Anderson, 2012 for an example of its application to healthcare organisations.

agency theory, contends that REM obscures the firm's genuine performance and reduces the value of accounting data as a tool for evaluation and monitoring. For instance, Roychowdhury (2006) provides evidence that the opportunistic use of extreme price reductions is harmful to long-term cash flow. Consequently, REM raises information risk, lowers the general information environment's quality, and has a substantial negative impact.

2.3 Earnings management in public sector and non-profits setting

In non-profits setting researchers concur with the notion that earnings management could inadvertently mislead stakeholders who reply on financial data to judge the effectives of the organisation or to decide whether to provide funding. (Ballantine et al., 2007; Verbruggen and Christiaens, 2012; Greenwood et al., 2017). Non-profit organisations are shown to report modest surpluses and deficits near zero (Leone and Van Horn, 2005; Ballantine et al., 2007). More specifically, Leone and Van Horn (2005) discovered the use of third party settlements and the allowance for doubtful accounts by US hospitals in order to report small surpluses.

Driving factors to engage in earnings management in non-profits setting include but no limited to better managerial performance, enhanced organisational reputation and increased donations (Khumawala et al., 2005; Jones and Roberts, 2006; Krishnan and Yetman 2011; Keating et al., 2008; Yetman and Yetman, 2013; Garven et al., 2016); avoid paying taxes or to prevent regulatory involvement (for example Yetman, 2001; Ballantine et al., 2007; Omer and Yetman, 2007; Greenwood and Tao, 2021). What's more, Non-profits may manage accounting numbers by employing AEM (Verbruggen and Christiaens, 2012; Jegers, 2013) or discretion in cost allocation practises or spending decisions, i.e., REM (Eldenburg et al., 2011).

2.4 Earning management in healthcare sector

Researchers have looked at earnings management in healthcare sector in various angles. Vansant (2016) examined earnings-before-manipulation in connection to discretionary accruals in US hospitals facing pressure to offer charitable healthcare services, and discovered that when the standard of care provided by the charity met (or exceeded) normative expectations, the administrators would use discretionary accruals to increase their income. According to Ibrahim et al. (2019) looked at the Italian setting and found evidence that hospitals used discretionary accruals, provisions, and non-operating expenses to report earnings a desirable level. Anagnostopoulou and Stavropoulou (2021) also documented the use of discretionary accruals by English hospitals to increase earnings in order to increase their chance of being granted a beneficial status. Whilst most of studies in this area focus on AEM, very limited research has tapped into REM in hospitals. Eldenburg et al. (2011) found hospitals engaged in REM via expenditures and asset management to manipulate their financial performance in US setting. Heese (2018) revealed the preference of overbilling over managing accruals or expenditures by US hospitals.

Our research contributes to the limited research of REM in public sector setting, by exploiting the distinctive characteristics of NHS Foundation Trusts and investigate whether real activities, including both non-clinical and clinical expenditure decisions, are managed in response to managerial incentives.

3. Institutional Setting

Our setting is the NHS Foundation Trusts(FTs) in the UK. NHS FTs were established from 2004-05 as the preferred model of healthcare service delivery in England (Health and Social Care (Community Health and Standards) Act 2003). Their establishment represented a logical continuation of a reform programme dating back to the 1980s in which public services became more disaggregated into self-governing corporatized units and in which private sector management and governance were referenced as models of best practice (Hood 1991, 1995). The introduction of FTs marked a further development in these reforms with unprecedented levels of managerial freedom being granted, including the ability to retain funds and to borrow on commercial markets for the purposes of strategic service development. As at the end of our sample year 2014-15 there were 153 Foundation Trusts in existence, represented by 104 trusts delivering acute hospital services and 49 delivering mental health or ambulance services. Although publicly funded, receiving most of their capital, in the form of 'taxpayers' equity', and revenues, in the form of contracted payments for patient treatments, they are free from central government control, reporting direct to Parliament.

[INSERT FIGURE 1, 2 & 3 HERE]

A risk-based approach is adopted in NHS in the UK and all Foundation Trusts' financial performance risk rated against a set of targets by their regulator. From 2005 to 2013, the risk rating is based on 5 key metrics on a scale of 1 (highest risk) to 5 (lowest risk) (as shown in Figure 1)[3]. Overall risk rating is then generated by applying weightings to each metrics. According to the Risk Assessment Framework, a risk rating below 3 will lead to additional monitoring and potential intervention[4]. Continuity of services risk rating (COSRR) replaces the financial risk rating under Risk Assessment Framework since 2013. COSRR incorporates two measures to test the degree to which the organisation's generated income covers its financing obligations: liquidity and capital servicing capacity (CSC). Both metrics are rated on a scale of 1 (most serious risk) to 4 (least risk) and the overall rating is the rounded-up average of the two (see Figure 2).

New measures including income and expenditure (I&E) margin and variance in I&E margin from plan are introduced from 2015, in addition to COSRR, to form a new financial sustainability risk rating (FSRR) (Figure 3). Overall rating is rounded average rating of the four measures. Both COSRR and FSRR reflect the degree of concerns about NHS trust finances and help determine the frequency needed for monitoring. Rating of 1 or 2 indicate significants financial risk, which may trigger further investigation, closer monitoring and potentially a

[3] Later, in the transform period revised compliance framework (Figure 2) add a new metric, net return after financing, to replace return on assets excluding dividend.

[4] Additional monitoring can take the form of monthly rather than quarterly reporting, additional line-item reporting, submission of remedial plans, meetings with Monitor officials and if deem appropriate, formal presentations of recovery plans.

contingency planning process. More severe measures such as formal enforcement actions could also be taken when risk rating is 1[5].

4. Hypothesis Development

Given the widespread evidence in both the private sector and public sector, real activities are manipulated to manage reported earnings or achieve earnings benchmarks (Graham et al. 2005; Roychowdhury 2006; Cohen et al. 2010; Eldenburg et al. 2011). Literature on the private sector presents substantial evidence that earnings are managed through various manipulations of operating, investing, and financing activities. These include manipulation of sales, production, discretionary expenditures, asset sales (Roychowdhury 2006) and the structuring of investing or financing transactions (Hribar et al. 2006; Marquardt and Wiedman 2005). However, investing and financing activities are limited to most public-sector organisations since they are not market-based. As for operating activities, managerial freedom on sales and production is also restricted in public-sector organisations since the main income of the public sector comes from government grants or local taxes, and production or provision of service is subject to regulation, both of which are not likely to be manipulated. Thus, manipulation of discretionary expenditures is accounted for as the main REM activity in this paper.

Empirical evidence suggests public sector organisations manage earnings to achieve regulatory financial targets and avoid regulatory intervention (Greenwood et al. 2017). According to the institutional setting, NHS FTs are subject to regulatory intervention if they do not financial targets. The regulatory framework establishes the motivation to manage performance in order to meet short-term goals and prevant regulatory intervention. We anticipate NHS FTs are motivated to manage discretionary expenditures through real activities that are in close proximity to regulatory thresholds.

> ***H1:*** NHS FTs manage financial performance through real activities to meet financial thresholds.

Discretionary expenditures, such as R&D, advertising, and maintenance, are most common to be utilised to increase earnings (Gunny 2005; Roychowdhury 2006). In non-profit hospitals, most clinical related expenditures are fixed costs hence difficult to manage, such as drug costs, supply of mechanisms, equipment and consumables. Moreover, health service output cannot be inventoried in hospitals and production is not easily smoothed when face anticipated demand (Kallapur and Eldenburg 2005). In contrast, non-clinical operating expenditures are not directly related with health care efforts and the management of these

[5] After 2015, a risk rating of 1 on any measure, especially on capital service capacity and liquidity, will cap the weighted rating to 2 and potentially lead to investigation and intervention (Risk Assessment Framework, 2015; Consultation on updates to the Risk Assessment Framework, 2015).

expenditures is less likely to affect health service quality (Eldenburg et al. 2011). In addition, non-clinical operating expenditures are arguably easier to be managed to meet short term performance target. For example, transport, establishment, and training fees can be cut back or postponed. Premises expenditure, such as refurbishment, can be deferred. Research, education and development expenditures have been found to be utilised to manage earnings (Bens et al. 2002; Cheng 2004; Gunny 2010; Eldenburg et al. 2011) as they have little short term impact on service quality.

Therefore we expect that discretionary non-clinical operation expenditures are decreased when pre-managed financial performance is just below the regulatory triggering threshold. When financial performance is well above the benchmark, we expect non-clinical operation expenditures to be increased considering the contingencies against future reduction in income or increase in expenditures (Ballantine et al. 2007; Greenwood et al., 2017). This leads to our below hypotheses.

> ***H2:*** Non-clinical expenditures are reduced (increased) when pre-managed financial performance is below (above) regulatory triggering thresholds.

Although we expect much less management in clinical expenses, expenditures related to purchases of health services from other providers and staff costs are more discretionary. Some of these purchases are not normally expected to apply a formal contracting or tendering procedure, which is required only when the financial implication is over £1000 and has over 12 months duration period (Trust Guidance for NHS Contracts and SLAs, 2020). Only expenditures over £25k need to be disclosed by NHS FTs with no required format for such disclosure. Some FTs provide detailed information including expense type, cost division, expense purpose, while others only provide information about the supplier. Fewer fixed costs and relaxed purchases agreement are likely to provide managers more discretions. As a result, we expect clinical purchase expenditures are managed when there are incentives to manage financial performance. In line with our last hypotheses, we predict the below hypotheses.

> ***H3:*** Clinical purchase activity expenditures are reduced (increased) when pre-managed financial performance is below (above) regulatory triggering threshold.

5. Research Design

This paper adopts an exploratory approach to provide both univariate analysis and multivariate analysis to examine REM in response to regulatory financial risk rating. Following earlier research (Roychowdhury 2006; Eldenburg et al. 2011), this study uses abnormal discretionary expenditures as proxies for REM. It firstly conducts univariate analysis to identify prima facie evidence of the expenditure management in response to regulatory risk rating. including a descriptive analysis of the presence and magnitude of abnormal expenditures as well as financial performance. Further, to analyse the relationship between expenditure management and regulatory risk rating, we conduct multivariate analysis to

analyse the incidence and magnitude of abnormal expenditures in response to different risk ratings and examine the extent to which expenditures are managed in relation to financial risk rating.

5.1 Measure of non-clinical expenditures

Using the model created by Dechow et al. (1998) and applied by Roychowdhury (2006), this study generates normal levels of discretionary non-clinical spending. "Normal" discretionary spending is expressed as a linear function of revenues in the Dechow et al. (1998) model. Under Dechow et al. (1998) model[6], "normal" discretionary expenditures are expressed as a linear function of revenues. The abnormal discretionary expenditure is the actual discretionary expenditure minus normal discretionary expenditure.

$$DISEXP_t/A_{t-1} = \alpha_0 + \alpha_1(1/A_{t-1}) + \beta_1(R_t/A_{t-1}) + \varepsilon_t \quad (1)^7$$

Where $DISEXP_t$ is discretionary non-clinical expenditures (including R&D, premise cost, maintenance cost, consultancy expenditures etc.) in period t; A_{t-1} is the total assets at the end of period t-1; R_t is the total revenue during period t.

