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Abstract

Purpose–Hospitals' corporate governance (CG) mechanisms oversee critical operational issues and evaluate the outcomes. This paper investigates the impact of CG (i.e. board size, board independence, board expertise, board meetings, board gender diversity, CEO gender, and academic directors) on the financial performance of English National Health Service (NHS) hospitals and separately by hospital type (i.e. trusts and foundation trusts).

Design/methodology/approach–The sample includes 128 NHS hospitals. The data were collected through document analysis and archival work from annual hospital reports from 2014 to 2018.

Findings–The findings indicate that board expertise, board meetings, board diversity, CEO gender, and academic directors significantly and negatively affect NHS hospitals' financial performance. For NHS trusts, the results reveal that board expertise, board diversity, and CEO gender have a significant negative effect, while for NHS foundation trusts, only CEO gender has a significant negative impact.

Originality/value–Overall, this study contributes to the literature on the healthcare system. It holds significant practical implications for hospital governance and has important implications for theories.

Keywords: Corporate governance, financial performance, National Health Service, hospitals, trusts and foundation trusts.

1. Introduction

The National Health Service (NHS) is the umbrella body that provides universal health services in the United Kingdom (UK) (Drummond-Hay and Bamford, 2009). In this paper, we aim to examine the impact of corporate governance (CG) mechanisms, focusing on board attributes, on England NHS hospitals' financial performance. The primary objective of the NHS is to deliver the highest quality health and care service, but there is also a secondary objective of balancing its finances (NHS Improvement, 2016). Ensuring sound financial performance is vital for the sustainable operation of hospitals, making it a significant concern for hospitals (Chen *et al.*, 2021). In this regard, good governance is a pivotal contributor to the financial health of hospitals (Murray *et al.*, 2014; Afriyie *et al.*, 2020; Agnihotri and Arora, 2021). Whether hospital boards influence financial outcomes is important (Chen *et al.*, 2021; Aly *et al.*, 2023). Especially since hospital performance is under growing scrutiny due to economic pressures and legislative changes (Aly *et al.*, 2023).

Although hospital boards are tasked with financial oversight to benefit stakeholders (Chen *et al.*, 2021), evidence of their effectiveness within the NHS is limited and mixed (Mannion *et al.*, 2015). The results from the few studies identified are mixed. For example, some results suggest that the presence of medical staff and hospital CEOs on hospital boards results in higher operating margins (Goes and Zhan, 1995; Molinari *et al.*, 1995), improved financial performance (Molinari *et al.*, 1993) and financial resource management (Veronesi *et al.*, 2014). Other studies, however, indicate that clinicians' involvement on boards results in lower efficiency (Succi and Alexander, 1999), higher operating costs (Goes and Zhan, 1995), and negative financial performance of hospitals (Chen *et al.*, 2021).

Besides the contradictory nature of the studies, they are also mainly based on United States (US) data (Molinari *et al.*, 1993; Goes and Zhan, 1995; Molinari *et al.*, 1995). Notable exceptions include studies conducted in Ghana (Abor, 2015), Germany (Kuntz and Scholtes, 2013), Taiwan (Chen *et al.*, 2021), and the UK (Veronesi *et al.*, 2013; Veronesi *et al.*, 2014; Aly *et al.*, 2023). The disproportionate concentration on the US context is restrictive because of the differences in the regulatory framework and competitive nature of hospitals in the US compared to other countries (Goes and Zhan, 1995). For example, the US is one of only two countries in the OECD without a universal healthcare system (Kumar *et al.*, 2011). The competitive nature of US hospitals is also in marked contrast to the UK, which has a universal health service funded by taxpayers. Therefore, the findings from US studies may not be generalised to other countries, such as the UK.

Given that, and due to the conflict in objectives of providing the highest quality of healthcare while maintaining financial balance, as well as the concerns regarding governance failures in NHS hospitals (Prowle and Harradine, 2014), it is not clear whether hospital boards will be effective in influencing financial outcomes. In this paper, we bridge this gap in the literature by organising empirical research around the following question:

RQ1. What is the impact of corporate governance mechanisms on NHS hospitals' financial performance?

This study further examines the impact of CG separately for NHS trusts and foundation trusts, because of their governance and financial differences. For instance, NHS trusts are governed by a unitary board of directors (Hodges *et al.*, 2004), while the foundation trusts have a two-tier structure consisting of a board of directors and a board of governors accountable to the local community (Wright *et al.*, 2012). Furthermore, foundation trusts benefit from more autonomy and reduced accountability to the central NHS (Hoque *et al.*, 2004). In contrast, NHS trusts are directly accountable to the Secretary of State and must balance their budgets annually (Ballantine *et al.*, 2008).

