Financial experts of top management teams and corporate social responsibility: evidence from China

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Financial experts of top management teams and corporate social responsibility: evidence from China

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Abstract

This study examines how the financial experience of senior executives influences corporate social responsibility (CSR) performance and reporting activities. With a sample of Chinese listed companies over the period 2009–2018, we find that companies with senior executives with financial expertise are associated with higher CSR performance and tend to issue lengthier sustainability reports than companies without; in addition, the percentage of financial experts on the top management team (TMT) is positively related to CSR. We next find that such improvement in CSR is mainly driven by senior executives who have work experience in regulatory-oriented financial institutions. By examining the role of the TMT's latitude of action, we find that the positive influence of senior executives' financial experience on CSR is more pronounced in non-state-owned enterprises and in cash-abundant companies. Last, further analysis demonstrates that the enhancement in CSR driven by financially sophisticated executives drives firm value. The results are robust to alternative measures, sensitivity tests, and various controls for endogeneity concerns.

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1 Introduction

Corporate social responsibility (CSR), a self-regulating business model, is widely acknowledged in the existing literature as a company's commitment to mitigating the potential adverse effects of its activities on its stakeholders and maximizing its long-term beneficial influence on the general public and society (Carroll 1979; McWilliams and Siegel 2001; Cheng et al. 2014; Ferrell et al. 2016; Liang and Renneboog 2017b). Specifically, CSR, also known as corporate citizenship, is a corporate action taken on behalf of stakeholders (McWilliams and Siegel 2000). The interest in and scope of practicing CSR have expanded from a minority of academic researchers to a vast majority of business communities, investors, senior executives, and policymakers (Shahab et al. 2018a; Ma et al. 2020).[1] The effective use of CSR can enhance firm value, referred to as 'doing well by doing good' (Brown and Dacin 1997; Deng et al. 2013; Boubakri et al. 2016; Nguyen et al. 2020). CSR activities, such as contributions to employee benefits, compliance with international environmental protection guidelines and social welfare practices, contributions to workplace and product safety, and human rights protection, motivate a company's customers, employees, investors, suppliers, and communities to continuously support its business dealings and operations, thus enhancing firm performance (Liang and Renneboog 2017a; Li et al. 2021b). Nevertheless, we still have limited knowledge on the determinants of a company's commitment to socially responsible activities, particularly from the top management team (TMT) perspective (Li and Zhang 2010; Siegel 2014; Orlitzky et al. 2015).

Prior research has, to a large extent, focused on the influence of CEOs on CSR strategies (Slater and Dixon-Fowler 2009; Tang et al. 2015; McCarthy et al. 2017; Al-Shammari et al. 2019; Hegde and Mishra 2019; Shahab et al. 2020). Until quite recently, the influence of the TMT on CSR has been little understood (Siegel 2014), especially in emerging markets. This is crucial negligence, as all companies' strategic decisions are made by the TMT, not CEOs alone. Along with the increased importance of and pressure from various stakeholders, CSR is increasingly matrixed into companies' business strategies, and it even constitutes a source of competitive advantage (Siegel and Vitaliano 2007). However, the dominated neoclassical economics and agency theories are not able to explain the CSR strategies as they are not obviously profit-maximizing. Indeed, the upper echelon theory (UET) postulates that the demographic and functional backgrounds of senior executives play a critical role in strategic decision making (Hambrick and Mason 1984). In regard to the implementation of CSR strategies, prior studies indicate that the demographic and functional backgrounds of senior executives can encourage and cultivate a stronger executive commitment to compliance with institutional regulations and guidelines, which exert a positive influence on social and environmental conduct (Ntim and Soobaroyen 2013; Shahab et al. 2018b, 2020; Al-Shammari et al. 2019; Hegde and Mishra 2019; Chen et al. 2020a). In other words, senior executives' specific characteristics or experiences may serve as crucial antecedents of the extent of CSR performance and reporting activities.