According to Leone and Van Horn (2005) and Roychowdhury (2006), the reported amount in the financial statements for non-clinical expenses approximates the annual cash expenditure because there is little room for discretion in estimating accrued costs for things like repairs, maintenance, agency staff compensation, etc. As a result, accruals have little variation at the end of each year, and it is anticipated that all abnormal non-clinical expenditures are related to real activity.

5.2 Measure of clinical expenditures[8]

To investigate whether trusts manage their clinical-related expenditures in response to regulatory financial risk rating, this study analyses changes in purchases of health service

[6] For robustness test, we follow Eldenburg et al. (2011) where expected non-clinical expenditures in year t is assumed to be the expenditure in year t-1 such that the change in non-clinical expenditures between year t and year t-1 is the abnormal expenditures

[7] In NHS, income generally comes from government grant and taxation and there is limited space for sales income manipulation. Therefore, in our paper, discretionary expenses are not expressed as a function of lagged income to avoid the impact of sales upward manipulation on unusually low residuals (Roychowdhury, 2006). But we also did a robust test using this modified model.

[8] For robustness test, we use staff costs, which account for about 64% of total expenditures in our sample, as a proxy for clinical service-related expenditures. We follow Marquardt and Wiedman (2004) and estimate the expected staff level as prior year cost scaled by the change in revenue. The expected staff number is estimated as prior year's number scaled by change in revenue:

$$ECN_{it} = CN_{it-1} * (TR_{it}/TR_{it-1})$$

Where ECN= expected clinical staff number; CN is clinical staff number; TR is total revenue.

Abnormal clinical staff number are calculated as actual clinical staff number less expected numbers:

$$UCN_{it} = CN_{it} - ECN_{it}$$

Where UCN is abnormal clinical staff number; CN is actual clinical staff number; ECN is expected clinical staff number.

The estimated abnormal staff cost is calculated by multiplying abmornal staff number with unit cost of staff:

$$USC_{it} = UCN_{it} * (SC_{it-1}/SN_{it-1})$$

from other providers as the signals or proxies of managing clinical-related expenditures. For purchases of health service from other providers, we follow Eldenburg et al. (2011) method and measure abnormal purchases as the deviation from prior year's purchase. Proxy for expected purchase expenditures in year t is assumed to be the expenditure in year t-1 such that the change in purchase expenditures between year t and year t-1 is the abnormal purchase expenditures. Purchase expenditures are scaled by total assets to remove the effect of trust size

The assumption behind Roychowdhury (2006) models, which are the most common method measuring REM, is that under profit maximize background expenses are spent for the purpose of generating revenue. Therefore, sale revenue is the sole driver of normal expenses. However, in public sector, especially in hospitals, clinical related expenses are not closely link with revenue. They are not only affected by income but also associated with service resources availability. For example, most common purchases cases are purchasing diagnostic test from private bodies or purchase a bulk of health care from other NHS hospitals. As these decisions largely depend on the bulky resource availability of the organisation itself, it is less likely to vary from year to year. Therefore we expect the normal level of purchases activity expenditures to be the same as prior year.

5.3 Multivariate analysis

This study models REM proxies, abnormal discretionary expenditures, as a function of proximity to pre-managed risk rating, which is derived from regulatory financial risk rating. Control variables are included to control for trust efficiency level, organizational size and complexity of discretionary expenditures and financial metrics. To control for unobservable time series effect, we include year dummy in the model. We also include the clinical negligence fee as proxy for clinical service quality, where higher fees indicate poor service quality, and investigate the effect of clinical negligence fee on relationship between abnormal non-clinical expenditure and rating. Foundation trust types and locations are also controlled for potential variation effect on earnings management (Greenwood et al. 2017). In all regressions, we clustered standard errors by trust to account for the within-trust correlations. We use random effect model to conduct following regressions[9]. The models are as follows,

(1) Non-clinical activities and pre-managed risk rating

$$DE_{it} = \alpha_1 + \alpha_2 Rating1_{it} + \alpha_3 \mathrm{ClinNeg}_{it} + \alpha_4 \mathrm{Rating} * \mathrm{ClinNeg}_{it} + \alpha_5 \Delta TR_{it} + \alpha_6 AI_{it} + \alpha_7 GR_{it} + \alpha_8 FTtype_{it} + \alpha_9 Location_{it} + \alpha_{10} SIZE_{it} + \sum_{j=0}^{j=4} \alpha_{11+j} YEAR_j + \varepsilon_{it} \quad (2)$$

Where USC is abnormal staff costs; UCN is abnormal staff number; SC is actual staff costs; SN is actual staff number.

[9] We did Hausman test (Hausman 1978) and Lagrange Multiplier test (Breusch and Pagan, 1980). We also use pooled OLS regression to do a robustness test.

(2) Clinical activities and pre-managed risk rating

$$Clinical_{it} = \alpha_1 + \alpha_2 Rating2_{it} + \alpha_3 \text{ClinNeg}_{it} + \alpha_4 \text{Rating} * \text{ClinNeg}_{it} + \alpha_5 \Delta TR_{it} + \alpha_6 AI_{it} + \alpha_7 GR_{it} + \alpha_8 FTtype_{it} + \alpha_9 Location_{it} + \alpha_{10} SIZE_{it} + \sum_{j=0}^{j=4} \alpha_{11+j} YEAR_j + \varepsilon_{it} \quad (3)$$

Where: *DE* is abnormal discretionary non-clinical expenditures, including premise costs, maintenance costs, R&D etc., scaled by total assets ; *Clinical* is abnormal clinical service purchase expenditures scaled by total assets; *Rating1 and Rating2* are derived from the pre-managed aggregate risk rating, firstly as categorical variable taking the values of 1, 2, 3 or 4 (where 4 captures a risk rating of both 4 and 5); secondly a as dummy variable taking 1 as each rating and 0 otherwise; ClinNeg is clinical negligence fee; Rating*ClinNeg is the interaction term testing the impact of clinical negligence fee on the relationship between rating and abnormal expenditures; ΔTR is change in total income scaled by lagged total assets; AI is asset turnover; GR is financial gearing that is calculated as long-term debt devided by lagged total assets; FTtype is dummy variable for different FT types including acute, mental and other; Location is dummy variable for different FT region including London, North England, South England and middle England; *SIZE* is logarithm of total revenue; *YEAR* is year dummies for the sample period.

To calculate the pre-managed risk rating, this study firstly calculates the financial performance metric using regulator's reporting risk rating framework. Financial metrics include I&E margin, EBITDA margin, Liquidity, Capital Service Capacity and Return on Assets. These metrics are adjusted to pre-managed values by adjusting for abnormal discretionary expenditures.[10] Risk ratings for each financial metric and the aggregated ratings are then generated according to the regulator's risk rating framework (as in Figure 1,2,3). Variance from plan metric has been omitted in this study due to data unavailability. The summing result is divided by percentage of all other metrics to arrive at an estimated final financial risk rating. In addition, to uniform risk rating framework from year 2010 to 2015 we combine rating 5 and rating 4 by replacing rating 5 to 4.

Further, to investigate the influence of individual component risk rating on REM when the rating is just below intervention trigging threshold, we also test the extent to which discretionary expenditures vary when the rating is just below intervention trigging threshold, for each component metric. The models are as follows,

(3) Non-clinical activities and key regulatory thresholds

$$DE_{it} = \alpha_1 + \alpha_2 IndivRate1_{it} + \alpha_3 \text{ClinNeg}_{it} + \alpha_4 \text{Rating} * \text{ClinNeg}_{it} + \alpha_5 \Delta TR_{it} + \alpha_6 AI_{it} + \alpha_7 GR_{it} + \alpha_8 FTtype_{it} + \alpha_9 Location_{it} + \alpha_{10} SIZE_{it} + \sum_{j=0}^{j=4} \alpha_{11+j} YEAR_j + \varepsilon_{it} \quad (4)$$

[10] For I&E surplus margin, EBTIDA margin, ROA margin and CSC, abnormal discretionary expenditures are added back to surplus; for liquidity metric abnormal discretionary expenditures are deducted from operating expenses.

(4) Clinical activities and key regulatory thresholds

$$Clinical_{it} = \alpha_1 + \alpha_2 IndivRate2_{it} + \alpha_3 \text{ClinNeg}_{it} + \alpha_4 \text{Rating} * \text{ClinNeg}_{it} + \alpha_5 \Delta TR_{it} + \alpha_6 AI_{it} + \alpha_7 GR_{it} + \alpha_8 FTtype_{it} + \alpha_9 Location_{it} + \alpha_{10} SIZE_{it} + \sum_{j=0}^{j=4} \alpha_{11+j} YEAR_j + \varepsilon_{it} \quad (5)$$

Where: *DE* is abnormal discretionary non-clinical expenditures, including premise costs, maintenance costs, R&D etc., scaled by total assets; *Clinical* is abnormal clinical activities expenditures scaled by total asset; *IndivRate1* and *IndivRate1* are a dummy variables which takes the value of 1 when an individual component of pre-managed performance metric rating (IEm, EBITDA, ROA, liquidity, CSC, respectively) is 2, and 0 otherwise.

The coefficients on aggregate rating and individual component ratings are all expected to be negative when pre-managed risk rating is just below regulatory thresholds, indicating discretionary expenditures management to avoid regulatory intervention[11]. The predictions for the expected signs on each of the independent variables are summarised in Figure 4.

[INSERT FIGURE 4 HERE]

5.4 Data and Sample

The financial data is collected from Laing and Buisson database. Our sample covers 147 NHS Foundation Trusts in the UK from 2011 to 2015, providing 724 sample. There are three observations with missing data which leads to a final sample of 721 trust-year observations. It drops to 697 in our multivariate analysis due to missing lagged scalar and missing control variables. The sample size reduces to 568 when choosing difference proxies for REM.

6. Findings

6.1 Descriptive statistics

Descriptive statistics of all key financial data is provided in Table 1. Table 1 Panel A shows that the mean total assets for our sample period is around £207m, ranging from around £9.49m to £1.47bn. Mean total income of our sample is around £268m, ranging from £10.6m to £1.29bn. Total expenditure mean value is £264m. Over this period, our sample has a mean surplus of £3.86m with a median of £3.98m.

Non-clinical expenditure, which consists of R&D expenditures, maintenance costs, premise costs and consultancy fee etc., has a mean of around £27m and a median of £21.6m. Clinical services purchases has a mean of £6.4m and a median of £4.5m, which account for around 2.5% of total revenue. In addition, total staff costs averages at £169m represents about 63% of total revenue.

