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Do CEOs' characteristics impact sell-side analysts' recommendations?

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Abstract

Purpose - This study examines the association between CEOs' characteristics and sell-side analysts' recommendations.

Design/methodology/approach - This study uses a sample of firms listed on the London Stock Exchange and uses two databases, Capital IQ and BoardEx to study the above relationship. A variety of regression analyses are used in the empirical models, including OLS, Fixed effect, random effect, Tobit, Logit, and GMM.

Findings - We find that firms with CEOs who had a wider network size and firms with foreign CEOs receive favourable investment recommendations. Further, firms with CEOs who have more time to retire are more likely to receive favourable investment recommendations. However, we find that firms with CEOs with more qualifications receive unfavourable recommendations and female CEOs are not affecting investment recommendations.

Originality/value - Ultimately, this study demonstrates the importance of CEO characteristics for sell-side analysts who play an important role in the stock markets.

Keywords: CEO characteristics, Networks, Qualifications, Foreigner; Gender, Time to retirement, Investment recommendations.

JEL: C1, G3, G2

1. Introduction

Chief executive officers (CEOs) play crucial roles in the corporate decision-making process (Aliani et al., 2016; Ali et al., 2022). This study aims to answer an important question, which is, do the characteristics of the CEOs affect the investment recommendations of financial analysts? If yes, what are those characteristics? Even though CEOs' characteristics have been found to play many key roles in shaping firms' decisions based on upper echelon theory (Shen, 2021). Yet, it is unclear how financial analysts, as key players in the stock markets perceive and react to such characteristics, and which CEO characteristics matter to financial analysts. This study adds to the existing literature by examining the association between several aspects of CEO characteristics and sell-side analysts' recommendations. To address these questions, we take advantage of combining data from two databases, BoardEx and S&P Capital IQ. BoardEx is a database which is relatively collecting data about board and corporate governance, while S&P Capital IQ is one of the leading platforms used by analysts, investors, and academics, which covers broad areas of financial data.

We can succinctly outline the research gap with the following: While CEO characteristics have been recognized for their influential roles in shaping corporate decisions, as indicated by the upper echelon theory (Shen, 2021), their impact on the perceptions and reactions of financial analysts,

who hold pivotal roles in the stock markets, remains unclear. We aim to elucidate which CEO characteristics are of significance to financial analysts. Furthermore, the prevailing body of corporate governance literature primarily examines the connection between CEO characteristics and firm performance. In this study, we extend the scope of inquiry beyond this conventional domain by delving into how these characteristics relate to financial analysts and the broader stock market literature.

Our commitment to research robustness is demonstrated through the application of a comprehensive array of analytical methods. We employ various regression models, including Ordinary Least Squares (OLS), fixed-effect models (FE), random-effect models (RE), Tobit, logit models, and the Generalized Method of Moments (GMM) estimator, enabling a thorough examination of our regression results. Our study benefits from the integration of unique data sources, namely Capital IQ and BoardEx. Leveraging these sources provides us with a distinctive approach to investigating the CEO characteristics and analyst recommendations relationship, particularly within the context of the London Stock Exchange.

We focused on these profiles; foreign CEOs, gender, network, time horizon, and education, of CEOs for many reasons. First, the foreign CEOs based on upper echelons theory is an intriguing topic of growing interest as many organizations globally have escalated to an internationalization agenda (Qasem et al., 2021). In addition, there is an academic and argument debate, detailed in the hypothesis related to this topic, about the benefits of appointing foreign CEOs, and there is a paucity of studying the impact of nationality on investment recommendations. Second, there is a growing interest in the accounting literature surrounding the effects of gender, wherein stereotypical behavior and discrimination potentially exist (Friedman, 2019). To what extent financial analysts perceive and assess existing CEO women on the board is an important question

that this study tries to answer. Third, many previous studies on the network of managers showed that network size plays a key role in accessing resources and information (Freeman, 1979). Executives with a large network have more access to these resources and information compared to executives with less network. Despite the increased interest in knowing the impact of the network of executives on the output of companies, the results are still ambiguous, and it is unclear whether financial analysts consider the network beneficial or unbeneficial. Therefore, this study is important to reduce that ambiguity and bridge that knowledge gap. Fourth, examining the time horizon is important, because previous studies have found mixed results about short- and long-term horizon investment. Managers who are closely approached to retire are less motivated to engage in long-term decisions with more uncertainty and high risk (DeChow and Sloan, 1991). However, younger CEOs with less experience and limited track records make their positions more volatile and highly uncertain. Thus, investigating this research is another important focus of this research paper. Finally, anecdotal evidence suggests that CEOs with diverse skills and qualifications were found to affect the firms' outcomes. However, limited evidence on how such qualifications affect the financial analysts' outcomes. In this paper, we address this issue by examining the relationship between CEOs' qualifications and analysts' investment recommendations.

Both types of financial analysts, buy-side analysts, and sell-side analysts, are important in stock markets by helping institutional and individual investors in their decisions. However, to serve the purpose of this study we focus on sell-side analysts. Sell-side analysts' main role is information intermediaries, channelling information from firms to investors in the stock markets (Alazzani *et al.*, 2021; Ljungqvist *et al.*, 2007). This information mainly is investment recommendations,

earnings forecasts, and reports (Brown *et al.*, 2015; Hoitash *et al.*, 2021; Ioannou and Serafeim, 2015).