Using a sample of 128 English NHS hospitals from 2014 to 2018, our findings indicate that board expertise, board meetings, board diversity, CEO gender, and academic directors significantly negatively affect financial performance. After splitting the sample, the results reveal that board expertise, board diversity, and CEO gender have a significant negative effect on NHS trusts' financial performance. The results also show that, for NHS foundation trusts, only CEO gender has a significant negative impact.

We contribute to the existing literature in three ways. *First,* our results provide new evidence on the CG-financial performance nexus in the UK, which remains largely unexplored except for Aly *et al.* (2023), Veronesi *et al.* (2013), and Veronesi *et al.* (2014). Unlike Veronesi *et al.* (2014), who focus only on clinicians on boards, our study considers several board attributes. The current study also differs from Aly *et al.* (2023), which is based on one year's data and restricted to foundation trusts. We have covered five years and investigated foundation trusts and trusts hospitals. *Second,* our findings show, for the first time, that most CG mechanisms significantly negatively affect financial performance, suggesting that NHS boards may prioritise quality health services over financial balance. *Finally,* our results show that the "one size fits all" CG model from private institutions may harm public hospital

performance, as NHS hospitals have adopted the private sector's Anglo-Saxon unitary board model (Chambers, 2012).

The rest of the paper is organised as follows. Section 2 is the theoretical framework and hypotheses development. Section 3 presents the methodology, and the findings and conclusion are found in Sections 4 and 5, respectively.

2. Literature Review and Hypotheses Development

2.1 Theoretical framework

This paper employs stakeholder-agency, resource dependency, and upper-echelon theories. Building on prior studies applying agency theory (e.g., Salehi *et al.*, 2021; Kasbar *et al.*, 2022) and resource dependency theory (e.g., Salehi and Hassanzadeh, 2024), our study uses the stakeholder-agency theory, which combines agency and stakeholder theories' arguments. This theory suggests that the firm is a nexus of contracts between resource holders, encompassing contracts between all stakeholders (Hill and Jones, 1992). Stakeholders, in this case, are perceived as those with a legitimate claim on the hospitals and can affect or be affected by their activities. As the agents of the stakeholders, the managers are held responsible for making strategic decisions and allocating resources by stakeholder claims (Hill and Jones, 1992). In most cases, the claims of stakeholders and managers can diverge, leading to conflicts (Hill and Jones, 1992), which can be managed using institutional structures such as the board of directors (Alta'any *et al.*, 2024).

The upper echelons theory explains the link between top management's characteristics and hospital performance. According to Hambrick and Mason (1984), outcomes, strategic choices and performance of organisations are, to an extent, predicted by the characteristics of top managers. The theory is grounded in the assumption that understanding top management's dispositions, experiences, values, and attributes gives insight into their choices, which subsequently affect performance (Hambrick and Mason, 1984). Moreover, the discretion allowed to the managers in their strategic choices and decision-making affects their performance, whereby the managers who have high levels of discretion perform better than their peers with less discretion (Finkelstein and Hambrick, 1990).

2.2 Prior studies and hypotheses development

2.2.1 Board size

There are two contrasting arguments for board size. From the resource dependence perspective, a crucial role of boards is resource provision (Salehi *et al.*, 2023). Likewise, drawing on stakeholder-agency theory, larger boards enhance a company's ability to address diverse stakeholders' needs (Alta'any *et al.*, 2024). This aligns with the National Service Trust Regulations 1990, which mandate a minimum of 11 board members for trusts and foundation trusts. Large boards are associated with improved monitoring and advisory due to the diversity of expertise (Alta'any *et al.*, 2024), distributing power among more members (Dashtbayaz *et al.*, 2020), offering multiple perspectives, and a broad knowledge base and skills that stimulate cognitive conflict (Forbes and Milliken, 1999).

Conversely, smaller boards are considered more effective for inclusive decision-making (Lipton and Lorsch, 1992) and experience fewer free rider problems, leading to better control and resource access (Berezinets *et al.*, 2017). The literature suggests large boards face high coordination costs, communication challenges, and information-processing problems (Lehn *et al.*, 2009). Focusing on the NHS trusts and foundation trusts required to maintain financial viability and focus on the main objective of providing quality health services, an optimum board size would be appropriate to provide the diversity of skills required to significantly influence financial performance. Based on the above arguments, our first set of hypotheses is:

H1. Board size has a significant impact on NHS hospitals' financial performance.

H1a. Board size has a significant impact on NHS trusts' financial performance.

H1b. Board size has a significant impact on NHS foundation trusts' financial performance.

2.2.2 Board independence

NHS trusts and foundation trusts are governed by boards comprising executive members closely linked to the medical field and non-executives representing patient and local community interests, often bringing experience from the private sector (Veronesi and Keasey, 2010). In this regard, the balance of the composition of outside and inside directors on these boards remains open to debate. From a stakeholder-agency perspective, appointing outsiders on boards ensures the representation of external stakeholders. Research suggests that outside directors are more effective than internal ones in prioritising shareholder interests and monitoring management and CEOs (Hillman *et al.*, 2000; Mousavi *et al.*, 2022; Shafeeq

Nimr Al-Maliki *et al.*, 2023). They are also beneficial for acquiring the requisite resources and providing alternative perspectives (Hillman *et al.*, 2000).