[11] We use following method to distinguish the manipulation from normal/reasonable management following Gunny (2010): 1. We draw on the previous literature and measure the normal level of expenditures based on Roychowdbury (2006). 2. We set the risk rating 3 as base group. Our results or abnormal real activities management is focused on the group which rating just below threshold 3 and compared with the rating 3 group.

The descriptive statistics of reported financial metrics are presented in Table 1 Panel B. I&E surplus has a mean of 1.23% and median of 2.14%, while the potential intervention triggering level is 1%. EBITDA margin has a mean value of 4.36% with median of 5.1%, both of which are very close to the potential intervention triggering level of 5%. Liquidity ratio has a mean value of 12.8 days. ROA is 3.1% on average which is just above the leve of rating 3. Capital service capacity (CSC)[12] has a mean value of 1.66 with a median of 3.25, which is close to threshold rating 3.

[INSERT TABLE 1 HERE]

Table 2 presents the descriptive statistics for abnormal non-clinical expenditures and abnormal clinical service purchases, scaled by total assets and sorted by pre-managed risk ratings. Panel A shows abnormal non-clinical expenditures are -2.3% (t=-6.170) and -2.9% (t=--12.952) when risk rating is 1 and 2 respectively. When risk rating is 4, abnormal non-clinical expenditures increases to 3.3% (t=8.767). These results provide preliminary evidence that non-clinical expenditures are reduced when pre-managed risk rating is below the regulatory threshold (under 3) and are increased when pre-managed risk rating is high above the threshold (over 3). Panel B shows the results for abnormal clinical service purchases is -0.3% (t=-2.07) when risk rating is 2, and it increases to 0.4% and 0.5 % when pre-managed risk rating is 3 and 4. However, the abnormal clinical service purchases is zero when risk rating is 1, which suggest the clinical service purchases decisions are more likely to be associated with the rating just below the regulatory intervention threshold.

In Panel C and D, we compare the incidence and magnitude of positive and negative abnormal expenditure. Panel C reveals 82.5% of abnormal non-clinical expenditure when risk rating is 2 are negative, averaging at -3.9% (t=-6.46, p<0.01). Similar results are shown in risk rating 1 group. In comparison, 74.45% of abnormal non-clinical expenditures are positive when risk rating is 4 (t=6.96, p<0.01). Panel D shows abnormal clinical service purchases are 50% negative and 46.7% positive (t=-2.315, p<0.05) when pre-managed risk rating is 2. Together with the level of downward abnormal expenditure slightly higher than upwards, it provides some evidence that purchases expenditures are reduced to improve performance when risk rating is just below the intervention triggering threshold. When pre-managed risk rating is 3 and 4, there are more positive abnormal clinical service purchasing. This indicates that the quality of clinical service quality benefits from additional spending when there is little risk of potential regulatory intervention.

[INSERT TABLE 2 HERE]

To further investigate the response to financial rating targets, we analyse individual financial metrics, including IE margin, EBITDA margin, Liquidity, ROA, and CSC. Table 3 presents descriptive statistics of abnormal non-clinical expenditures (Panel A) and clinical

[12] Capital service capacity is a new financial metric in Risk Assessment Framework 2014 which measures the ability to meet financial obligations. It is easured as annual revenue available for debt divided by annual debt service. It is calculated as (Surplus after tax + finance costs + depreciation – gain on asset disposals + PDC expenses – donations of PPE)/(PDC dividend expense + finance costs + PDC repayments + loan repayments + capital element of PFI & other finance lease payments) (NEAS NHS FTs Monitor Risk Assessment Framework Summary Report 2013, pg15: https://www.neas.nhs.uk/media/68017/item_15.iii_-_report.pdf).

service purchase (Panel B)for each individual financial metric. Panel A displays significant negative abnormal expenditure of -3% when pre-managed IE margin rating is 2 and -2% when EBITD margin rating is 2. In comparison, Panel B shows clinical service purchases are only significantly negative for pre-managed IE margin risk rating 2. These results suggest that IE margin is more closely related to abnormal expenditure management.

[INSERT TABLE 3 HERE]

6.2 Multivariate analysis

Analysis of discretionary non-clinical expenditures

Table 4 Panel A presents the regression results of Equation (2) which estimates the relation between discretionary non-clinical expenditures and pre-managed risk ratings. As expected, discretionary non-clinical expenditures are significantly negative (coefficient -0.019, $p<0.01$) when pre-managed rating is 2 (Column 2). When pre-managed rating is 3 (Column 3), discretionary non-clinical expeditures are also negative, albeit with a lower magnitude (coefficient -0.09, $p<0.05$). These results indicates that non-clinical expenditures are managed downward to avoid breaching regulatory intervention threshold. When pre-managed risk rating is 4 (column 4), discretionary non-clinical expenditures are significantly positive (coefficient 0.026, $p<0.01$). This result is consistent with the incentives to protect future performance (Ballantine et al., 2007; Greenwood, Baylis and Tao, 2017). Column (5) shows a significant negative relation (coefficient -0.011, $p<0.01$) between discretionary non-clinical expenditures and pre-managed risk rating 2 in comparison to base rating 3, which provides further evidence that non-clinical expenditures are decreased more in an effort to improve financial rating when pre-managed risk rating is just below regulatory intervention triggering level.

Regarding clinical negligence fee, Results in Column 2 show that when the pre-managed rating is 2, as opposed to ratings of 1, 3, and 4, the higher clinical negligence fees reduce the negative abnormal clinical non-clinical expenses[13]. This indicates the management of abnormal non-clinical expenditures to improve risk rating is moderated by clinical service quality concern. Similar results are found in column 3 for pre-managed rating 3 and column 4 and 5 for pre-managed rating 4[14].

In addition, we find financial gearing and change in total revenues are positively related to abnormal non-clinical expenditures. We also find variation in trust types and results in column 2, 3 and 4 suggests that mental, ambulance and other trust types have higher abnormal non-clinical expenditures compared with acute trusts. In terms of location, north England has more abnormal non-clinical expenditures than London. Asset turnover and size, however, has no significant impact.

[13] For pre-managed risk rating 2 regression, when rating is 2, abNCexp is generated by -0.019+0.722ClinNeg; when rating is not 2, abNCexp is 0.

[14] For pre-managed risk rating 4 regression, when rating is 4, abNCexp is generated by 0.026-0.758ClinNeg; when rating is not 4, abNCexp is 0. So when clinical negligence fee increase, positive abnormal non-clinical expenditures are reduced to moderate the management for future performance.

Panel B displays the results for the relationship between abnormal non-clinical expenditures and individual financial metric when pre-managed rating is 2 in equation (4). We also examine the relationship between abnormal non-clinical expenditures and individual financial metric when pre-managed rating is 1 due to the assessment framework requirement that overall rating is capped at 2 if one of the metric rating is 1.

[INSERT TABLE 4 HERE]

From Panel B we can see abnormal non-clinical expenditures are significantly negative when pre-managed IE margin is rated 2 (coefficient -0.027, $p<0.01$) and when pre-managed EBITDA margin is rated 2 (coefficient -0.022, $p<0.01$). Similar results are found for IE margin, EBITDA margin when pre-managed rating is 1 (Table 4 Panel C). In addition, CSC metric is also found to be negatively related to abnormal non-clinical expenditures when it has a 1 rating. These results are consistent with our earlier findings and suggests that the incentive to manage discretionary non-clinical expenditures to avoid potential regulatory intervention are driven by the I&E surplus and EBITDA, both of which are key performance metrics for stakeholders, and CSC, which has the implication for strategic capacity of FT (Ballantine et al., 2007; Greenwood et al., 2017).

Analysis of abnormal clinical service purchases

Table 5 presents the regression results for Equation 3. Panel A estimates the relation between abnormal clinical service purchases and aggregate pre-managed risk ratings. Consistent with our expectation, abnormal clinical purchases are more negative (coefficient -0.015, $p<0.01$) when pre-managed rating is 2 (Column 2). When compared with rating 3 (column 5), abnormal purchases are also more negative (coefficient -0.013, $p<0.01$). These results support the hypothesis that clinical service purchases are managed downward to avoid breaching regulatory intervention threshold. When risk rating is 4 (column 4) , we find more positive abnormal clinical purchases (coefficient 0.007, $p<0.05$) which is in line with the incentives to protect future performance (Ballantine et al., 2007; Greenwood, Baylis and Tao, 2017).

We do not find a direct relation between clinical negligence fees and abnormal purchase expenditures. However, when pre-managed rating is 2, compared with rating 1,3 and 4, the higher clinical negligence fees reduce the negative abnormal clinical purchase expenditure [15] . This result indicates the management of abnormal clinical purchases expenditures to improve risk rating is moderated by clinical service quality concern. Similar results are found in column 5 for pre-managed rating 2 compared with rating 3 and column 4 and 5 for pre-managed rating 4[16]. We find limited variations in different FT types, locations, or sizes.

[15] For pre-managed risk rating 2 regression, when rating is 2, abPurchase is generated by -0.015+0.587ClinNeg; when rating is not 2, abPurchase is 0.

[16] For pre-managed risk rating 4 regression, when rating is 4, abPurchase is generated by 0.007-0.327ClinNeg; when rating is not 4, abPurchase is 0. So when clinical negligence fee increase, positive abnormal purchase expenditures are reduced to moderate the management for future performance.

Panel B presents the regression results for Equation (5). Results for individual financial measures, including IE margin, EBITDA margin, ROA, liquidity, and CSC, are displayed in columns (1) through (5). Abnormal service purchases are more negative when pre-managed IE margin rating is 2 (coefficient -0.011, $p<0.05$) and when pre-managed EBITDA margin is 2 (coefficient -0.008, $p<0.01$). In addition, abnormal purchase expenditures are more negative when pre-managed CSC metric rating is 2. Similar results are found in Panel C when pre-managed IE margin, EBITDA margin and CSC rating is 1. These results are consistent with our earlier findings that strategic metrics are the driving force in managing clinical service purchases (Greenwood, Baylis and Tao, 2017). Clinical service quality moderates the impact of individual metric incentives on purchases decisions but the effect is weak for IE margin and EBITDA margin ($p<0.1$), which are the healine performance metrics for vaious stakeholders.

[INSERT TABLE 5 HERE]

Analysis of abnormal staff costs

For robustness test we also use staff expenditure as a proxy for clinical expenditure when testing whether it is managed in response to low financial risk rating which could lead to regulatory intervention. Table 6 presents the regression results between abnormal staff costs and pre-managed risk rating. It can be seen in Panel A Column (2) that abnormal staff costs are more negative with a coefficient of -0.439 ($p<0.05$). Similar results are also found in Column (5) (coefficient -0.386, $p<0.05$). These results indicate that staff cost are reduced when financial risk rating is just below the regulatory intervention threshold. We find no significant evidence of abnormal staff costs management for pre-managed risk rating 1 or 3 which strengthens the regulatory intervention avoidance incentives. It is worth mentioning that there is a positive relation between abnormal staff costs and risk rating 4 which indicates abnormal staff costs are increased to reduce the risk rating for future performance incentives (Ballantine et al., 2007; Greenwood et al., 2017). As for clinical negligence fee, the interaction term shows it reduces the negative abnormal staff costs when pre-managed risk rating is 2. Asset turnover is positively related to abnormal staff cost whilst change in revenues displays a nagetive relation. We also find mental trusts have higher abnormal staff costs compared with acute trusts.