This paper is theoretically motivated by upper echelons (Hambrick and Mason, 1984). Whilst scholars have examined myriad aspects of upper-echelon traits and their impacts on organisational outcomes, studies are scarce on the traits associated with sell-side analysts' recommendations. We can see three reasons why study the relationship between CEO characteristics and investment recommendations is important. First, both, the CEO and financial analyst, are considered among the most important elements that play a pivotal role in the business context today. Regarding CEO is considered the most important individual in a firm, who is responsible for making many essential decisions that have an important impact on the performance of companies, whether in the short or the long term (Ali *et al.*, 2022). According to upper-echelon theory, these decisions are substantially influenced by the characteristics of CEOs. Therefore, we predict that the impact of these decisions on the company's performance, strategy, and continuity shaped by the CEOs' characteristics, which will be the primary attention of financial analysts. Some of these characteristics have been documented to influence analyst's outcomes. For example, overconfident CEOs affect upgrading/downgrading investment recommendations and investors react strongly to recommendations issued to companies with overconfident CEOs (Tan *et al.*, 2019). Tan *et al.* (2019) show that in a crisis time, analysts look more at the management strength than financial earnings and performance. Second, the most current literature about the influence of CEO characteristics is based on upper echelons theory, which focuses on how CEOs affect firm behaviors rather than the implications of CEO characteristics on external parties (Petrenko *et al.*, 2019; Vitanova, 2021). Further, the corporate governance literature also mainly studies the linkage

between CEO characteristics and firm performance. Thus, we extend that literature to financial analysts and stock market literature.

Finally, a sell-side analyst, as a legitimate third-party, who has the knowledge, skill, and experience is capable of evaluating the performance of companies and evaluating the capabilities of their leadership. The investment recommendations, whether negative or positive, which sell-side analysts' issues will affect the survival, dismissal, or appointment of the CEO of the company. Therefore, the board of directors pays attention to the financial analysts' recommendations when deciding to stay, dismiss or appoint the CEO. Moreover, the board will also consider CEOs' characteristics, especially, that characteristics which attract the attention of analysts. These arguments are supported by evidence from recent studies. For example, Wiersema and Zhang (2011) find that unfavorable analyst recommendations lead to a higher probability of CEO dismissal. Similarly, HERNBERGER (2016) finds that firms that receive more pessimistic recommendations are more likely to hire an outsider CEO.

We hypothesise and test five CEO characteristics; gender, network, foreign, qualification, and time to retirement. We propose that firms having CEOs with more networks, more qualifications, and more time to retire, will gain optimistic recommendations. However, we state non-directional hypotheses about whether the CEO is a female or a foreigner with investment recommendations.

Our sample consists of 1120 UK firm-year observations from 2008 to 2018, and we find that firms with CEOs who have more network, foreigners, and more time to retirement receive favourable investment recommendations. We also find that firms with CEOs having more qualifications receive unfavourable recommendations. However, CEO gender does not show any relationship with investment recommendations.

This study makes the following contributions to the literature. First, we extend to the current debate whether CEO characteristics can be a value creation in the stock market. For example, the results reveal a strong positive relationship between CEO networks and investment recommendations. From the economic point of view, the favorable recommendation increased by 0.007 when CEO networks increased by one, based on OLS regression. Suggesting that firms with more CEO networks can gain more optimistic recommendations. To the best of our knowledge, this is the first study to examine such an important issue. When firms hire such CEO with more networks can attract analysts to such firms. Another explanation is that such a CEO with more intangible capital can mitigate uncertainty as the network can provide access to important information and resources needed to reduce uncertain context (Geletkanycz and Hambrick, 1997). That will directly or indirectly influence sell-side analysts to create value by solving problems characterized by uncertainty (Sasson, 2008). Second, this study also reveals that foreigner CEO is associated with favourable recommendations. Since the CEO is in a very important position to shape the firm's strategic decisions, the CEO's nationality is important to consider. To the best of our knowledge, we are the first to show that the nationality of the CEO is related favourably to sell-side analysts' recommendations. Third, this study also examines the association between CEO qualifications and sell-side analyst recommendations. We predict that firms managed by CEOs with more qualifications will gain favourable recommendations. The result revealed from this study supports the inverse relationship. One explanation is that the analysts perceived such CEOs as overqualified. Fourth, CEO gender is also another important factor that we investigate in this study. The finding resulting from this study did not show any association relationship between CEO gender and analysts' recommendations. Finally, CEO career horizon is one of the factors that grasp the attention of the emerging literature. Previous studies found that older directors can have different

preferences than younger directors (Ormazabal, 2018) and when CEOs approach retirement, are more likely to make decisions that preserve their legacy, success, and reputation (Matta and Beamish, 2008) and more risk-averse (Romano *et al.*, 2019), and perceive risk in strategic decisions, making the decision-making process slower (Forbes, 2005). We add to this literature by showing that CEO career horizon is an important factor in sell-side analysts' recommendations.

Ultimately, this study demonstrates the importance of CEO characteristics for sell-side analysts.

2. Theoretical background

We utilise upper echelons theory introduced by Hambrick and Mason (1984) as a theoretical framework for this study. According to this framework, the demographic background of top management has implications for organisational performance.