In this study, we draw on the UET and respond to the recent call for investigating specific TMT demographic backgrounds as drivers of CSR (Siegel 2014; Orlitzky et al. 2015)

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[1] For instance, approximately 93% of the top 250 Fortune Global firms undertook environmental, social, and governance (ESG) reporting and actively engaged in stakeholder-oriented activities in 2017 (KPMG sustainability report, 2017). In 2018, the Fortune Global 500 firms spent more than $20 billion on CSR (Harvard Business Review, 2018). Details are available at https://hbr.org/2018/01/stop-talking-about-how-csr-helps-your-bottom-line.

by exploring whether and how senior executives' financial working experience ('financial expertise') affects CSR. The financial expertise acquired by the TMT becomes increasingly important and is cast as best equipped to make strategies (Zorn 2004; Uhde et al. 2017). In particular, the increased financial constraint inflicted by the recession of 2008–2009 makes senior executives with financial acumen more desirable because of the importance of financial skills when appraising business strategies and corporate policies and managing limited capital resources and business risk (Custódio and Metzger 2014). Prior studies have demonstrated that boards with financial experts affect corporate policies and strategies (Defond et al. 2005; Burak Güner et al. 2008; Abernathy et al. 2013; Badolato et al. 2014; Farber et al. 2018). We extend this strand of research by investigating whether financial experts with financial institutions working experience affect CSR strategies. Traditionally, financial experts (i.e., accountants) are viewed as profit-driven, whereas evidence finds that CEOs with financial expertise engage more in CSR activities (Shahab et al. 2020). This suggests that some backgrounds of financial experts are not solely profit-driven. Therefore, we focus on senior executives' working experience in financial institutions, not only because of the financial skills obtained from such experience, but also the special cognitions of responsible investments cultivated while working in financial institutions matters in CSR practices.

The Chinese market provides a unique and ideal environment to study companies' CSR strategies and decisions regarding the existence of senior executives with financial experience for the following reasons. China is the largest emerging market and has weak corporate sustainable performance and minority shareholder protections, severe environmental problems, and inferior law enforcement (Li et al. 2021b). The average CSR ratings of Chinese listed companies are, in general, lower than those of companies located in countries with common or civil law regimes (Demirbag et al. 2017; Liang and Renneboog 2017b). China has significantly improved its economic development and successfully transformed its industrial structure within a relatively short period since its capital markets were open to international investors in the 1990s; however, this remarkable 'industrial upgrade' has, to a certain extent, driven up societal and environmental costs such as excessive sulphur dioxide emissions, industrial wastewater treatment, and poor food quality (Elmagrhi et al. 2019). A series of actions have been conducted by the Chinese government and regulatory authorities to address environmental problems, and sustainability regulations have been enacted at all levels in response to the pressure from various stakeholders to encourage companies to promote CSR.[2] Moreover, in response to drastic climate change and deteriorating environmental conditions, Chinese environmental organizations highlighted the slogan 'greener GDP' in the mid-2000s (Shahab et al. 2018b, 2020). In September 2016, the Chinese authority signed the Paris Climate Agreement to demonstrate its commitment to changing the worsening environment situation in the country in particular and the globe in general. However, despite all these efforts, social and environmentally sustainable problems are still prevalent because of the poor law enforcement in China (Li et al. 2021b). Compared with those in developed countries, where CSR standards have been successfully implemented, Chinese executives are still a long way from fully practicing socially sustainable activities in alignment with international practices and standards; this alarming

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[2] The number of companies that disclose CSR and stakeholder-oriented information increased from 121 in 2008 to 681 in 2014 (see http://www.unesco.org/education/BBE-EPG-Report2015.pdf). Furthermore, the Shanghai Stock Exchange issued the *Notice on Strengthening Listed Companies' Assumption of Social Responsibility* and the *Guidelines on Listed Companies' Environmental Information Disclosure* in 2008 to guide CSR practices (See https://sseinitiative.org/stock-exchange/sse/).

situation and China's institutional background motivate us to timely examine the influence of senior executives' attributes on CSR activities and sustainable reporting.