[INSERT TABLE 6 HERE]

7. Discussion and Conclusion

This study investigates how expenditures in the public sector are affected by regulatory financial targets, using NHS hopitals as the setting. We examine two types of expenditures, non-clinical expenditure and clinical expenditure, across all NHS Foundation Trusts in England from 2011 to 2015. We look at how these two kinds of expenditure respond to the regulatory financial risk rating, especially when low rating could trigger potential regulatory intervention. In line with earlier research, we discover that non-clinical abnormal spending is significantly decreased when the risk rating is just below the intervention triggering threshold. When the risk rating is well above the threshold a significant increase in

non-clinical abnormal expenditure is observed, which is consistent with contingency plans for future performance. We also find evidence that such increase/decrease is driven more by certain individual financial metric ratings, including I&E margin and EBITA margin. Surprisingly, we also find evidence of management in clinical expenditure in response to regulatory financial risk rating. Contrary to earlier work, clinical expenditure is dramatically decreased when risk rating is just below the regulatory intervention triggering level, and that it is increased when risk rating is well above the intervention triggering level. Finally, we look into the impact of clinical service quality on the management of expenditure spending in relation to risk of regulatory intervention. We find a moderation effect for both non-clinical and clinical expenditure management when trusts faced with potential intervention.

This study contributes to the relevant literature in several ways. First, it contributes to the understanding of earnings management choices in public sector and non-profit organisations, by providing empirical evidence of financial performance management in healthcare organisations through spending activities. Therefore, our results also add to the limited literature in REM in public sector and non-profit organisations. More importantly, this paper extends the scope of Eldenburg et al. (2011) by challenging their conclusions that core operating expenditures or clinical expenditures are not manipulated. Our result strengthens the importance of the tension between complying with regulatory financial targets and service quality in public sector and non-profit organisations and stimulates consideration of the competing interests of various stakeholders. Second, our findings contribute to the understanding of how regulatory monitoring is related to REM in public sector, that REM exists in public sector organisations due to the incentives resulted from regulatory financial performance monitoring. Third, our paper also strengthens our understanding of the interaction between service quality concern and financial performance monitoring in public sector. Concern over service quality moderates REM activities. Lastly, our study of NHS FTs, as representative of further NPM reform, are of great importance in contributing to the discussion on implication of accounting choices and practices under NPM movement, especially from the perspectives of public service values.

These contributions lead to the policy implications of our paper. Our findings reveal that the importance of effective financial performance monitoring in public sector as incentives to manage financial performance could result from the regulatory monitoring itself. Our findings also suggest that non-financial performance monitoring, such as service quality monitoring, could be developed more closely with financial performance monitoring to reduce the impact of financial performance management incentives. Finally, due to the growing interest in financial performance and value-for-money in public sector and non-profit organisations, our findings are crucial in advancing the conversation on the value-based public spending. It raises interesting questions from the perspectives of the notion of publicness. The findings suggest that the outcomes of public service delivery are affected by the regulatory environment. Further research into other services can help us better understand the nature of public value failure.

8. **Reference**

Anagnostopoulou, S.C. and Stavropoulou, C. (2021). Earnings management in public healthcare organizations: the case of the English NHS hospitals. Public Money & Management, 1-10.

Andrews, R., Boyne, G.A. and Walker, R.M. (2011). The dimension of publicness and organisational performance: a review of the evidence. Journal of Public Administration, Research and Theory, 21, 301-309.

Ayers, B.C., Jiang, J. and Yeung, P.E. (2006). Discretionary accruals and earnings management: An analysis of pseudo earnings targets. The Accounting Review, 81, 617-652.

Ballantine, J., Forker, J. and Greenwood, M. (2007). Earnings management in English NHS hospital trusts. Financial Accountability & Management, 23, 421-440.

Beaver, W.H., McNichols, M.F. and Nelson, K.K. (2003). Management of the loss reserve accrual and the distribution of earnings in the property-casualty insurance industry. Journal of Accounting and Economics, 35, 347-376.

Bens, D., V. Nagar, and M. F. H. Wong. (2002). Real investment implications of employee stock option exercises. Journal of Accounting Research, 40, 359–406.

Bozeman, B. (1987). *All Organizations are Public*, Washington, DC: Jossey-Bass.

Bozeman, B. (2002). Public Value Failure: When Efficient Markets May Not Do. Public Administration Review, 62, 145–61.

Bozeman, B. (2007). *Public Values and Public Interest: Counterbalancing Economic Individualism*. Washington, DC: Georgetown University Press.

Breusch, T.S. and Pagan, A.R. (1980). The Lagrange multiplier test and its applications to model specification in econometrics. The Review of Economic Studies, 47, 239-253.

Brown, K., Chen, V.Y. and Kim, M. (2015). Earnings management through real activities choices of firms near the investment–speculative grade borderline. Journal of Accounting and Public Policy, 34, 74-94.

Cheng, S. (2004). R&D expenditures and CEO compensation. Accounting Review, 79 , 305–27.

Cohen, D., Dey, A. and Lys, T. (2008). Real and accrual-based earnings management in the pre- and post-Sarbanes-Oxley periods. Accounting Review, 83, 757-787.

Cohen, D., Mashruwala, R. and Zach, T. (2010). The use of advertising activities to meet earnings benchmarks: Evidence from monthly data. Review of Accounting Studies, *15*, 808-832.

Cooper, C. (2005). Accounting for the public interest: public ineffectuals or public intellectuals? Accounting, Auditing & Accountability Journal, 18, 592-607.

de Villiers, C., Rinaldi, L. and Unerman, J. (2014). Integrated reporting: insights, gaps and an agenda for future research. Accounting, Auditing and Accountability Journal, 27, 1042-1067.

Dechow, P., Ge, W. and Schrand, C. (2010). Understanding earnings quality: A review of the proxies, their determinants and their consequences. Journal of Accounting and Economics, 50, 344-401.

Dechow, P.M., Kothari, S.P. and Watts, R.L. (1998). The relation between earnings and cash flows. Journal of Accounting and Economics, *25*, 133-168.

Eldenburg, L.G., Gunny, K.A., Hee, K.W. and Soderstrom, N. (2011). Earnings management using real activities: Evidence from nonprofit hospitals. The Accounting Review, *86*, 1605-1630.

Garven, S.A., Hofmann, M.A. and McSwain, D.N. (2016). Playing the numbers game: Program ratio management in nonprofit organizations. *Nonprofit Management and Leadership*, 26, 401-416.

Graham, J.R., Harvey, C.R. and Rajgopal, S. (2005). The economic implications of corporate financial reporting. Journal of Accounting and Economics, *40*, 3-73.

Greenwood, M.J., Baylis, R.M. and Tao, L. (2017). Regulatory incentives and financial reporting quality in public healthcare organisations. Accounting and Business Research, 47, 831-855.

Greenwood, M.J. and Tao, L. (2021). Regulatory monitoring and university financial reporting quality: Agency and resource dependency perspectives. Financial Accountability & Management, 37, 163-183.

Gunny, K.A. (2005). *What are the consequences of real earnings management?*. University of California, Berkeley.

Gunny, K.A. (2010). The relation between earnings management using real activities manipulation and future performance: Evidence from meeting earnings benchmarks. Contemporary Accounting Research, 27, 855-888.

Hausman, J.A. (1978). Specification tests in econometrics. Econometrica: Journal of the Econometric Society, 46, 1251-1271.

Health and Social Care (Community Health and Standards) Act, (2003). London: The Stationery Office. Retrieved from: http://www.legislation.gov.uk/ukpga/2003/43/contents.

Health and Social Care Act (2012). Section 105, 106,and 111. London: The stationary office.

Heese, J. (2018). The role of overbilling in hospitals' earnings management decisions. European Accounting Review, 27, 875-900.

Herrmann, D., Inoue, T. and Thomas, W.B. (2003). The sale of assets to manage earnings in Japan. Journal of Accounting Research, *41*, 89-108.

Hood, C. (1991). A Public Management for All Seasons?, Public Administration, 69, 3-19.

Hood, C. (1995). The "New Public Management" in the 1980s: Variations on a Theme, Accounting, Organizations and Society, 20, 93-109.

Hribar, P., Jenkins, N. T., & Johnson, W. B. (2006). Stock repurchases as an earnings management device. Journal of Accounting and Economics, *41*, 3-27.

Ibrahim, S., Noikokyris, E., Fabiano, G. and Favato, G. (2019). Manipulation of profits in Italian publicly-funded healthcare trusts. Public Money & Management, *39*, 428-435.

Jegers, M. (2013). Do nonprofit organisations manage earnings? An empirical study. VOLUNTAS: International Journal of Voluntary and Nonprofit Organizations, 24, 953-968.

Jones, C.L. and Roberts, A.A. (2006). Management of financial information in charitable organizations: The case of joint-cost allocations. Accounting Review, 81, 159-178.

Kallapur, S. and Eldenburg, L. (2005). Uncertainty, real options, and cost behavior: Evidence from Washington state hospitals. Journal of Accounting Research, 43, 735-752.

Keating, E.K., Parsons, L.M. and Roberts, A.A. (2008). Misreporting fundraising: How do nonprofit organizations account for telemarketing campaigns?. Accounting Review, 83, 417-446.

Khumawala, S.B., Parsons, L.M. and Gordon, T.P. (2005). TRACKS: Assessing the quality of not-for-profit efficiency ratios: Do donors use joint cost allocation disclosures?. Journal of Accounting, Auditing & Finance, 20, 287-309.

Krishnan, R. and Yetman, M.H. (2011). Institutional drivers of reporting decisions in nonprofit hospitals. Journal of Accounting Research, 49, 1001-1039.

Lapsley, I. (2008). The NPM agenda: back to the future. Financial accountability & management, 24, 77-96.

Leone, A.J. and Van Horn, R.L. (2005). How do nonprofit hospitals manage earnings?. Journal of Health Economics, 24, 815-837.

Marquardt, C.A. and Wiedman, C.I. (2004). How are earnings managed? An examination of specific accruals. Contemporary Accounting Research, 21, 461-491.

Marquardt, C. and Wiedman, C. (2005). Earnings management through transaction structuring: Contingent convertible debt and diluted earnings per share. Journal of Accounting Research, 43, 205-243.

Monitor (2009). Compliance Framework 2009/10. London. IRG 05/09.

Monitor (2013). Compliance Framework 2013/14. London. IRG 07/13.

Monitor (2015). Risk Assessment Framework 2015. London. IRG 23/15.