This is mirrored in managerial characteristics and idiosyncrasies such as age, tenure, functional background, and educational experience that capture values, cognitions and perceptions (Parola *et al.*, 2015; Plöckinger *et al.*, 2016; Cook and Burrell, 2013). As a first premise, this theory states that top executives and managers employ a fundamental influence on strategic choices in their organisations and, hence, on organisational outcomes (Finkelstein and Hambrick, 1990; Hambrick and Mason, 1984; Wiersema and Bantel, 1992). This argument has its roots in some earlier studies such as March and Simon (1958) and Cyert and March (1963) who argued that many large and complex decisions are largely the result of behavioural factors rather than a mechanistic pursuit of economic optimisation.

Several recent studies have also contributed valuable insights into the intricate dynamics within the analyst community and their ramifications for financial analysis and recommendations. Cici, Shane, and Yang (2022) examined the interplay between buy-side and sell-side analysts, delving

into whether insights from buy-side analysts influence the research conducted by their sell-side counterparts. Meanwhile, Drake et al. (2023) explored the role of social media in financial analysis, investigating how information disseminated through social media platforms can impact or complement the analyses and recommendations made by sell-side analysts. In a different vein, Salehi, Ghanbari, and Orfizadeh (2021) probed the relationship between managerial entrenchment and accounting conservatism, assessing whether entrenched managers tend to adopt more conservative accounting practices and the subsequent implications for financial reporting. Seifzadeh et al. (2022) extended their focus to management characteristics, seeking to determine whether specific attributes of management influence the consistency and transparency of financial reporting, thereby contributing to our understanding of factors shaping financial statement comparability. Finally, Sheng and Montgomery (2023) concentrated on the realm of corporate site visits conducted by both buy-side and sell-side analysts within the Chinese market. Their study not only explored the factors triggering these visits but also evaluated whether such visits exerted a discernible impact on investor behaviour and decision-making, emphasizing the significance of these visits in the broader investment process.

Further, several studies shed light on the intricate relationship between financial analysts' recommendation profitability, forecast accuracy, and the extent of commonality in their forecast errors. Lawrenz, Schredelseker, and Weissensteiner (2017) conduct empirical analysis that challenges conventional wisdom by revealing that the group of most profitable recommendations is not necessarily associated with the highest forecast accuracy, particularly in cases of asymmetric information. Lawrenz and Weissensteiner (2012) emphasize the importance of considering the extent of commonality in forecast errors when evaluating the connection between earnings forecast accuracy and expected performance. Meanwhile, Marinelli and Weissensteiner's (2014) analysis

highlights the non-monotonic nature of the relationship between forecast precision and trading profitability, emphasizing that the impact of the correlation between forecasts on the expected payoff of individual analysts depends on the relative accuracy of their signals. These studies collectively contribute to a nuanced understanding of the factors influencing the financial analyst landscape, challenging conventional assumptions and highlighting the complexity of analyst performance evaluation.

Based on the foregoing, we expect, based on this theory, that financial analysts will consider, during the issuance of their reports, forecasts, and recommendations, those characteristics presented by this paper.

3. Literature review and hypotheses developments

This section discusses related research that motivates this study and introduces our main hypotheses

CEO Gender

The literature noted that more women served on the board of large firms than ever before. In the UK for example, where this study was conducted, FTSE100 firms showed 29% are female, and FTSE250 firms have at least 27% women directors in 2019 (Burstyn, 2020). However, despite

these expansions, research has only started to analyse whether and how female CEOs impact their firms' practices. In this study, we extend the literature by the linkage of sell-side analysts' outcomes to firms with CEO women.

We build our hypothesis about gender based on three streams of literature. The first stream finds that female CEOs positively affect firm performance. Vo et al. (2021) find that firms with woman CEOs produce higher profitability compared to male CEOs. Sah (2021) finds that firms with female CEOs make a significantly higher return on assets than males. Peni (2014) documents a positive relationship between female CEOs and firm performance. Saggese et al. (2021) also find that female CEOs influence firm innovation, which will lead to better performance. We argue that firms managed by a CEO female with better performance will be perceived positively by financial analysts. Thus, we predict that those firms will gain positive recommendations.

The second stream finds that female CEOs are more risk-averse than males. Shropshire et al. (2021) document that risky strategies are less likely to be chosen by CEO females. In the same vein, Vo et al. (2021) find that fewer systematised risks and lower volatility are linked to firms having female CEOs. Further, Sah (2021) also finds that female CEOs exhibit a high-risk aversion and hold more cash. Dwiharti and Adhariani (2018) show that female CEO has a high-risk level. However, Farag and Mallin (2018) and Khan and Vieito (2013) find no difference in risk levels between CEOs male and female. The risk aversion character might hinder female CEOs from making risky decisions, which might lead to losing important chances and that will affect negatively the performance of those firms. Thus, if the analysts consider risk aversion positively, they will be more positive, but if they consider it as a barrier, they will react negatively.

The third stream is gender stereotypes. According to Newsweek newspaper, people always judge a firm more harshly for ethical blunders when the CEO is female. Lee and James (2007) document

that stock markets lower a firm value when it promotes women and the reactions of investors are significantly more negative. Thus, the effect of gender stereotypes also be considered negatively by financial analysts and will lead to negative recommendations. Based on the above discussion, we state the non-directional hypothesis:

H1: There is a relationship between female CEOs and investment recommendations.