However, the contribution of outside directors is impacted by non-transparent appointment process (Assenga *et al.*, 2018) and lack motivation, firm knowledge, and experience (Muchemwa *et al.*, 2016). Their performance is also impacted by their busy workload from multiple directorships (Farhan *et al.*, 2017). This, in turn, adversely affects board performance. In the case of hospitals, Molinari *et al.* (1995) argue that the knowledge provided by the insiders on the board is greater than their potential opportunistic behaviour. Particularly for the NHS hospitals, Veronesi and Keasey (2011) argue that NHS boards' internal dynamics and passive attitude might result in difficulties for the outside directors to be involved in decision-making as their inputs are rarely shared with the rest of the organisation or dismissed. Based on the above discussion, the second set of hypotheses is:

H2. Board independence has a significant impact on NHS hospitals' financial performance.

H2a. Board independence has a significant impact on NHS trusts' financial performance.

H2b. Board independence has a significant impact on NHS foundation trusts' financial performance.

2.2.3 Board expertise

According to the stakeholder-agency theory, managers and employees, as stakeholders, contribute their time and skills in return for fair compensation and work conditions (Hill and Jones, 1992). Incorporating clinicians into hospital boards, encouraged by New Performance Management reforms, reflects a move towards blending professional management with clinical expertise (Veronesi *et al.*, 2014). Molinari *et al.* (1995) argue that clinician board members drive medical staff commitment and adherence to hospital policies more effectively than financial incentives alone. Despite their limited numbers on boards (Veronesi *et al.*, 2013; Veronesi *et al.*, 2014), clinician appointments are crucial for accessing specialised knowledge and skills (Dunn, 2012).

However, clinicians prioritise social and patient well-being over profit maximisation because of their professional training and ethical norms (Bai, 2013). This orientation might lead to adopting opportunistic strategies favouring clinicians' interests over the hospital's broader goals (Veronesi *et al.*, 2014). Their involvement may be less productive in financial matters due to their lack of relevant training (Veronesi *et al.*, 2014). Additionally, clinician presence

has been linked to lower efficiency (Succi and Alexander, 1999) and increased hospital costs (Goes and Zhan, 1995). Clinicians in managerial positions might also struggle to reconcile the two roles (Clay-Williams *et al.*, 2017), especially in NHS hospitals where financial considerations are paramount, potentially overshadowing clinician influence (Veronesi and Keasey, 2011). Nonetheless, empirical results are mixed. Prior studies show a significant and positive impact (Veronesi *et al.*, 2014), significant but negative (Chen *et al.*, 2021), and insignificant (Veronesi *et al.*, 2013). Accordingly, we hypothesise that:

H3. Board expertise has a significant impact on NHS hospitals' financial performance.

H3a. Board expertise has a significant impact on NHS trusts' financial performance.

H3b. Board expertise has a significant impact on NHS foundation trusts' financial performance.

2.2.4 Board meetings

Stakeholder-agency theory posits that managers' and stakeholders' conflict interests are aligned through institutional governance mechanisms, including the board of directors, who monitor firm contracts (Hill and Jones, 1992). NHS trusts and foundation trusts, facing accountability to various stakeholders, require their boards to meet frequently. Boards must dedicate sufficient time to monitor management effectively, e.g., over 100 hours annually (Lipton and Lorsch, 1992), and satisfy the stakeholders' interests. Often, directors lack sufficient time, leading to information gaps and limiting their ability to effectively monitor and evaluate company strategy (Lipton and Lorsch, 1992). Frequent meetings are, therefore, imperative for directors to stay informed on firm operations and financial positions and perform their roles effectively (Puni and Anlesinya, 2020).

However, frequent meetings can negatively affect firm performance, especially in NHS hospitals, due to the expert model dominance in NHS board meetings and clinician and non-clinical directors' tensions (Veronesi and Keasey, 2011). Additionally, the costs associated with frequent meetings can counteract the potential benefits they are supposed to bring to the hospital's financial performance (Musleh Alsartawi, 2019). Findings from hospital studies indicate that boards that perform well are unlikely to hold unnecessary meetings; however, board meeting frequency tends to increase when performance deteriorates (Aly *et al.*, 2023). Therefore, we propose the following:

H4. Board meetings have a significant impact on NHS hospitals' financial performance.

H4a. Board meetings have a significant impact on NHS trusts' financial performance.

H4b. Board meetings have a significant impact on NHS foundation trusts' financial performance.