Moulton, S. (2009). Putting together the publicness puzzle: A framework for realized publicness. Public Administration Review, 69, 889-900.

Omer, T.C. and Yetman, R.J. (2007). Tax misreporting and avoidance by nonprofit organizations. Journal of the American Taxation Association, 29, 61-86.

Roychowdhury, S. (2006). Earnings management through real activities manipulation. Journal of Accounting and Economics, 42, 335-370.

Steccolini, I. (2019). Accounting and the post-new public management. Accounting, Auditing and Accountability Journal, 32, 255-279.

Vansant, B. (2016). Institutional pressures to provide social benefits and the earnings management behavior of nonprofits: Evidence from the US hospital industry. Contemporary Accounting Research, 33, 1576-1600.

Verbruggen, S. and Christiaens, J. (2012). Do Non-profit Organizations Manage Earnings toward Zero Profit and Does Governmental Financing Play a Role?. Canadian Journal of Administrative Sciences/Revue Canadienne des Sciences de l'Administration, 29, 205-217.

Xu, R.Z., Taylor, G.K. and Dugan, M.T. (2007). Review of real earnings management literature. Journal of Accounting Literature, 26, 195-228.

Yetman, R.J. (2001). Tax-motivated expense allocations by nonprofit organizations. Accounting Review, 76, 297-311.

Yetman, M.H. and Yetman, R.J. (2013). Do donors discount low-quality accounting information?. Accounting Review, 88, 1041-1067.

Zang, A.Y. (2012). Evidence on the trade-off between real activities manipulation and accrual-based earnings management. Accounting Review, 87, 675-703.

9. Tables

Table 1

Descriptive Statistics

Panel A. Key financial data for NHS Foundation Trusts from year 2011 to year 2015.

VARIABLES	VARIABLES	No.	Mean	Std.	Min	Median	Max	Skewness	Kurtosis
			£000	£000	£000	£000	£000		
TA	Total Assets(£000)	721	207,120	165,781	9,492	162,136	1.47E+06	2.856	15.340
TL	Total Liability(£000)	721	77,697	103,495	2,317	45,003	694,031	3.051	13.430
Inv	Inventory(£000)	721	3,225	3,703	0	2,349	20,760	1.913	7.173
STdebtor	Short term debtor(£000)	721	14,151	15,442	867	9,865	128,261	3.369	17.950
Bank	Bank(£000)	721	27,953	23,963	306	20,726	150,388	1.810	7.211
STdebt	Short term borrowing(£000)	721	1,728	3,541	-0.0125	645.2	68,528	10.250	179.000
STprov	Short term provision(£000)	721	2,054	3,145	0	1,005	54,729	7.650	113.500
TCA	Current Assets(£000)	721	45,561	37,333	2,298	34,550	272,111	2.435	10.990
LTdebt	Long term borrowing(£000)	721	39,217	82,355	0	7,786	545,877	3.379	15.230
LTprov	Long term provision(£000)	721	1,911	2,402	-0.351	1,096	20,368	3.220	18.560
LTdebtor	Long term debtor(£000)	721	1,594	5,213	0	292	58,255	7.580	70.490
TCL	Current Liability(£000)	721	35,042	28,782	2,295	26,670	188,606	2.390	9.923
TI	Total Income(£000)	721	268,140	189,087	10,583	223,958	1.29E+06	2.136	8.917
TE	Total expenditures(£000)	721	264,283	184,057	10,352	223,486	1.24E+06	2.064	8.562
NCexp	Non-clinical expenditures(£000)	721	26,991	20,858	1,535	21,623	137,589	2.289	9.693
Depr	Depreciation(£000)	721	7,633	6,171	181	6,017	45,202	2.304	10.700
Surp	Surplus(£000)	721	3,857	17,696	-239,284	3,978	125,004	-4.754	70.690
TSC	Total staff costs(£000)	721	168,881	104,676	6,802	149,716	731,269	1.802	7.850
scaClinNeg	scaled clinical negligence fee	721	0.119	0.010	0	0.013	0.069	1.271	7.080
Purchase	clinical services purchases(£000)	721	6,362	6,796	0	4,510	50,477	2.066	8.378

Panel B. Reported financial metrics in NHS FTs regulatory framework from year 2011 to year 2015.

VARIABLES	N	Mean	Std	Min	Median	Max	Skewness	Kurtosis
I&E margin	721	1.231	5.57	-71.86	2.142	14.56	-5.763	61.03
EBITDA margin	571	4.355	5.71	-67.61	5.093	17.51	-6.205	65.36
Liquidity	721	12.78	31.52	-100.2	6.896	259.1	2.156	14.97
ROA	571	3.071	7.809	-56.57	4.311	25.44	-3.44	23.68
CSC	149	1.66	22.95	-172.28	3.254	74.55	-5.44	46.44

Legend: I&E margin and liquidity for 2011-2015; EBITDA margin for 2011-2014; ROA for 2011-2014; CSC only for 2015.

Table 2
Descriptive statistics for abnormal expenditures

Panel A. Descriptive statistics for abnormal non-clinical expenditures, scaled by total assets and sorted by pre-managed risk ratings

	abnormal non-clinical expenditure							
	No.	Mean	Median	std. dev.	min	max	skewness	t-test mean=0
pre-managed rating 1	97	-0.023	-0.031	0.037	-0.090	0.068	0.458	(-6.170)***
pre-managed rating 2	171	-0.029	-0.032	0.029	-0.092	0.053	0.484	(-12.952)***
pre-managed rating 3	202	-0.005	-0.006	0.038	-0.156	0.202	1.043	(-1.884)*
pre-managed rating 4	227	0.033	0.024	0.056	-0.061	0.355	2.177	(8.767)***
total	697	-0.024	-0.045	0.16	-0.399	0.678	4.162	

Panel B. Descriptive statistics for abnormal clinical service purchases, scaled by total assets and sorted by pre-managed risk rating

	abnormal Purchases							
	No.	Mean	Median	std. dev.	min	max	skewness	t-test mean=0
pre-managed rating 1	61	0.003	0.001	0.025	-0.065	0.152	2.866	-0.828
pre-managed rating 2	122	-0.003	0.000	0.019	-0.088	0.039	-2.113	(-2.073)**
pre-managed rating 3	193	0.004	0.000	0.022	-0.099	0.134	1.596	(2.346)**
pre-managed rating 4	192	0.005	0.001	0.019	-0.095	0.107	1.432	(3.467)***
total	568	0.009	0.002	0.085	-0.347	0.432	3.781	

Panel C. Descriptive statistics for abnormal increase and decrease management of non-clinical expenditures sorting by pre-managed ratings

	abnormal non-clinical expenditure													
	Increase adj.						Decrease adj.						t-test	Total
	No.	Mean	%	median	min	max	No.	mean	%	median	min	max		No.
pre-managed rating 1	25	0.027	25.77%	0.023	0.001	0.068	72	-0.041	74.23%	-0.038	-0.09	0.000	(-2.801)***	97
pre-managed rating 2	30	0.018	17.54%	0.013	0.001	0.053	141	-0.039	82.46%	-0.038	-0.092	-0.001	(-6.462)***	171
pre-managed rating 3	74	0.03	36.63%	0.019	0.000	0.202	128	-0.026	63.37%	-0.022	-0.156	0.000	(-1.083)	202
pre-managed rating 4	169	0.05	74.45%	0.035	0.000	0.355	58	-0.019	25.55%	-0.015	-0.061	0.000	(6.955)***	227
total	298	0.125	154.39%	0.090	0.002	0.678	399	-0.125	245.61%	-0.113	-0.399	-0.001		697

Panel D. Descriptive statistics for abnormal increase and decrease management of clinical service purchases sorting by pre-managed ratings

	abnormal Purchases															
	Increase adj.						Decrease adj.						t-test	no adj.		Total
	No.	Mean	%	median	min	max	No.	mean	%	median	min	max		No.	%	No.
pre-managed rating 1	36	0.013	59.02%	0.007	0	0.152	23	-0.013	37.70%	-0.004	-0.065	0.000	-0.0018	2	3.28%	61
pre-managed rating 2	57	0.007	46.72%	0.004	0	0.039	61	-0.014	50.00%	-0.005	-0.088	-3E-05	(-2.315)**	4	3.28%	122
pre-managed rating 3	99	0.015	51.30%	0.006	0	0.134	86	-0.009	44.56%	-0.004	-0.099	-1E-05	(2.223)**	8	4.15%	193
pre-managed rating 4	116	0.012	60.42%	0.005	0	0.107	64	-0.008	33.33%	-0.003	-0.095	0.000	(1.814)*	12	6.25%	192
total	308	0.047	217.45%	0.022	0	0.432	234	-0.044	165.60%	-0.016	-0.347	0.000		26	16.95%	568

Table 3

Descriptive statistics of abnormal real expenditure management sorted by individual risk rating

Panel A. Descriptive statistics for abnormal non-clinical expenditures sorted by pre-managed individual metric ratings

		abnormal non-clinical expenditure							
		No.	Mean	Median	std. dev.	min	max	skewness	t-test mean=0
I&E margin	pre-managed rating 1	153	-0.029	-0.036	0.035	-0.090	0.068	0.618	(-10.301)***
	pre-managed rating 2	149	-0.032	-0.035	0.026	-0.156	0.053	-0.030	(-14.620)***
	pre-managed rating 3	80	-0.011	-0.014	0.018	-0.053	0.047	0.787	(-5.435)***
	pre-managed rating 4	315	0.030	0.020	0.051	-0.061	0.355	2.312	(10.240)***
		abnormal non-clinical expenditure							
		No.	Mean	Median	std. dev.	min	max	skewness	t-test mean=0
EBITDA margin	pre-managed rating 1	102	-0.033	-0.037	0.034	-0.092	0.055	0.419	(-9.977)***
	pre-managed rating 2	211	-0.022	-0.024	0.029	-0.156	0.068	0.214	(-10.681)***
	pre-managed rating 3	146	0.012	0.005	0.033	-0.05	0.202	2.203	(4.233)***
	pre-managed rating 4	94	0.059	0.042	0.059	-0.061	0.285	1.441	(9.607)***
		abnormal non-clinical expenditure							
		No.	Mean	Median	std. dev.	min	max	skewness	t-test mean=0
Liquidity	pre-managed rating 1	329	-0.006	-0.014	0.050	-0.092	0.285	2.142	(-2.219)**
	pre-managed rating 2	65	0.0005	-0.004	0.053	-0.156	0.144	0.471	-0.075
	pre-managed rating 3	88	0.002	-0.002	0.043	-0.083	0.133	0.529	-0.539
	pre-managed rating 4	215	0.005	-0.003	0.050	-0.083	0.355	2.183	-1.369
		abnormal non-clinical expenditure							
		No.	Mean	Median	std. dev.	min	max	skewness	t-test mean=0
ROA	pre-managed rating 1	58	-0.009	-0.007	0.038	-0.09	0.683	-0.037	(-1.830)*
	pre-managed rating 2	55	-0.009	-0.016	0.052	-0.089	0.202	1.574	(-1.299)
	pre-managed rating 3	102	-0.007	-0.016	0.042	-0.08	0.132	0.907	(-1.752)*
	pre-managed rating 4	338	0.003	-0.004	0.052	-0.156	0.285	1.679	(-1.137)
		abnormal non-clinical expenditure							
		No.	Mean	Median	std. dev.	min	max	skewness	t-test mean=0
CSC	pre-managed rating 1	44	-0.025	-0.029	0.036	-0.083	0.053	0.538	(-4.582)***
	pre-managed rating 2	10	-0.017	-0.014	0.024	-0.049	0.014	-0.008	(-2.279)**
	pre-managed rating 3	15	-0.025	-0.028	0.029	-0.083	0.026	-0.212	(-3.297)***
	pre-managed rating 4	75	0.021	0.015	0.057	-0.049	0.355	3.125	(3.1615)***