CEO network

Networking is very important and it can be considered one of the most important assets for business today. It is also a signal of success for CEOs and executives. The business network is also found to influence firms' strategic decisions and financial outcomes (Adams and Baker, 2020). Fan et al. (2021) find that board-CEO social networks affect positively firm risk. Chahine et al. (2021) find that firms that have CEOs with more network centrality are less likely to report financial fraud. Griffin et al. (2021) find that the volatility of real earning management is associated with those firms with well-connected CEOs. Dbouk et al. (2020) asserted that the social networks of executives lead to excessive bank risk. Even though the results are mixed about CEO's networks, we predict that the financial analysts look for such network as power and they will be more optimistic about it. Our hypothesis has been stated below:

H2: The more the CEO networks, the more the firm receives optimistic investment recommendations.

Foreigner CEO

We also examine whether the CEO is a foreigner or a native citizen will affect investment recommendations. Based on literature related to this demographic characteristic, there are two competing arguments. The first argument is that a foreign CEO may have more global knowledge

and network than a local, and thus financial analysts may prefer such companies with foreign managers. This argument is supported by the studies which have conducted on US Fortune 500 firms by Carpenter et al. (2001) and Daily et al. (2000). Both studies documented that firms with international CEOs have better financial performance. In the same vein, Herrmann and Datta (2005) show that managers with international experience perceive lower risks and that firms with higher levels of international diversification are likely to be managed by CEOs with international experience. These results are confirmed by Nielsen and Nielsen (2011) and Piaskowska and Trojanowski (2014). They even receive more compensation as documented by Conyon et al. (2019) who find that foreign CEOs and national CEOs with foreign working experience receive significantly higher levels of total compensation compared to similar UK CEOs without such characteristics. This argument is based on the upper-echelon theory. The competing argument argues that a foreign CEO may increase the uncertainty problem due to a sometimes lack of knowledge of local regulatory rules and laws, accounting procedures, and local cultural factors (Adams and Baker, 2020). In the same vein, (Shi et al., 2020) argue that having foreign CEOs is associated with the same risks and uncertainty because they are not accustomed to the local economic environment. This argument suggests that the upper echelon theory has little support and is simply not necessary that foreign CEOs will bring benefits to the firms, or at least the analysts have the opposite way of accommodating such benefits. Hence, it is not clear how sell-side analysts will evaluate firms with foreign CEOs. Therefore, we state our hypothesis as a non-directional hypothesis as follows:

H3: There will be a significant relationship between firms which having foreign CEOs and analysts' recommendations.

CEO Qualifications

The education of top management has been found to influence the success of the firms, and hence, lead to better performance. This is confirmed by previous literature which finds; educated CEOs lead to firm's success (Wang *et al.*, 2016), banks led by CEOs with MBAs outperform their peers (King *et al.*, 2016), CEOs with stronger educational credentials generate significant abnormal returns (Bhagat *et al.*, 2010) and CEOs with MBAs tend to choose more aggressive corporate strategies (Bertrand and Schoar, 2003), and manage the risk-taking incentives (Murphy and Zabojnik, 2007). The upper echelon theory also supported such arguments and results. Hence, we assume and predict that financial analysts evaluate the firm and its CEOs with more qualifications positively. Therefore, we state our next hypothesis as follows:

H4: Firms with more CEO qualifications will gain optimistic recommendations.

CEO career horizon – time to retirement

The issue of the career horizon of CEOs has attracted many researchers. In this study, we extend the literature on CEOs' career horizons to link it with sell-side analysts' recommendations.

According to Romano et al. (2019) when "CEOs approach retirement, they appear reluctant to change, more conservative and less likely to act in the long-term interests of the firm". They argue and find that a long career horizon of CEOs is associated with fast and risky decisions. Further, Matta & Beamish, (2008) find that if short career horizon (approaching retirement) their decisions are more to preserve their success, reputation, and legacy, and be more risk-averse. They are also avoiding risky investments (Jayawarna *et al.*, 2013). Hence, we state the following hypotheses:

H5: If the CEOs whose time to retirement is close, the firms they led will gain pessimistic recommendations by sell-side analysts.

4. RESEARCH METHOD

Sample

Our initial sample includes companies listed on the London Stock Exchange from 2008 to 2018. We use the SP Capital IQ database to collect analysts' recommendations and financial data, and the BoardEx database to collect CEO characteristics data and board variables. After merging the datasets collected from both databases, our observations dropped due to missing data on the board and recommendations data. Our final sample consists of 1120 firm-year observations. The sample was selected from 11 different industries, including Information Technology, Consumer Staples, Real Estate, Materials, Industrials, Consumer Discretionary, Health Care, Financials, Energy, Communication Services, and Utilities.

Variables Definitions and Measurement

The dependent variable (Analysts' recommendations)

The analysts' recommendations measure is based on the S&P Capital IQ. The S&P Capital IQ standardized all individual recommendations across brokers on a 1 - 5-point scale and took the average. The value is assigned a rating based on the ranges below: Buy (mean rating range 1.0 - 1.5), Outperform (1.5 - 2.5); Hold (2.5 - 3.5), Underperform (3.5 - 4.5), and Sell (4.5 - 5.0).