2.2.5 Board gender diversity

Stakeholder-agency theory supports female representation on boards to align with stakeholders' interests. Similarly, resource dependence theory posits that diverse director appointments enhance resource linkages (Pfeffer and Salancik, 2003). Terjesen *et al.* (2009) suggest that the complexity and uncertainty of today's business environments necessitate strategic leaders with connections to essential resources (e.g., legitimacy, financing, knowledge, and diversity). In the healthcare sector, women's representation is significant (Ellwood and Garcia-Lacalle, 2015). The NHS would benefit from diverse perspectives in overcoming uncertainties and operational complexities. Moreover, with the diversity of their stakeholders, the NHS boards should reflect the same diversity to improve response to stakeholder claims. Gender diversity on the boards brings several benefits, e.g., board independence, executive monitoring, and linkage to critical resources (Alta'any *et al.*, 2024).

Female directors are, however, perceived to be more aligned towards non-financial performance, e.g., customer and employee satisfaction (Terjesen *et al.*, 2009). Females also tend to over-monitor managers, which ultimately decreases shareholder value (Adams and Ferreira, 2009). Moreover, despite their unique skills, knowledge and experience, the feminine qualities of female directors are overshadowed by suppressive boardroom cultures (Terjesen *et al.*, 2009). In related hospital studies, Chen *et al.* (2021) find no evidence of a significant relationship between female directors and hospitals' financial performance in Taiwan. In addition, Ellwood and Garcia-Lacalle (2015) indicate that female directors on the NHS foundation trust boards have no impact on hospitals' financial sustainability. Thus, we hypothesise the following:

H5. Board diversity has a significant impact on NHS hospitals' financial performance.

H5a. Board diversity has a significant impact on NHS trusts' financial performance.

H5b. Board diversity has a significant impact on NHS foundation trusts' financial performance.

2.2.6 CEO gender

The upper echelons theory suggests that a CEO's gender impacts firm performance, as organisational outcomes are influenced by top management's traits (Hambrick and Mason, 1984). Female CEOs, chosen for their robust functional expertise, corporate experience, and specialised skills (Dunn, 2012), bring unique attributes like empathy and democratic leadership, which foster creativity, innovation, and practical problem-solving (Eagly and Carli, 2003). These qualities contribute to stronger corporate leadership, improved understanding of complex environments, and effective global relationships (Carter *et al.*, 2003). Female CEOs also improve teamwork and intrinsic motivation (Dezsö and Ross, 2012), legitimacy, and implement corporate strategies (Dunn, 2012).

Prior research, however, indicates that female leadership might negatively affect the firm due to gendered perceptions of leadership roles (Eagly and Carli, 2003; Kaur and Singh, 2019). Female directors also prioritise non-financial objectives, like customer and employee satisfaction (Terjesen *et al.*, 2009). However, they tend to take risk-averse decisions related to financial matters, resulting in lower returns (Kaur and Singh, 2019). Their conformance limits their contribution to the dominant group on the board (Torchia *et al.*, 2011). Notably, when female directors are appointed to response to political and social pressure, they are used as tokens and not for their potential contributions, which is detrimental to performance and efficiency (Dezsö and Ross, 2012). When related to the NHS trusts and foundation trust boards that are structured on the private sector board model, female CEOs face the same situations. Based on that, we hypothesise that:

H6. CEO gender has a significant impact on NHS hospitals' financial performance.

H6b. CEO gender has a significant impact on NHS trusts' financial performance.

H6c. CEO gender has a significant impact on NHS foundation trusts' financial performance.

2.2.7 Academic directors

Resource dependence theory highlights that academic directors on boards enable firms to manage external dependencies and facilitate resource access (Pfeffer and Salancik, 2003). Diversity in boards (i.e. including academics, bankers, and professionals) can enhance their knowledge, skills, and cognitive conflict (Forbes and Milliken, 1999). For the NHS, academic directors are prevalent on the hospital boards since several hospitals are affiliated with universities, and the academic directors are affiliated universities' representatives. The

attributes of academic directors are unique. They surpass other outside directors in reputation, specialised knowledge, and independent thinking (Francis *et al.*, 2015). Moreover, academic directors enhance management oversight, drive innovation, and support board advisory roles, contributing to diversity, efficiency, and financial access (Francis *et al.*, 2015; Liu, 2020).

However, diverse educational and functional backgrounds on the board can complicate communication and coordination, leading to the underuse of knowledge and skills to resolve issues (Forbes and Milliken, 1999). The specific expertise of academic directors may fail to align with business needs, limiting their impact on board efficacy and decision-making (Francis *et al.*, 2015). Moreover, their potential biases, stemming from compensation and external affiliations, may detract from firm performance enhancement efforts (Francis *et al.*, 2015). For NHS hospitals, academic directors are appointed to the board for stakeholder representation purposes or affiliated universities' representation. However, prior studies (e.g., Chen *et al.*, 2021) indicate that directors with a Master's or Doctoral degree hurt hospitals' financial performance. Based on the above discussion, we propose the following hypotheses:

H7. Academic directors have a significant impact on NHS hospitals' financial performance.