Panel B. Descriptive statistics for abnormal clinical service purchases sorted by pre-managed individual metric ratings

		abnormal Purchases							
		No.	Mean	Median	std. dev.	min	max	skewness	t-test mean=0
I&E margin	pre-managed rating 1	91	-0.004	0.000	0.028	-0.099	0.152	0.694	(-1.217)
	pre-managed rating 2	75	-0.003	0.000	0.015	-0.066	0.023	-2.135	(-1.700)*
	pre-managed rating 3	86	-0.001	-0.0001	0.012	-0.053	0.039	-1.143	(-0.098)
	pre-managed rating 4	316	0.006	0.0015	0.021	-0.095	0.134	2.093	(5.522)***
		abnormal Purchases							
		No.	Mean	Median	std. dev.	min	max	skewness	t-test mean=0
EBITDA margin	pre-managed rating 1	59	-0.006	0.000	0.035	-0.099	0.152	0.636	(-1.330)
	pre-managed rating 2	156	-0.001	0.000	0.011	-0.053	0.026	-1.359	(-1.560)
	pre-managed rating 3	176	0.005	0.001	0.018	-0.095	0.104	0.84	(3.712)***
	pre-managed rating 4	33	0.019	0.002	0.036	-0.017	0.134	1.847	(3.022)***
		abnormal Purchases							
		No.	Mean	Median	std. dev.	min	max	skewness	t-test mean=0
Liquidity	pre-managed rating 1	256	0.003	0.001	0.021	-0.088	0.134	0.958	(2.228)**
	pre-managed rating 2	55	0.002	-0.000	0.027	-0.073	0.152	3.034	(0.559)
	pre-managed rating 3	71	0.003	0.000	0.023	-0.045	0.107	2.409	(1.116)
	pre-managed rating 4	186	0.002	0.000	0.018	-0.099	0.083	-1.045	(1.195)
		abnormal Purchases							
		No.	Mean	Median	std. dev.	min	max	skewness	t-test mean=0
ROA	pre-managed rating 1	49	0.005	0.001	0.025	-0.065	0.152	3.652	(1.484)
	pre-managed rating 2	42	0.003	0.001	0.013	-0.044	0.039	-0.433	(1.377)
	pre-managed rating 3	88	0.009	0.001	0.025	-0.033	0.134	2.730	(3.184)***
	pre-managed rating 4	245	-0.001	0.000	0.021	-0.099	0.107	-0.719	(-0.614)
		abnormal Purchases							
		No.	Mean	Median	std. dev.	min	max	skewness	t-test mean=0
CSC	pre-managed rating 1	37	-0.002	0.0001	0.016	-0.051	0.030	-0.975	(-0.784)
	pre-managed rating 2	2	-0.001	-0.001	0.003	-0.003	0.001	0.000	(-0.578)
	pre-managed rating 3	14	-0.006	-0.002	0.016	-0.042	0.023	-0.548	(-1.502)
	pre-managed rating 4	91	0.006	0.002	0.016	-0.031	0.083	2.347	(3.732)***

Table 4

Estimation results for discretionary non-clinical expenditures and pre-managed risk rating

Panel A. How do abnormal discretionary non-clinical expenditures respond to pre-managed risk rating?

		(1)	(2)	(3)	(4)	(5)
Variables	Description	abNCexp	abNCexp	abNCexp	abNCexp	abNCexp
Rating	Pre-managed risk rating 1	-0.012				-0.009
		(0.010)				(0.010)
	Pre-managed risk rating 2		-0.019***			-0.011**
			(0.004)			(0.005)
	Pre-managed risk rating 3			-0.009**		
				(0.004)		
	Pre-managed risk rating 4				0.026***	0.022***
					(0.005)	(0.005)
ClinNeg	clinical negligence scaled by lagged total assets	-0.828	-0.850*	-0.753*	-0.328	-0.466
		(0.560)	(0.491)	(0.455)	(0.475)	(0.633)
rating#ClinNeg	Pre-managed risk rating 1	0.399				0.163
interaction effect		(0.432)				(0.490)
between pre-	Pre-managed risk rating 2		0.722***			0.32
managed risk rating			(0.218)			(0.324)
and scaled clinical	Pre-managed risk rating 3			0.440**		
negligence				(0.208)		
	Pre-managed risk rating 4				-0.758***	-0.670***
					(0.239)	(0.212)
ΔTR	change in total revenue scaled by lagged total assets	0.016**	0.016**	0.017**	0.016**	0.015**
		(0.008)	(0.007)	(0.008)	(0.007)	(0.007)
AI	asset turnover	0.004	0.007	0.004	0.007	0.009
	(total income divided by total assets)	(0.009)	(0.009)	(0.009)	(0.008)	(0.008)
GR	financial gearing	0.018**	0.018**	0.016*	0.020**	0.022***
	(long term debt scaled by lagged total assets)	(0.008)	(0.009)	(0.008)	(0.008)	(0.008)
FT type	Mental FTs	0.019	0.022**	0.024**	0.021**	0.020
base group: Acute FTs		(0.012)	(0.011)	(0.011)	(0.011)	(0.012)
	other FTs (include Ambulance, communities, etc.)	0.023	0.026*	0.026*	0.024	0.022
		(0.016)	(0.016)	(0.015)	(0.015)	(0.015)
Location	Midland England	-0.013	-0.011	-0.011	-0.008	-0.009
base group: London		(0.010)	(0.010)	(0.010)	(0.009)	(0.009)
	North England	-0.025***	-0.024***	-0.024***	-0.022***	-0.022***
		(0.009)	(0.009)	(0.009)	(0.008)	(0.008)
	South England	-0.012	-0.011	-0.011	-0.008	-0.008
		(0.012)	(0.012)	(0.012)	(0.011)	(0.011)
lnSIZE	logarithm of total assets	-0.003	0.001	0.000	0.003	0.002
		(0.007)	(0.007)	(0.007)	(0.006)	(0.006)
Constant		0.039	-0.014	0.002	-0.047	-0.035
		(0.090)	(0.083)	(0.085)	(0.077)	(0.084)
Observations		697	697	697	697	697
Number of Trust		147	147	147	147	147
Year		Yes	Yes	Yes	Yes	Yes
R-square		0.250	0.283	0.258	0.371	0.385

Legend: Cluster robust standard errors in parentheses.

Dependent variable: abNCexp is abnormal non-clinical expenditures

***p<0.01

**p<0.05

*p<0.1

Panel B. How do abnormal non-clinical expenditures respond to each individual pre-managed financial metric rating of 2?

		(1)	(2)	(3)	(4)	(5)
Variables	Description	abNCexp	abNCexp	abNCexp	abNCexp	abNCexp
RateIE_adj2	IE margin rating =1 when pre-managed IE	-0.027***				
	margin rating is 2, =0 otherwise	(0.005)				
RateEBITDA_adj2	EBITDA margin rating =1 when pre-managed		-0.022***			
	EBITDA margin rating is 2, =0 otherwise		(0.006)			
RateROA_adj2	ROA rating =1 when pre-managed ROA margin			0.009		
	rating is 2, =0 otherwise			(0.009)		
RateLIQ_adj2	Liquidity rating =1 when pre-managed liquidity				0.000	
	rating is 2, =0 otherwise				(0.007)	
RateCSC_adj2	CSC rating =1 when pre-managed CSC rating is					-0.018
	2, =0 otherwise					(0.014)
scaClinNeg	clinical negligence	-0.885*	-1.103*	-0.851	-0.733	-0.695
	scaled by lagged total assets	(0.510)	(0.668)	(0.645)	(0.481)	(0.636)
rating#ClinNeg: interaction effect between pre-managed risk rating and scaled clinical negligence	pre-managed IE margin rating	1.113***				
		(0.274)				
	pre-managed EBITDA margin rating		0.911**			
			(0.364)			
	pre-managed ROA rating			-0.448		
				(0.419)		
	pre-managed Liquidity rating				-0.012	
					(0.347)	
	pre-managed CSC rating					-0.208
						(0.840)
ΔTR	change in total revenue	0.016**	0.022***	0.023***	0.017**	-0.049
	scaled by lagged total assets	(0.007)	(0.007)	(0.008)	(0.008)	(0.033)
AI	asset turnover	0.007	0.004	0.001	0.004	0.017
	(total income divided by total assets)	(0.009)	(0.010)	(0.009)	(0.009)	(0.017)
GR	financial gearing	0.015*	0.015*	0.015*	0.016*	0.046**
	(long term debt scaled by lagged total assets)	(0.008)	(0.008)	(0.008)	(0.008)	(0.019)
lnSIZE	logarithm of total assets	0.003	0.004	0.000	-0.001	0.007
		(0.006)	(0.007)	(0.007)	(0.007)	(0.009)
FT type base group: Acute FTs	Mental FTs	0.023**	0.024*	0.020	0.022**	0.025*
		(0.011)	(0.013)	(0.014)	(0.011)	(0.015)
	other FTs	0.027*	0.020	0.018	0.025	0.053**
	(include Ambulance, communities, etc.)	(0.016)	(0.014)	(0.014)	(0.016)	(0.021)
Location basegroup: London	Midland England	-0.011	-0.010	-0.012	-0.012	-0.019
		(0.010)	(0.010)	(0.010)	(0.010)	(0.012)
	North England	-0.023***	-0.021**	-0.023**	-0.025***	-0.036***
		(0.009)	(0.010)	(0.010)	(0.009)	(0.011)
	South England	-0.010	-0.011	-0.013	-0.012	-0.003
		(0.012)	(0.011)	(0.012)	(0.012)	(0.015)
Constant		-0.032	-0.035	0.005	0.020	-0.098
		(0.083)	(0.086)	(0.087)	(0.084)	(0.119)
Observations		697	553	553	697	144
R-squared		0.301	0.362	0.283	0.238	0.264
Number of Trust		147	145	145	147	144
Year		Yes	Yes	Yes	Yes	No

Legend: Cluster robust standard errors in parentheses.
Dependent variable: abNCexp is abnormal non-clinical expenditures
***p<0.01
**p<0.05
*p<0.1

Panel C. How do abnormal non-clinical expenditures respond to each individual pre-managed financial metric rating of 1?