The independent and control variables

CEO gender is measured using a dummy variable taking a value of 1 for female CEO and 0 for male CEO (Glass et al., 2016; Sah 2021). We measure the CEO network as the summation of the CEO's employment, education, and other activities ties (Chahine et al., 2021; Fan, 2021). We further measure CEO nationality by using a dummy variable taking a value of 1 if the CEO is foreign national and zero otherwise. We measure CEO qualification by the number of qualifications held by the CEO. It is a count of all qualifications of degree level including all

professional qualifications (e.g. PhD or master's degree), the executive holds. Each qualification has the count one. We also explore the effect of CEO career horizon (time to retirement) on investment recommendations and we use the number of years to retirement for the CEO assuming a retirement age of 70 as a proxy for CEO career horizon (Jayawarna et al., 2013).

Further, we consider the importance of controlling for board characteristics in examining the effect of CEO characteristics on investment recommendations. Board characteristics like size, independence, and the presence of an audit committee significantly influence analysts' recommendations as they are indicative of robust corporate governance. A well-sized board ensures diverse expertise and efficient decision-making, while board independence guarantees objective oversight and aligns with shareholder interests, enhancing company credibility. Additionally, a strong audit committee is crucial for ensuring financial integrity and regulatory compliance, factors that analysts heavily rely on. Together, these elements signal a company's commitment to effective management and risk mitigation, leading to more favourable analyst recommendations due to perceived lower investment risk and potential for long-term stability. This is consistent with some prior literature that argue that larger boards are more diverse and include directors from different backgrounds and expertise which could affect investment recommendations (Nordin *et al.*, 2021; Papangkorn *et al.*, 2020). Board size is measured as the number of directors on the board. We also include board independence measured as the proportion of independent directors on the board as prior studies also find the board independence effect on analysts' outcomes (Cohen *et al.*, 2012). Audit committee size is measured by the number of audit committee members.

Finally, we control for firm-specific variables. Firm characteristics like size, Return on Assets (ROA), Beta, and Price-to-Book Value (PBV) significantly influence analysts' recommendations

because they are key indicators of a company's performance, risk, and value. Larger firms often offer more stability and resources, making them attractive investments. ROA reflects operational efficiency and profitability, directly impacting earnings forecasts. Beta measures market volatility and risk exposure, with lower beta often preferred for stable investment. PBV provides insight into market valuation relative to the company's book value, indicating potential under or overvaluation. These factors combined give analysts a comprehensive view of a company's financial health, market position, and investment potential, guiding their stock recommendations. Firm size (Fsize) is measured by the natural logarithm of total assets; Beta is measured by Beta ratio; firm profitability (ROA) is measured by net income before extraordinary items divided by total assets; PBV ratio is calculated by the market price per share divided by the book value per share and industry and year dummies.

Econometric Model

We construct the following model to examine the effect of CEO characteristics on investment recommendations.

$$REC_{jt} = \beta_0 + \beta_1 CEO_gender + \beta_2 CEO_network + \beta_3 CEO_Nationality + \beta_4 CEO_Qualifi + \beta_5 CEO_Time to Retir + \beta_6 Independent\% + \beta_7 Bsize + \beta_8 ASize + \beta_9 Fsize + \beta_{10} Beta + \beta_{11} ROA + \beta_{12} PBV + Year\ dummies + Industry\ dummies + \varepsilon$$

Where:

REC_{jt}: The analysts' recommendations measure is based on the S&P Capital IQ. The S&P Capital IQ standardized all individual recommendations across brokers on a 1 - 5-point scale and took the average.

CEO_gender: a dummy variable taking a value of 1 for female CEO and 0 for male CEO

CEO_network: the summation of the CEO's employment, education, and other activities ties

CEO_Nationality: a dummy variable taking a value of 1 if the CEO is a foreign national and zero otherwise

CEO_Qualifi: number of qualifications held by the CEO. It is a count of all qualifications of degree level including all professional qualifications (e.g. PhD or master's degree), the executive holds

CEO_Time to Retire: number of years to retirement for CEOs assuming a retirement age of 70 as a proxy for CEO's career horizon

Independent%: the proportion of independent directors on the board

Bsize: the number of directors on the board

ACsize: the number of audit committee members

Fsize: the natural logarithm of total assets

Beta: is a measurement of the sensitivity of a company's stock price to the overall fluctuation of a given benchmark index. Capital IQ's betas are levered, unadjusted and derived from a least-squares regression analysis using stock and benchmark index returns based on a monthly or weekly frequency. Beta is calculated using 60 monthly returns (each as of month-end) but if the company's trading history is too short to provide such a sample, fewer than 60 but not fewer than 24 monthly returns are used to run the regression.

ROA: net income before extraordinary items divided by total assets

PBV: market price per share divided by the book value per share

We also include year and industry fixed effects where industry dummies are created based on the SIC one-digit industry classification.

5. EMPIRICAL RESULTS

Descriptive Statistics

Table 1 shows the descriptive statistics of the variables used in the analysis. The mean value of REC is 1.57. The mean value of CEO_gender is 3.6% which reflects a low percentage of women CEOs in our sample. The mean value of CEO_network is 15.868, and the percentage of boards with CEOs from foreign nationalities is 14.8%. The average number of years for the CEO to retire is approximately 11 years. Further, we find the mean of qualifications number held by the CEOs is about 2 qualifications. The mean board size is almost 7. The mean independent directors is about 42.8%. The mean audit committee size is 3 members. In regards to firm-related variables, the mean firm size measured by the natural log of total assets is 4.67, the mean Beta ratio is 0.537, and the mean PBV and ROA is 4.113, -1.017 respectively.