H7a. Academic directors have a significant impact on NHS trusts' financial performance.

H7b. Academic directors have a significant impact on NHS foundation trusts' financial performance.

3. Date and Methodology

3.1 Sample selection and data collection

Our sample includes trusts and foundation trusts in the English NHS from 2014 to 2018, as shown in Table I. We chose English NHS hospitals over the UK's other health systems due to their larger operational scale and data comparability issues among the UK's four regions. Entities analysed were 130 in 2014, 129 in 2015, and 128 each year from 2016 to 2018. This timeframe was chosen to assess the impact of the 2012 Health and Social Care Act, which introduced extensive reforms to enhance care quality and outcomes, increase patient-centricity, and expand healthcare choices under a tightened financial environment. Regarding data collection, we use document analysis and archival work to collect data for all examined variables from NHS hospitals' annual reports.

[TABLE I HERE]

3.2 Dependent variable: Financial performance

Following accounting literature (e.g., Kayed *et al.*, 2024; Oyewo *et al.*, 2024) and studies conducted in hospitals (e.g., Pink *et al.*, 2007; Collum *et al.*, 2014), the main measure of financial performance in this study is ROA. The selected financial performance measure of ROA assesses the hospital's ability to generate financial resources needed to replace assets, acquire new technology, and meet increases in service demand (Pink *et al.*, 2007).

3.3 Independent variables: Corporate governance

To test our hypotheses, a specific bundle of board-level characteristics (i.e. size, independence, expertise, meetings, gender diversity, CEO gender, and academic directors) is considered. Table II below shows their measurements in detail.

3.4 Control variables

Hospital-specific factors are used as the control variables in this study. In line with prior studies (e.g., Molinari *et al.*, 1995; Collum *et al.*, 2014; Veronesi *et al.*, 2014; Abor, 2015), we control for hospital size, hospital age, hospital location, and hospital type (i.e. trusts or foundation trusts).

3.5 Empirical model

The study utilises the ordinary least squares (OLS) method as the primary estimation technique to address data endogeneity and unobserved fixed effects. Following the Hausman test, showing no correlation between individual effects and independent variables, we employ fixed effects regression. The OLS model is presented below.

$$FP_{it} = \alpha + \beta_1 BS_{it} + \beta_2 BI_{it} + \beta_3 BE_{it} + \beta_4 BM_{it} + \beta_5 BGD_{it} + \beta_6 CGe_{it} + \beta_7 AD_{it} + \beta_8 HS_{it} + \beta_9 HA_{it} + \beta_{10} HL_{it} + \beta_{11} HT_{it} + \varepsilon$$

Where *FP* = financial performance. The remaining variables are defined in Table II.

[TABLE II HERE]

4. Empirical Results and Discussion

4.1 Descriptive Statistics

Table III shows descriptive statistics for the samples. The average ROA is -0.074 for NHS trusts and -0.042 for foundation trusts. Board size averages 14 directors for NHS hospitals and foundation trusts, and 15 for NHS trusts, with six outside directors on average. Board expertise is limited, with three clinicians for NHS hospital and foundation trusts, and two for

NHS trusts. In contrast, the gender diversity is balanced, with at least six female directors for NHS hospitals and foundation trusts, and five for NHS trusts. Boards hold at least 11 annual meetings. Leadership trends show male CEOs lead NHS trusts, while female CEOs more often lead foundation trusts. Academic director representation is minimal, with no average presence in NHS trusts and foundation trusts.

[TABLE III HERE]

4.2 Correlation analysis

The correlation matrices between the dependent, independent and control variables for the NHS hospitals are shown in Table IV. Overall, the correlation between the independent variables is low for the NHS hospitals, with the highest association between academic directors and hospital size at 0.334. This is below the value of 0.8 or 0.9 recommended by Field (2013), suggesting that the multicollinearity has no impact on the examined models. Still, certain multicollinearity issues can exist (Meqbel *et al.*, 2024). Hence, the VIF check is also used; however, values for the VIF test are considerably lower than 10, suggesting low multicollinearity among the investigated variables.

[TABLE IV HERE]

4.3 Regressions analysis

Table V presents our baseline results. Models 1, 2, and 3 show the impact of CG on financial performance for NHS hospitals, trusts, and foundation trusts, respectively. The Adjusted R^2 is 0.187 for NHS hospitals, 0.179 for trusts, and 0.225 for the foundation trusts. For NHS hospitals, the hypotheses for board expertise (H3), board meetings (H4), board diversity (H5), CEO gender (H6), and academic directors (H7) are confirmed, while board size (H1) and board independence (H2) are rejected. Regarding trust hospitals, board expertise (H3a), board diversity (H5a), and CEO gender (H6a) are confirmed, while board size (H1a), board independence (H2a), board meetings (H4a), and academic directors (H7a) are rejected. Concerning foundation trust hospitals, only CEO gender (H6b) is confirmed, while board size (H1b), board independence (H2b), board expertise (H3b), board meetings (H4b), board diversity (H5b), and academic directors (H7b) are not confirmed.