		(1)	(2)	(3)	(4)	(5)
Variables	Description	abNCexp	abNCexp	abNCexp	abNCexp	abNCexp
RateIE_adj1	IE margin rating =1 when pre-managed IE	-0.034***				
	margin rating is 1, =0 otherwise	(0.010)				
RateEBITDA_adj1	EBITDA margin rating =1 when pre-managed		-0.038***			
	EBITDA margin rating is 1, =0 otherwise		(0.010)			
RateROA_adj1	ROA rating =1 when pre-managed ROA			-0.009		
	margin rating is 1, =0 otherwise			(0.010)		
RateLIQ_adj1	Liquidity rating =1 when pre-managed				-0.008	
	liquidity rating is 1, =0 otherwise				(0.009)	
RateCSC_adj1	CSC rating =1 when pre-managed CSC rating					-0.051***
	is 1, =0 otherwise					(0.016)
scaClinNeg	clinical negligence	-0.47	-0.416	-0.34	-0.558	-1.233
	scaled by lagged total assets	(0.604)	(0.602)	(0.574)	(0.609)	(0.841)
rating#ClinNeg: interaction effect between pre-managed risk rating and scaled clinical negligence	pre-managed IE margin rating	0.620				
		(0.595)				
	pre-managed EBITDA margin rating		0.707			
			(0.534)			
	pre-managed ROA rating			0.554		
				(0.599)		
	pre-managed Liquidity rating				0.360	
					(0.446)	
	pre-managed CSC rating					2.070**
						(0.952)
ΔTR	change in total revenue	0.032***	0.037***	0.041***	0.034***	-0.037
	scaled by lagged total assets	(0.009)	(0.010)	(0.010)	(0.009)	(0.028)
AI	asset turnover	0.002	-0.002	-0.010	-0.002	0.021
	(total income divided by total assets)	(0.009)	(0.008)	(0.009)	(0.009)	(0.015)
GR	financial gearing	0.040***	0.038***	0.034***	0.038***	0.054***
	(long term debt scaled by lagged total assets)	(0.013)	(0.012)	(0.012)	(0.013)	(0.018)
lnSIZE	logarithm of total assets	0.007	0.007	0.012*	0.012*	0.005
		(0.006)	(0.006)	(0.006)	(0.007)	(0.008)
FT type base group: Acute FTs	Mental FTs	0.027**	0.030**	0.036***	0.034***	0.017
		(0.013)	(0.013)	(0.013)	(0.013)	(0.016)
	other FTs	0.025*	0.017	0.023*	0.029*	0.053**
	(include Ambulance, communities, etc.)	(0.014)	(0.013)	(0.013)	(0.015)	(0.022)
Location basegroup: London	Midland England	-0.012	-0.013	-0.012	-0.011	-0.019
		(0.009)	(0.010)	(0.010)	(0.010)	(0.012)
	North England	-0.022***	-0.021**	-0.020**	-0.022**	-0.030***
		(0.008)	(0.009)	(0.010)	(0.009)	(0.011)
	South England	-0.009	-0.013	-0.011	-0.009	-0.003
		(0.010)	(0.010)	(0.010)	(0.011)	(0.015)
Constant		-0.089	-0.088	-0.145*	-0.145	-0.072
		(0.085)	(0.085)	(0.086)	(0.089)	(0.117)
Observations		697	553	553	697	144
R-squared		0.271	0.305	0.262	0.238	0.306
Year		Yes	Yes	Yes	Yes	No

Legend: Cluster robust standard errors in parentheses.
Dependent variable: abNCexp is abnormal non-clinical expenditures
***p<0.01
**p<0.05
*p<0.1

Table 5

Estimation results for abnormal clinical service purchases and pre-managed risk rating

Panel A. How do abnormal clinical service purchases react to pre-managed risk rating?

		(1)	(2)	(3)	(4)	(5)
Variables	Description	abPurchase	abPurchase	abPurchase	abPurchase	abPurchase
Rating	Pre-managed risk rating 1	0.006				0.004
		(0.011)				(0.012)
	Pre-managed risk rating 2		-0.015***			-0.013***
			(0.004)			(0.005)
	Pre-managed risk rating 3			0.002		
				(0.004)		
	Pre-managed risk rating 4				0.007**	0.003
					(0.003)	(0.004)
ClinNeg	clinical negligence	0.035	-0.110	0.076	0.103	-0.048
	scaled by lagged total assets	(0.106)	(0.099)	(0.130)	(0.102)	(0.127)
rating#ClinNeg	Pre-managed risk rating 1	-0.2				-0.156
interaction effect		(0.450)				(0.489)
between pre-managed	Pre-managed risk rating 2		0.587***			0.520**
risk rating and scaled			(0.173)			(0.205)
clinical negligence	Pre-managed risk rating 3			-0.115		
				(0.189)		
	Pre-managed risk rating 4				-0.327**	-0.167
					(0.161)	(0.187)
ΔTR	change in total revenue	0.020***	0.019***	0.020***	0.020***	0.019***
	scaled by lagged total assets	(0.006)	(0.005)	(0.006)	(0.006)	(0.005)
AI	asset turnover	-0.004	-0.003	-0.004	-0.003	-0.002
	(total income divided by total assets)	(0.003)	(0.002)	(0.003)	(0.003)	(0.003)
GR	financial gearing	-0.004	-0.003	-0.004	-0.003	-0.003
	(long term debt scaled by lagged total assets)	(0.003)	(0.003)	(0.002)	(0.003)	(0.003)
FT type	Mental FTs	0.001	0.000	0.001	0.000	0.000
base group: Acute FTs		(0.002)	(0.002)	(0.002)	(0.003)	(0.002)
	other FTs	-0.001	-0.003	-0.001	-0.003	-0.003
	(include Ambulance, communities, etc.)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Location	Midland England	0.003	0.004	0.003	0.003	0.004
base group: London		(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
	North England	0.004	0.004*	0.004	0.003	0.004
		(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
	South England	0.001	0.001	0.001	0.001	0.001
		(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
lnSIZE	logarithm of total assets	0.000	0.005	0.005	-0.002	0.000
		(0.018)	(0.018)	(0.018)	(0.017)	(0.020)
Observations		568	568	568	568	568
R-squared		0.104	0.135	0.103	0.112	0.137
Year		Yes	Yes	Yes	Yes	Yes
Number of trusts		147	147	147	147	147

Legend: Cluster robust standard errors in parentheses.

Dependent variable: abPurchase is abnormal clinical services purchases

***p<0.01

**p<0.05

*p<0.1

Panel B. How do abnormal clinical service purchases respond to each individual pre-managed financial metric rating of 2?

		(1)	(2)	(3)	(4)	(5)
Variables	Description	abPurchases	abPurchases	abPurchases	abPurchases	abPurchases
RateIE_adj2	IE margin rating =1 when pre-managed IE margin	-0.011**				
	rating is 2, =0 otherwise	(0.005)				
RateEBITDA_adj2	EBITDA margin rating =1 when pre-managed		-0.008***			
	EBITDA margin rating is 2, =0 otherwise		(0.003)			
RateROA_adj2	ROA rating =1 when pre-managed ROA margin			-0.002		
	rating is 2, =0 otherwise			(0.004)		
RateLIQ_adj2	Liquidity rating =1 when pre-managed liquidity				0.007	
	rating is 2, =0 otherwise				(0.007)	
RateCSC_adj2	CSC rating =1 when pre-managed CSC rating is 2,					-0.012***
	=0 otherwise					(0.003)
scaClinNeg	clinical negligence scaled by lagged total assets	-0.031	-0.032	0.010	0.097	0.018
		(0.110)	(0.127)	(0.113)	(0.092)	(0.159)
rating#ClinNeg: interaction effect between pre-managed risk rating and scaled clinical negligence	pre-managed IE margin rating	0.427*				
		(0.220)				
	pre-managed EBITDA margin rating		0.263*			
			(0.151)			
	pre-managed ROA rating			0.166		
				(0.176)		
	pre-managed Liquidity rating				-0.558*	
					(0.309)	
	pre-managed CSC rating					0.329**
						(0.131)
ΔTR	change in total revenue	0.020***	0.020***	0.021***	0.020***	0.014*
	scaled by lagged total assets	(0.005)	(0.006)	(0.006)	(0.006)	(0.008)
AI	asset turnover	-0.003	-0.004	-0.005*	-0.004	0.000
	(total income divided by total assets)	(0.003)	(0.003)	(0.003)	(0.003)	(0.005)
GR	financial gearing	-0.003	-0.002	-0.002	-0.004	-0.007
	(long term debt scaled by lagged total assets)	(0.002)	(0.003)	(0.003)	(0.002)	(0.006)
lnSIZE	logarithm of total assets	0.000	0.000	0.000	0.000	-0.000
		(0.001)	(0.002)	(0.002)	(0.001)	(0.003)
FT type base group: Acute FTs	Mental FTs	0.001	0.001	0.000	0.001	0.003
		(0.003)	(0.003)	(0.003)	(0.002)	(0.005)
	other FTs	-0.002	-0.002	-0.001	-0.002	-0.004
	(include Ambulance, communities, etc.)	(0.003)	(0.003)	(0.003)	(0.003)	(0.005)
Location basegroup: London	Midland England	0.003	0.002	0.002	0.002	0.006
		(0.002)	(0.002)	(0.003)	(0.002)	(0.006)
	North England	0.003	0.004	0.004*	0.003	0.000
		(0.002)	(0.002)	(0.002)	(0.002)	(0.005)
	South England	0.001	0.000	0.002	0.001	-0.001
		(0.003)	(0.003)	(0.003)	(0.003)	(0.005)
Constant		0.006	0.007	0.003	0.004	0.005
		(0.018)	(0.021)	(0.021)	(0.017)	(0.039)
Observations		568	424	424	568	144
R-squared		0.115	0.135	0.123	0.109	0.042
Year control		Yes	Yes	Yes	Yes	No

Legend: Cluster robust standard errors in parentheses.
Dependent variable: abPurchase is abnormal clinical services purchases
***p<0.01
**p<0.05
*p<0.1

Panel C. How do abnormal clinical service purchases respond to each individual pre-managed financial metric rating of 1?