Using a sample consisting of 847 unique Chinese listed companies and 5,158 firm-year observations over the period 2009–2018, we find that the TMT's financial experience has a positive influence on CSR and that the influence has its economic significance. On average, the CSR rating is approximately 4.05% higher for companies with financial experts as senior executives than for companies without financial experts as senior executives, ceteris paribus. In addition, companies run by senior executives with financial expertise tend to issue longer sustainability reports. We further find that the positive influence of the TMT's financial experience on CSR is particularly driven by senior executives who have work experience in regulatory-oriented financial institutions. By examining the role of the TMT's latitude of action in the link between senior executives' financial experience and CSR performance, we reveal that this positive influence is more salient in non-state-owned enterprises (non-SOEs) or in cash-rich firms. Our results are also robust to a battery of additional tests, including a firm fixed-effect model, alternative measures of the TMT's financial experience, an industry-mean-adjusted social responsibility rating, the inclusion of additional control variables, the weighted least squares (WLS), the propensity score matching (PSM) technique, the Heckman correction approach, and the dynamic generalized method of moments (GMM) model. Last, our further analysis illustrates that the enhancement in companies' CSR driven by financial experts on the TMT leads to higher firm value.

We contribute to the extant literature in the following ways. First, we update the growing understanding of the effect of financial experience on companies' strategies by providing novel evidence of its effect on CSR, a crucial aspect that has been omitted in related literature. Extant studies on the effects of TMT members with financial experience mainly focus on conservative financial disclosure (Bamber et al. 2010), internal control weaknesses (Oradi et al. 2020), general financial policies (Custódio and Metzger 2014),[3] earnings management (Jiang et al. 2013; Dimitrios and Hang 2018), investment efficiency and firm performance (Li et al. 2021a), tax avoidance (Chen et al. 2020b), and the interplay between the Sarbanes–Oxley Act and the likelihood of appointing a financial expert CEO (Cullinan and Roush 2011). We demonstrate that financial experts in the TMT not only focus on short-term profit via financial performance, innovation, and M&As but also take the long-term stakeholders' interests into consideration. Our finding contributes to upper echelons theory (Hambrick and Mason 1984; Hambrick 2007) and early-career formative experiences (Gibbons and Waldman 2004, 2006).

Second, our research contributes to the literature on the driving factors of CSR. To the best of our knowledge, this is the first attempt to investigate whether TMTs' financial experience affects corporate outcomes with a specific focus on socially responsible activities. The extant literature indicates that a company's CSR is influenced by female board directors (McGuinness et al. 2017; Elmagrhi et al. 2019), analyst coverage (Adhikari 2016), institutional ownership (Dyck et al. 2019; Li et al. 2021b), family ownership (Block and Wagner 2014; Oh et al. 2019), cross-listing (Del Bosco and Misani 2016; Lu and Wang 2021), legal origins and national institutional characteristics (Demirbag et al. 2017), and

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[3] In particular, Custódio and Metzger (2014) find that firms with financial expert CEOs hold less cash and more debt and engage in more share repurchases. In addition, financial expert CEOs are more financially sophisticated, are better able to raise external funds, and tend to invest less in research and development (R&D).

CEO management skills (Chen et al. 2020a). Our study highlights that the financial backgrounds of senior executives play a part in improving CSR performance and facilitating nonfinancial disclosures, such as the readability and reporting contents of sustainability reports.

The rest of the study is organized as follows. Section 2 discusses the institutional background of China. Section 3 reviews the related literature and develops our hypotheses. Section 4 describes the research design. The discussion of key findings and robustness checks is covered in Sect. 5. Endogeneity tests are presented in Sect. 6. Section 7 presents further analysis, and Sect 8 concludes the study.

2 CSR in China

The concept of CSR was formally introduced into Chinese capital markets between the 1990s and early 2000s following extensive pressure from domestic and foreign stakeholders for more information on employee contributions, product standards and quality, environmental conditions and social problems.[4] However, Chinese firms saw CSR not as a core value but as a task to complete, and as a consequence, a wide range of labour, health, and sustainability problems still continued to break out. Since then, Chinese firms have faced greater pressure to engage in stakeholder-oriented activities, and a series of localized sustainability guidelines and standards have been enacted to reflect the view that companies' socially responsible activities can help build a harmonious community and society, which is a key goal that was highlighted by the Chinese regulatory authorities at the 2006 National People's Congress. Later, both the Shanghai Stock Exchange (SSE) and the Shenzhen Stock Exchange (SZSE) enacted guidelines for the social responsibility and environmental information disclosure of listed companies in September 2006 and December 2008, respectively, to further strengthen CSR consciousness and construct a harmonious society.[5] Since the turning point of 2006, when the concept of CSR was included in Chinese Corporate Law, many firms have begun to publish corporate sustainability reports. This was the time when non-governmental organizations and local academic institutions started researching the topic and educating those around them on best practices. Driven by the intensive intervention of the central government and regulatory authorities, the total annual amount of Chinese listed companies' donations in kind experienced an increase of nearly 42%, from $3.24 billion in 2015 to $4.6 billion in 2018, as noted by the RKS Runling CSR rating system, which is a leading and independent sustainability rating agency in the Chinese market.