[TABLE V HERE]

Our findings show that board expertise has a significant negative effect on the financial performance of the NHS hospitals and trusts. This aligns with the upper-echelons theory's

arguments and other studies (Succi and Alexander, 1999; Chen *et al.*, 2021). One reason for these results is that clinicians prioritise patients' needs over financial matters and defer decisions related to financial matters to the NHS hospital board's financial experts (Veronesi and Keasey, 2011). Still, the impact on foundation trusts' financial performance is insignificant. Likewise, frequent meetings significantly and negatively affect NHS hospitals and trust hospitals' financial performance, while the effect is insignificant for foundation trusts. As per prior studies (Aly *et al.*, 2023), this could be because board meeting frequency increases when hospital performance declines.

In line with prior studies (e.g., Wang, 2020), our results show a negative and significant impact of board diversity on the financial performance of NHS hospitals and trusts, consistent with upper echelons theory. This may be due to women's focus on non-financial performance (Terjesen *et al.*, 2009) and their tendency to over-monitor management (Adams and Ferreira, 2009). For foundation trusts, the impact is insignificant, aligning with prior studies (e.g., Ellwood and Garcia-Lacalle, 2015). Moreover, female CEOs negatively influence the financial performance of NHS hospitals, trusts, and foundation trusts. These results align with previous studies (e.g., Aly *et al.*, 2023) and the upper-echelons theory's arguments. According to Kaur and Singh (2019), gender-based disparities affect an individual's work success, as different genders have different ways of handling managerial tasks.

Although academic directors strongly and negatively affect NHS hospitals' financial performance, their impact on trusts and foundation trusts is insignificant. Academic directors are typically appointed from hospital-affiliated universities in line with the Health and Social Care Act 2003. This practice does not generate positive outcomes for performance because the NHS trust and foundation trust boards are dominated by an expert model (Veronesi and Keasey, 2011), where decision-making is deferred to the professional experts on the board. This finding supports the upper echelons theory's notion of the performance outcomes being predicted by top manager characteristics, and, in this situation, the academic directors may have unrelated expertise (Francis *et al.*, 2015).

Results of board size show an insignificant negative association with the financial performance of the NHS hospitals and foundation trusts. For the trusts, the association between board size and financial performance is positive and insignificant. Our evidence is, therefore, inconclusive as the result has a negligible effect on financial performance. Similarly, the impact of board independence has an insignificantly negative relationship with

the financial performance of NHS hospitals, trusts, and foundation trusts. However, the presented evidence is inconclusive, given that the association is positive and significant in the robustness tests for all hospital types, trusts, and foundation trusts.

4.4 Robustness tests

We employ a robustness test to confirm our findings, using 2SLS estimation to verify the OLS regression results. Boards of directors are endogenously determined institutions, and therefore, related to performance. To control this, the independent variables are instrumented with $_{t-1}$ lags (Wintoki *et al.*, 2012). Then, in line with studies by Molinari *et al.* (1995) and Collum *et al.* (2014), we use an alternative measure (i.e. operating profit margin, measured as surplus/deficit as a proportion of revenue) of financial performance in the 2SLS model.

As shown in Table VI, several results persist in both the OLS FE and 2SLS regression models. For NHS hospitals, the impact of board meetings on financial performance remains significant and negative. Similarly, for trusts hospitals, board meetings and CEO gender have a significant negative impact on financial performance under both models. In addition, board expertise has a significant negative impact on foundation trusts' financial performance.

[TABLE VI HERE]

5. Conclusion

There has been increased emphasis on hospitals' efficiency and management (Nordstrand Berg and Byrkjeflot, 2014). This study explored how the board of directors impacts the financial performance of NHS hospitals, trusts, and foundation trusts in England. The results reported in this paper reveal that expertise, meetings, diversity, CEO gender, and academic directors have a statistically significant and negative association with NHS hospitals' financial performance. Moreover, the results indicate that expertise, diversity, and CEO gender are significantly and negatively related to NHS trusts' financial performance. For the NHS foundation trusts, only CEO gender has a significant negative effect.