Table 1 about here

Table 2 shows the correlation matrix for all variables included in the analysis. The correlation coefficient between REC and both CEO_gender and CEO_Qualifi is significantly positive at a significance level of 1%. However, the correlation coefficient between REC and each of CEO_network, CEO_Time to Retir and CEO_Nationality is significantly negative at the 1% significance level. The correlation coefficients of all control variables are less than 0.8, reflecting that there is no serious multicollinearity issue among variables. Further, it can be decided that Multicollinearity does not appear to be a concern in explaining the regression results from variance inflation factor (VIF) results which were tested separately (VIF ranges from 2.31 to 2.68 with a mean value of 2.51).

Table 2 about here

Effects of CEOs' Characteristics on sell-side analysts' recommendations

As we mentioned earlier, this study examines the effect of CEOs' characteristics on sell-side analysts' recommendations.

To ensure the robustness of the research results, we use different regression models namely OLS, fixed-effect models (FE), and random-effect models (RE), Tobit model, logit model, and GMM estimator to perform regressions and compare the regression results simultaneously. The empirical results are shown in Table 3. As can be seen from the results, CEO_gender is negative and not significant with sell-side analysts' recommendations, suggesting that female CEOs are not affecting financial analysts' recommendations. Thus, our first hypothesis is rejected.

The results also show that CEO_network and CEO_Nationality are significant and negatively associated with analysts' recommendations at the 1% level. This suggests that firms with CEOs who have a wider network size, and foreign CEOs are more likely to receive favourable investment recommendations. Also, the relationship between CEO_Time to Retirement and analysts' recommendations is significantly negative at the 10% level suggesting that firms that have CEOs who have more time to retire receive favourable investment recommendations. However, CEO_Qualification is significant and positively associated with analysts' recommendations suggesting that firms with more CEOs' qualifications receive unfavourable recommendations. Therefore, our main findings support our hypotheses (H2, H3, H4, H5).

We apply the Tobit model because our dependent variable *analysts' recommendations* fall on one side (between 1-5). Tobit regression is a censored regression model designed to estimate the linear relationship between variables when the dependent variable is only right or left censoring (Winship et al., 2016). The results remain consistent with the main findings.

We employ a two-step dynamic GMM regression model as a robustness check to address the potential endogeneity issue arising from reverse causality association between CEOs' characteristics and analysts' recommendations and also to ensure that the findings were not severely affected by the potential concerns of endogeneity problems (Blundell and Bond 1998).

Table 3 shows the results of running the GMM model. The findings also remain robust.

Table 3 about here

6. Further analyses

We also use quantile regression to provide a robust examination of CEO characteristics' impact on the overall conditional distribution of investment recommendations. Quantile regression fully represents the conditional distribution by getting information about points in the conditional distribution (Ortas et al., 2015). The estimated coefficient vector in quantile regression is not sensitive to outliers as the estimator minimizes the sum of all weighted absolute values of residuals. Also, quantile regression fits data with skewed distributions and captures non-monotonous and non-even effects of independent variables on dependent variables (Lin 2021). The results are shown in Table 4.

Table 4 about here

6. Discussion and Conclusion

Looking at the effect of CEOs' characteristics on one of the capital market stakeholders (financial analysts), we seek to provide more understanding about the positive effects of these characteristics that CEOs bring to firms, and the potential effects of their characteristics on external evaluation of the company. Motivated by ignoring previous studies to examine this important issue, and using the upper-echelon theory as a theoretical basis, we investigate the impact of CEOs' characteristics on investment recommendations. Using a sample of UK data, we find that firms having CEOs with more networks, foreigners, and more time to retire gain optimistic recommendations, while firms which have CEOs with more qualifications gain pessimistic recommendations. Further, CEO's gender was found to have no effect on analysts' recommendations.

These results are relevant to both research and practice. Concerning research, this study makes an important contribution to the strategic capital and executive leadership literature by increasing our understanding of the role that CEO characteristics play in forming external evaluations of the firm and affecting their market success. Concerning practice and implication, the results of this study yield valuable insights for stakeholders in the financial market. First, the non-significant and negative relationship between CEO gender and analysts' recommendations suggests that female CEOs do not significantly impact investment recommendations, potentially opening doors for greater gender diversity in executive leadership roles without discernible effects on analyst assessments. Second, the significant associations between CEO network size, CEO nationality, and analysts' recommendations highlight the significance of CEOs' networking abilities and international backgrounds in garnering favourable investment recommendations, underscoring the importance of these attributes for firms seeking positive market reactions. Third, the negative relationship between CEO time to retirement and recommendations indicates that CEOs with

longer tenures are viewed positively by analysts, potentially due to the perception of stability and continuity they bring. Lastly, the positive relationship between CEO qualification and recommendations suggests that firms with highly qualified CEOs may receive less favourable assessments, raising questions about potential mismatches between CEO qualifications and firm needs in the eyes of analysts. These implications offer valuable insights into how CEO characteristics influence financial analysts' assessments and can guide corporate governance practices and investor decisions.