		(1)	(2)	(3)	(4)	(5)
Variables	Description	abPurchase	abPurchase	abPurchase	abPurchase	abPurchase
RateIE_adj1	IE margin rating =1 when pre-managed	-0.012**				
	IE margin rating is 1, =0 otherwise	(0.005)				
RateEBITDA_adj1	EBITDA margin rating =1 when pre-		-0.018**			
	managed EBITDA margin rating is 1, =0		(0.008)			
RateROA_adj1	ROA rating =1 when pre-managed ROA			0.009		
	margin rating is 1, =0 otherwise			(0.011)		
RateLIQ_adj1	Liquidity rating =1 when pre-managed				-0.002	
	liquidity rating is 1, =0 otherwise				(0.002)	
RateCSC_adj1	CSC rating =1 when pre-managed CSC					-0.014**
	rating is 1, =0 otherwise					(0.005)
scaClinNeg	clinical negligence	-0.047	-0.003	0.054	-0.131	-0.081
	scaled by lagged total assets	(0.116)	(0.114)	(0.117)	(0.126)	(0.160)
rating#ClinNeg: interaction effect between pre-managed risk rating and scaled clinical negligence	pre-managed IE margin rating	0.413*				
		(0.232)				
	pre-managed EBITDA margin rating		0.838**			
			(0.395)			
	pre-managed ROA rating			-0.262		
				(0.524)		
	pre-managed Liquidity rating				0.255**	
					(0.117)	
	pre-managed CSC rating					0.484*
						(0.283)
ΔTR	change in total revenue	0.019***	0.019***	0.021***	0.020***	0.014*
	scaled by lagged total assets	(0.006)	(0.006)	(0.006)	(0.006)	(0.008)
AI	asset turnover	-0.003	-0.004	-0.005*	-0.004	0.000
	(total income divided by total assets)	(0.003)	(0.003)	(0.003)	(0.003)	(0.005)
GR	financial gearing	-0.003	-0.002	-0.003	-0.004*	-0.004
	(long term debt scaled by lagged total asset	(0.003)	(0.003)	(0.003)	(0.003)	(0.007)
lnSIZE	logarithm of total assets	0.000	0.000	0.001	0.000	-0.001
		(0.001)	(0.002)	(0.002)	(0.001)	(0.003)
FT type base group: Acute FTs	Mental FTs	0.000	0.002	0.000	0.000	0.003
		(0.003)	(0.003)	(0.003)	(0.002)	(0.005)
	other FTs	-0.003	-0.001	-0.001	-0.002	-0.004
	(include Ambulance, communities, etc.)	(0.003)	(0.003)	(0.003)	(0.002)	(0.005)
Location basegroup: London	Midland England	0.003	0.001	0.002	0.003	0.005
		(0.002)	(0.003)	(0.002)	(0.002)	(0.006)
	North England	0.003	0.004	0.004*	0.004	0.000
		(0.002)	(0.003)	(0.002)	(0.002)	(0.005)
	South England	0.001	0.002	0.001	0.001	-0.002
		(0.003)	(0.003)	(0.003)	(0.003)	(0.005)
Constant		0.01	0.004	-0.003	0.003	0.013
		(0.019)	(0.024)	(0.021)	(0.017)	(0.039)
Observations		568	424	424	568	144
R-squared		0.118	0.147	0.128	0.106	0.092
Year		Yes	Yes	Yes	Yes	No

Legend: Cluster robust standard errors in parentheses.
Dependent variable: abPurchase is abnormal clinical services purchases
***p<0.01
**p<0.05
*p<0.1

Table 6

Estimation results for abnormal staff costs and pre-managed risk rating

		(1)	(2)	(3)	(4)	(5)
Variables	Description	abSTAFF	abSTAFF	abSTAFF	abSTAFF	abSTAFF
Rating	Pre-managed risk rating 1	0.030				-0.026
		(0.168)				(0.155)
	Pre-managed risk rating 2		-0.439**			-0.386**
			(0.175)			(0.167)
	Pre-managed risk rating 3			0.072		
				(0.076)		
	Pre-managed risk rating 4				0.248***	0.103
					(0.087)	(0.075)
ClinNeg	clinical negligence	4.681*	0.138	4.391	5.304*	1.161
	scaled by lagged total assets	(2.591)	(2.743)	(2.906)	(2.911)	(2.716)
rating#ClinNeg	Pre-managed risk rating 1	-3.469				-1.160
interaction effect		(5.875)				(5.741)
between pre-	Pre-managed risk rating 2		10.954**			9.754*
managed risk rating			(5.150)			(5.196)
and scaled clinical	Pre-managed risk rating 3			-2.152		
negligence				(3.047)		
	Pre-managed risk rating 4				-2.208	1.074
					(2.690)	(2.875)
ΔTR	change in total revenue scaled by lagged total assets	-1.602***	-1.572***	-1.596***	-1.608***	-1.574***
		(0.552)	(0.522)	(0.545)	(0.542)	(0.529)
AI	asset turnover	0.331***	0.346***	0.317***	0.354***	0.364***
	(total income divided by total assets)	(0.124)	(0.118)	(0.114)	(0.121)	(0.124)
GR	financial gearing	0.069	0.056	0.060	0.080	0.071
	(long term debt scaled by lagged total assets)	(0.073)	(0.073)	(0.074)	(0.075)	(0.073)
FT type	Mental FTs	0.218**	0.165*	0.214**	0.205**	0.159*
base group: Acute FTs		(0.107)	(0.093)	(0.098)	(0.096)	(0.095)
	other FTs (include Ambulance, communities, etc.)	-0.131*	-0.159*	-0.124	-0.167*	-0.197**
		(0.079)	(0.092)	(0.079)	(0.085)	(0.094)
Location	Midland England	-0.052	-0.073	-0.046	-0.058	-0.077
base group: London		(0.060)	(0.065)	(0.060)	(0.063)	(0.067)
	North England	-0.054	-0.066	-0.047	-0.068	-0.075
		(0.064)	(0.066)	(0.062)	(0.067)	(0.069)
	North West England	-0.141	-0.160*	-0.138	-0.139	-0.161*
		(0.089)	(0.091)	(0.086)	(0.087)	(0.092)
	South England	0.090	0.096*	0.090	0.103*	0.090
		(0.061)	(0.057)	(0.056)	(0.058)	(0.063)
lnSIZE	logarithm of total assets	0.090	0.096*	0.090	0.103*	0.090
		(0.061)	(0.057)	(0.056)	(0.058)	(0.063)
Constant		-1.410*	-1.359*	-1.410*	-1.670**	-1.336
		(0.824)	(0.732)	(0.738)	(0.791)	(0.825)
Observations		568	568	568	568	568
Number of Trust		147	147	147	147	147
R-squared		0.332	0.354	0.332	0.345	0.359
Year		Yes	Yes	Yes	Yes	Yes

Legend: Cluster robust standard errors in parentheses.

Dependent variable: abSTAFF is abnormal clinical staff costs.

***p<0.01

**p<0.05

*p<0.1

10.Figures

Figure 1. The component metrics of financial star rating for NHS Foundation Trust under Compliance Framework.

Financial criteria	Metric to be scored	Weight %	Risk Rating[17]				
			1	2	3	4	5
Financial efficiency	I&E surplus margin net of dividend[18] (%)	20	<-2	-2	1	2	3
	Return on assets excluding dividend[19] (%)	20	<-2	-2	3	5	6
Underlying performance	EBITDA margin[20] (%)	25	<1	1	5	9	11
Liquidity	Liquidity ratio (days)[21]	25	<10	10	15	25	60
Achievement of plan	EBITDA% of plan	10	<50	50	70	85	100

(Source: Compliance framework 2009/10 and 2011/12)

[17] Weighted average of financial criterial scores, with rating 1 representing lowest risk and rating 5 representing highest risk.

[18] Income and expenditure surplus as a percentage of total revenue.

[19] In 2010, it is calculated as income and expenditure surplus (after deducting finance cost but before dividend for public dividend capital) divided by equity plus debt. In March 2011, Compliance framework 2011/12 changes return on asset to return on capital employed, calculated as EBIT divided by (fixed assets plus current assets minus current liabilities).

[20] Earnings before interest, tax, depreciation, and amortisation as a percentage of total revenue.

[21] Cash plus trade debtors (including accrued income) plus unused working capital facility minus (trade creditors plus other creditors plus accruals) as expressed as the number of days of operating expenses (excluding depreciation).

Figure 2. The component metrics of financial star rating for NHS Foundation Trust under revised Compliance Framework[22].

Financial criteria	Metric to be scored	Weight %	Risk Rating				
			1	2	3	4	5
Financial efficiency	I&E surplus margin net of dividend (%)	20	<-2	-2	1	2	3
	Net return after financing[23] (%)	20	<-5	-5	-0.5	2	3
Underlying performance	EBITDA margin (%)	25	<1	1	5	9	11
Liquidity	Liquidity ratio (days)	25	<10	10	15	25	60
Achievement of plan	EBITDA% of plan	10	<50	50	70	85	100

(Source: Compliance framework 2013/14 March 28th 2013)

[22] Monitor published revised Compliance Framework 2012/13 until replaced by new Risk Assessment Framework from Oct. 2013.

[23] (Income and expenditure surplus less PDC dividend, interest, PFI financing and other financial lease costs) divided by (total debt plus total balance sheet PFI and finance leases plus taxpayers' equity).

Figure 3. The component metrics of financial risk rating for NHS Foundation Trust under Risk Assessment Framework

Financial criteria	Metric to be scored	Weight %	Risk Rating[24]			
			1	2	3	4
Financial efficiency	I&E surplus margin (%)	25	≤-1	-1	0	1
	Variance in I&E margin as a % of income	25	≤-2	-2	-1	0
Continuity of services	Capital service capacity (times)[25]	25	<1.25	1.25	1.75	2.5
	Liquidity (days)	25	<-14	-14	-7	0

(Source: Risk Assessment Framework 2015)

[24] Rating 1 reprents highest risk and rating 4 represents lowest risk.

[25] Annual revenue available for debt divided by annual debt service.

Figure 4 Predicted signs of coefficients on independent variables.

Independent variables	Description		Hypothesis	Expected sign
Rating1/2	Pre-managed aggregate financial risk rating	1	No additional discretionary expenditures management	
		2	Discretionary expenditures will be reduced when pre-managed rating is below regulatory threshold to avoid intervention.	-ve
		3	No additional discretionary expenditures management	
		4	No additional discretionary expenditures management	
		5	No additional discretionary expenditures management	
IndivRate1/2	=1 for pre-managed IE ratings is 2, =0 otherwise		Discretionary expenditures will be reduced when pre-managed IE rating is 2 compared with others.	-ve
	=1 for pre-managed EBITDA rating is 2, =0 otherwise		Discretionary expenditures will be reduced when pre-managed EBITDA rating is 2 compared with others.	-ve
	=1 for pre-managed ROA rating is 2, =0 otherwise		Discretionary expenditures will be reduced when pre-managed ROA rating is 2 compared with others.	-ve
	=1 for pre-managed LIQ rating is 2, =0 otherwise		Discretionary expenditures will be reduced when pre-managed liquidity rating is 2 compared with others.	-ve
	=1 for pre-managed CSC rating is 2, =0 otherwise		Discretionary expenditures will be reduced when pre-managed CSC rating is 2 compared with others.	-ve