These results should be interpreted with the following limitations. *First*, we only examined the impact of CG on hospital performance in the English NHS. Other NHS systems in Scotland, Wales, and Ireland were not explored due to data comparability issues. *Second,* our sample covers the period before the COVID-19 pandemic. Therefore, future studies should examine the effect of the COVID-19 pandemic on this relationship. Such studies could provide valuable insights into how public health crises affect governance structures and operational outcomes, building on the baseline understanding provided by this study. *Finally*,

due to data availability, we focus only on group-level of CG mechanisms (i.e. board attributes). Investigating firm-level (i.e. ownership attributes) or individual-level (CEO attributes), for example, may provide new insights and knowledge.

Our results have academic, theoretical, and practical implications. *First*, for research, the findings suggest that the CG mechanisms adopted by the hospitals are ineffective in driving hospitals' financial sustainability. In fact, the NHS hospitals face challenges in balancing dual objectives, especially under the pressure of penalties for failing to meet performance standards. Chambers (2012), for instance, questions the suitability of private sector governance structures for NHS boards, highlighting the inappropriateness of adopting profit-driven corporate board styles for NHS hospitals. This underscores the need for further future research to explore whether the CG model in the private sector applies to the public sector and how different CG mechanisms can be optimised to effectively balance the competing objectives (e.g., providing quality health services and maintaining financial viability).

Second, for theory, the results support the upper echelons theory, which has yet to be used in explaining the relationship between CG and hospitals' financial performance. Commonly used theories to explain the CG-financial performance nexus in hospitals (e.g., stakeholder-agency and resource dependence theories) are not applicable due to the NHS objectives' incompatibility. Thus, this study encourages applying upper echelons theory in public sector entities, including public health institutions, paving the way for a more nuanced understanding of CG dynamics in these entities.

Finally, regarding the practical and managerial implications, the results show a negative impact of board expertise, board meetings, board diversity, CEO gender, and academic directors on financial performance. This suggests that these mechanisms may not suit NHS hospitals' specific needs. Thus, hospital management and policymakers should recognise the necessity of revising and customising CG structures to align with hospital objectives (i.e. financial and non-financial ones) and unique needs. A 'one size fits all' approach is ineffective. Although there were significant reforms to CG mechanisms (Ferlie, 2017), it is apparent that these private sector mechanisms may be inadequate for public sector entities that face pressure to meet a broader range of financial and non-financial goals (Garcia-Lacalle *et al.*, 2023). Therefore, adapting flexible CG structures to align with specific public sector entities' objectives and contexts can improve their financial performance and overall effectiveness.

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Tables

Table I: Sample description

	Trusts and Foundation Trusts per year				
Type of Trust	**2018**	**2017**	**2016**	**2015**	**2014**
Trusts	46	46	46	47	47
Foundation trusts	82	82	82	82	83
Total final sample	128	128	128	129	130
Firm Years	**640**	**512**	**384**	**258**	**130**

Source: Created by authors.

Table II: Definition of variables

Variable	Symbol	Measurement
Dependent variable		
Return on Assets	*ROA*	Proportion of net income to total assets.
Independent Variables		
Board Size	*BS*	Total number of directors on the board.
Board Independence	*BI*	Proportion of outside directors to total board size and measured by "1" for those above the median and "0" for those below.
Board Expertise	*BE*	Proportion of qualified clinical directors to board size.
Board Meetings	*BM*	Number of board meetings held per year.
Board Gender Diversity	*BGD*	Proportion of females on the board to the overall board size. Based on the critical mass theory, those with 30% or more female representation were denoted by "1" and "0" for otherwise.
CEO Gender	*CGe*	The gender of the CEO; "1" for female and "0" for male.
Academic Directors	*AD*	Proportion of academic directors to board size.
Control Variables		
Hospital Size	*HS*	Natural log of total assets.
Hospital Age	*HA*	Number of years the (foundation) trust has been in existence.
Hospital Location	*HL*	Represents the nine regions of England; Operationalised by "1" for (foundation) trusts located in London, "2" for North East, "3" for North West, "4" for Yorkshire, "5" for East Midlands, "6" for West Midlands, "7" for South East, "8" for East of England, and "9" for South West.
Hospital Type	*HT*	Whether the hospital is a foundation trust "1"; trust "0".

Source: Created by authors.

Table III: Descriptive statistics for all variables

Variables	NHS Hospitals			NHS Trusts			NHS Foundation Trusts		
	Mean	**Median**	**SD**	**Mean**	**Median**	**SD**	**Mean**	**Median**	**SD**
ROA	-0.055	-0.042	0.099	-0.074	-0.062	0.109	-0.043	-0.031	0.091
BS	14.537	14	2.229	14.662	15	2.379	14.463	14	2.135
BI	6.204	6	1.205	6.084	6	1.075	6.274	6	1.271
BE	3.058	3	1.326	2.681	2	1.145	3.276	3	1
BM	10.603	11	2.877	10.381	11	2.500	10.734	11	3.098
BGD	5.779	6	1.778	5.583	5	1.817	5.895	6	1.747
CGe	0.463	0	0.499	0.381	0	0.487	0.512	1	0.501
AD	0.677	0	0.946	0.673	0	0.843	.680	0	1.001
HS	12.467	12.438	0.628	0.816	0.820	0.636	12.343	12.343	0.617
HA	18.277	14	14.550	21.365	18	14.683	16.403	13	14.161
HL	5.175	5	2.685	5.4108	6	2.674	5.031	4	2.685
HT	0.622	1	0.485	-	-	-	-	-	-

Note: Variable definitions are reported in Table II.
Source: Created by authors.