The managerial implications of this study suggest that firms should prioritize CEO characteristics strategically in their decision-making processes. CEOs with wider networks and international backgrounds are more likely to receive favorable analyst recommendations, indicating the importance of these attributes in CEO selection and development. Succession planning should consider the preference for longer CEO tenures to maintain investor confidence and stability. While CEO qualifications are crucial, firms should ensure they align with the organization's specific needs to avoid unfavourable analyst assessments. Importantly, the study highlights that promoting gender diversity in executive leadership is unlikely to adversely affect investment recommendations, encouraging firms to foster inclusivity. To influence analyst perceptions positively, companies can proactively communicate CEO strengths and qualities. Boards of directors should consider the implications of CEO characteristics when making governance decisions, and adapting practices to align with analyst preferences, especially concerning CEO succession and qualification assessment. These insights guide firms in optimizing CEO-related strategies and governance practices to enhance their standing with financial analysts and potentially improve stock market performance.

This study has some limitations and can be extended in several ways. For example, we only focus on the UK context. Though we believe that our results generalize to other developed countries, they may not generalize to developing countries. Additional research is needed to examine these findings further.

Note: The data that support the findings of this study are available from the corresponding author upon reasonable request.

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Table: 1 Descriptive Statistics

Variable	Mean	Std. Dev.	Min	Max
REC	1.786	.876	0	5
CEO_gender	.039	.194	0	1
CEO_network	15.366	23.904	0	168
CEO_Nationality	.119	.323	0	1
CEO_Time to Retir	11.15	6.764	-11	29
CEO_Qualifi	1.83	1.146	0	4
Independent%	.428	.218	0	.9
Bsize	8.105	2.333	4	15
ACsize	3.12	.867	0	7
Fsize	5.688	2.15	.518	11.191
Beta	.48	.618	-5.963	3.26
PBV	4.113	12.088	0	211.26
ROA	6.947	5.983	-28.247	28.166

Table: 2 Matrix of correlations**Pairwise correlations**

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
(1) REC	1.000												
(2) CEO_gender	0.113*	1.000											
(3) CEO_network	-0.118*	0.060	1.000										
(4) CEO_Nationality	0.060	0.120*	-0.019	1.000									
(5) CEO_Time to Retir	0.332*	0.190*	0.143*	0.104*	1.000								
(6) CEO_Qualifi	0.068*	-0.034	-0.119*	0.073*	0.073*	1.000							
(7) Independent%	0.249*	0.187*	0.164*	0.122*	0.139*	0.043	1.000						
(8) Bsize	0.479*	0.133*	0.189*	0.193*	0.245*	0.191*	0.190*	1.000					
(9) ACsize	0.276*	0.122*	0.104*	0.098*	0.185*	0.102*	0.316*	0.516*	1.000				
(10) Fsize	0.491*	0.192*	0.228*	0.212*	0.254*	0.202*	0.455*	0.732*	0.503*	1.000			
(11) Beta	0.143*	0.063*	0.080*	0.014	-0.030	-0.002	0.166*	0.114*	0.050	0.213*	1.000		
(12) PBV	-0.036	0.008	0.063	-0.010	0.014	-0.071*	0.013	-0.149*	-0.069*	-0.124*	0.036	1.000	
(13) ROA	0.100*	0.030	-0.076*	0.001	-0.009	-0.105*	0.081*	-0.065	0.031	-0.115*	0.134*	-0.121*	1.000

*shows significance at the 0.05 level

Table 3: CEOs Characteristics on sell-side analysts' recommendations

VARIABLES	(1) OLS	(2) FE	(3) RE	(4) Tobit	(6) Logit	(7) GMM
CEO_gender	0.0868 (0.103)	-0.149 (0.146)	-0.154 (0.126)	0.0868 (0.101)	0.163 (0.712)	-0.132 (0.264)
CEO_network	-0.00746*** (0.000748)	-0.01000*** (0.00110)	-0.00898*** (0.000915)	-0.00746*** (0.000740)	-0.0241*** (0.00397)	-0.0170*** (0.00162)
CEO_Nationality	-0.200*** (0.0526)	-0.291*** (0.0926)	-0.275*** (0.0690)	-0.200*** (0.0520)	-0.755*** (0.263)	-0.303** (0.144)
CEO_Qualifi	0.188*** (0.0238)	0.382*** (0.0403)	0.296*** (0.0315)	0.188*** (0.0236)	0.522*** (0.119)	0.718*** (0.0599)
CEO_Time to Retir	-0.293* (0.150)	-0.0787 (0.216)	-0.113 (0.177)	-0.293** (0.148)	-1.188* (0.705)	-0.775** (0.366)
Independent%	0.118 (0.110)	0.101 (0.181)	0.126 (0.139)	0.118 (0.109)	0.267 (0.488)	0.472* (0.261)
Bsize	0.0942*** (0.0126)	0.0864*** (0.0184)	0.0925*** (0.0154)	0.0942*** (0.0125)	0.306*** (0.0696)	0.115*** (0.0240)
ACsize	0.00919 (0.0259)	-0.0577** (0.0283)	-0.0425 (0.0262)	0.00919 (0.0256)	0.0548 (0.126)	-0.109*** (0.0382)
Fsize	0.0639*** (0.0139)	-0.0648* (0.0390)	0.0675*** (0.0193)	0.0639*** (0.0137)	0.616*** (0.0765)	0.0252 (0.0464)
Beta	0.0546*** (0.0193)	0.00637 (0.0308)	0.0278 (0.0219)	0.0546*** (0.0190)	0.198** (0.0844)	-0.0854* (0.0487)
ROA	0.00754*** (0.00158)	-0.00445* (0.00246)	0.00133 (0.00191)	0.00754*** (0.00156)	0.0187** (0.00823)	-0.00212 (0.00328)
PBV	-0.00240 (0.00236)	-0.000290 (0.00220)	-0.00135 (0.00206)	-0.00240 (0.00233)	0.00179 (0.0178)	0.00139 (0.00192)
Year dummies	Y	Y	Y	Y	Y	Y
Industry dummies	Y	Y	Y	Y	Y	Y
L.REC						0.113*** (0.0387)
Constant	1.827*** (0.584)	1.769** (0.862)	1.203* (0.690)	1.827*** (0.578)	0.113 (2.747)	3.169** (1.404)
Observations	1,120	1,120	1,120	1,120	1,120	900
R-squared	0.379	0.215				
Number of s_id		201	201			173