Table IV: Pearson correlation

Variable	1	2	3	4	5	6	7	8	9	10	11	12
1. ROA	1											
2. BS	0.048**	1										
3. BI	0.141	-0.239	1									
4. BE	-0.057**	-0.228	0.151	1								
5. BM	-0.103	-0.118	0.041**	-0.004***	1							
6. BGD	0.004***	-0.133	0.039**	0.049**	0.024**	1						
7. CGe	-0.033**	-0.046**	0.023**	0.127	-0.038**	0.149	1					
8. AD	0.048**	-0.003***	0.104	0.153	-0.096*	-0.039**	-0.149	1				
9. HS	0.284	0.257	0.078**	0.007***	-0.070**	-.005***	-0.143	0.334	1			
10. HA	0.045**	0.048**	0.002***	-0.023**	-0.051**	-0.090*	-0.072**	-0.111	-0.051**	1		
11. HL	-0.046**	-0.021**	-0.045**	-0.028**	0.064**	-0.036**	-0.179	-0.111	-0.058**	-.0.105	1	
12. HT	0.160	-0.039**	0.113	0.212	-0.005***	0.152	0.104	0.002***	-0.114	-0.211	-0.105	1

Note: Variable definitions are reported in Table II.
*significance at 10% level.**significance at 5% level.***significance at 1% level.
Source: Created by authors.

Table V: OLS regression results

	Model 1	Model 2	Model 3
		ROA	
BS	-0.001 (0.002)	0.003 (0.003)	-0.002 (0.002)
BI	-0.007 (0.008)	-0.008 (0.015)	-0.009 (0.009)
BE	-0.118*** (0.050)	-0.185*** (0.093)	-0.083 (0.058)
BM	-0.003** (0.002)	-0.003 (0.004)	-0.003 (0.002)
BGD	-0.022*** (0.009)	-0.025* (0.014)	-0.017 (0.011)
CGe	-0.023*** (0.009)	-0.034* (0.019)	-0.017** (0.010)
AD	-0.151** (0.084)	-0.115 (0.139)	-0.150 (0.102)
HS	0.214*** (0.024)	0.202*** (0.050)	0.223*** (0.027)
HA	-0.008*** (0.002)	-0.015*** (0.004)	-0.005*** (0.002)
HL	0.001 (0.019)	-0.002 (0.022)	- -
HT	-	-	-
Firm year fixed effect	Yes	Yes	Yes
Adjusted R^2	*0.187*	*0.179*	*0.225*
F-statistic	*6.27*	*1.92*	*5.40*

Note: This table presents our baseline results for NHS hospitals (Model 1), trusts (Model 2), and foundation trusts (Model 3). Robust standard errors in parentheses. Variable definitions are reported in Table II.

*significance at 10% level.**significance at 5% level.***significance at 1% level.

Source: Created by authors.

Table VI: 2SLS regression Results

	NHS Hospitals	NHS Trusts	NHS Foundation Trusts
		Operating Profit Margin	
BS	0.001 (0.002)	0.004 (0.004)	-0.004 (0.003)
BI	0.044*** (0.012)	0.033* (0.019)	0.042*** (0.015)
BE	-0.030 (0.046)	0.027 (0.092)	-0.172*** (0.053)
BM	- 0.0180* (0.010)	-0.028* (0.016)	-0.012 (0.012)
BGD	0.021 (0.018)	-0.004 (0.022)	0.034 (0.031)
CGe	0.008 (0.008)	-0.028*** (0.014)	0.017* (0.010)
AD	-0.009 (0.063)	-0.114 (0.133)	0.020 (0.067)
Control variables	Yes	Yes	Yes
Firm year fixed effect	Yes	Yes	Yes
Adjusted R^2	*0.057*	*0.141*	*0.056*
Hausman Test of Endogeneity			
X^2	1.906	0.760	1.731
p-value	0.330	0.471	0.370
Test of weak instruments			
F-statistic	437.654	154.004	280.995
p-value	0.000	0.000	0.000
Partial R^2	0.496	0.464	0.485
Test of over-identifying restrictions			
p-value	0.288	0.328	0.188

Note: This table shows 2SLS regression results using operating profit margin. Robust standard errors in parentheses. Variable definitions are reported in Table II.

*significance at 10% level.**significance at 5% level.***significance at 1% level.

Source: Created by authors.