*, **, and *** indicate statistical significance at the .10, .05, and .01 levels, respectively.

Table 4: Quantile regression

VARIABLES	(1) REC	(2) REC	(3) REC	(4) REC	(5) REC	(6) REC	(7) REC	(8) REC	(9) REC
CEO_gender	0.152 (0.182)	0.0559 (0.0951)	0.0440 (0.104)	-0.00927 (0.121)	-0.0244 (0.134)	0.104 (0.144)	0.0251 (0.170)	-0.0177 (0.151)	-0.0414 (0.203)
CEO_network	-0.00197 (0.00133)	-0.00336*** (0.000694)	-0.00460*** (0.000755)	-0.00534*** (0.000880)	-0.00622*** (0.000979)	-0.00676*** (0.00105)	-0.00771*** (0.00124)	-0.00811*** (0.00110)	-0.00856*** (0.00148)
CEO_Nationality	-0.141 (0.0936)	-0.206*** (0.0488)	-0.155*** (0.0531)	-0.181*** (0.0619)	-0.199*** (0.0688)	-0.195*** (0.0738)	-0.114 (0.0873)	-0.0305 (0.0773)	-0.128 (0.104)
CEO_Qualifi	0.0498 (0.0424)	0.0836*** (0.0221)	0.123*** (0.0241)	0.129*** (0.0281)	0.177*** (0.0312)	0.220*** (0.0335)	0.261*** (0.0396)	0.236*** (0.0351)	0.305*** (0.0473)
CEO_Time to Retir	-0.199 (0.267)	-0.363*** (0.139)	-0.387** (0.151)	-0.283 (0.176)	-0.237 (0.196)	-0.318 (0.210)	-0.317 (0.249)	-0.213 (0.220)	-0.0194 (0.297)
Independent%	0.137 (0.196)	0.234** (0.102)	0.210* (0.111)	0.0947 (0.129)	0.0657 (0.144)	0.0990 (0.154)	0.161 (0.182)	0.117 (0.162)	0.0691 (0.218)
Bsize	0.0470** (0.0225)	0.0567*** (0.0117)	0.0626*** (0.0128)	0.0672*** (0.0149)	0.0797*** (0.0166)	0.0990*** (0.0177)	0.124*** (0.0210)	0.124*** (0.0186)	0.103*** (0.0251)
ACsize	0.00753 (0.0460)	0.0114 (0.0240)	0.0268 (0.0261)	0.0558* (0.0304)	0.0571* (0.0339)	0.0746** (0.0363)	0.0387 (0.0429)	-8.39e-05 (0.0380)	0.00957 (0.0513)
Fsize	0.0863*** (0.0247)	0.109*** (0.0129)	0.101*** (0.0140)	0.0949*** (0.0163)	0.0883*** (0.0182)	0.0627*** (0.0195)	0.0444* (0.0230)	0.0321 (0.0204)	0.0143 (0.0275)
Beta	0.0335 (0.0343)	0.0545*** (0.0179)	0.0450** (0.0195)	0.0449** (0.0227)	0.0513** (0.0252)	0.0627** (0.0270)	0.0659** (0.0319)	0.0746*** (0.0283)	-0.00902 (0.0382)
ROA	-0.00156 (0.00281)	5.44e-05 (0.00146)	0.00171 (0.00159)	0.00507*** (0.00186)	0.00587*** (0.00206)	0.00702*** (0.00221)	0.00879*** (0.00262)	0.0121*** (0.00232)	0.0128*** (0.00313)
PBV	-0.00181 (0.00420)	-0.00277 (0.00219)	-0.00161 (0.00238)	-0.00143 (0.00278)	-0.00138 (0.00309)	-0.00155 (0.00331)	-0.00137 (0.00392)	-0.0105*** (0.00347)	-0.00363 (0.00468)
Year dummies	Y	Y	Y	Y	Y	Y	Y	Y	Y
Industry dummies	Y	Y	Y	Y	Y	Y	Y	Y	Y
Constant	0.992 (1.040)	1.501*** (0.542)	1.778*** (0.591)	1.502** (0.688)	1.342* (0.765)	1.855** (0.820)	1.973** (0.970)	2.060** (0.860)	1.722 (1.159)
Observations	1,120	1,120	1,120	1,120	1,120	1,120	1,120	1,120	1,120

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