The execution of these CSR policies, however, still remained substandard, mainly because of the weak commitment of companies' management teams and inferior corporate governance (Du et al. 2014; Shahab et al. 2020). Moreover, our data show that between 2009 and 2018, only approximately 15.12% of Chinese listed firms issued their

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[4] The China Business Council for Sustainable Development issued *The China CSR Recommended Standard and Best Practice* in 2006 to guide listed firms to build up their capability of taking social responsibility.

[5] Details are available at http://www.szse.cn/English/about/news/szse/t20061222_558483.html, http://english.sse.com.cn/news/newsrelease/c/4946972.shtml, and https://www.coresponsibility.com/csr-china-follower-leader/#:~:text=Corporate%20social%20responsibility%20(CSR)%20in,as%20its%20economy%20and%20skylines.&text=It%20is%20a%20trend%20that,many%20to%20reassess%20their%20strategy.

CSR reports in accordance with the Global Reporting Initiative (GRI) sustainability and 'green' standards. Prevailing evidence suggests that in the absence of the total commitment of the TMT, the drive to bring positive changes to China's sustainable and social conduct is unlikely (Shahab et al. 2018b, 2020). In sum, the present environmental and social concerns in China and its unique institutional background motivate us to investigate the effects of the TMT's attributes on CSR.

3 Theoretical framework and hypotheses

3.1 TMT's influence on CSR

Although CSR is not a traditional profit-driven investment, it can still benefit companies financially. For instance, firms that invest in CSR strategies to satisfy both internal and external stakeholders can gain enhanced reputation, greater support from customers, suppliers, communities, and governments (Wang and Qian 2011), and deepened employee loyalty and commitment (Greening and Turban 2000). All of these developments ultimately reflect on the increase in financial performance. Furthermore, a remarkable CSR record can help companies secure critical resources from stakeholders and mitigate the possible risks of reputational loss, thereby providing insurance-like protection in the long run (Fombrun and Gardberg 2000; Williams and Barrett 2000; Godfrey 2005). Despite these benefits, companies still vary in terms of CSR activities. In fact, TMTs, as the main driver of company strategies, face a significant increase in pressure from various stakeholders, including shareholders and debtholders (Wiengarten et al. 2017), which has a great influence on companies' CSR strategies (Defond et al. 2005; Pondeville et al. 2013).

Nevertheless, the dominated neoclassical economics and agency theories are not able to explain the CSR strategies as they are not obviously profit-maximizing (Huang and Watson 2015; Plöckinger et al. 2016). Whether and how a company balances the conflicting needs of multiple stakeholders and achieves the abovementioned financial benefits is attributed to how the TMT understands and identifies the needs of stakeholders and incorporates them into firm strategies (Brower and Mahajan 2013; Parker 2014). We, therefore, introduce the UET, which postulates that individual characteristics play a significant role in corporate-level decision making (Hambrick and Mason 1984).

UET posits that a company's strategic choices can reflect the values and cognitions of its TMT (Hambrick and Mason 1984; Hambrick 2007). Based on bounded rationality, this theory posits that senior executives will percept and interpret facets, details, and external pressures through a set of cognitive bases and values which affect the way they perceive the information and make decisions (Hambrick and Mason 1984; Parker 2014; Heyden et al. 2017). These cognitions and values reflect individual characteristics and idiosyncrasies of decision-making and create an individual managerial perception that evaluatesall situations and makes corporate strategic decisions. Therefore, UET provides theoretical roots to explain how TMT may react to the requests of stakeholders and make CSR decisions (Plöckinger et al. 2016; Reimer et al. 2018). Based on this theory, various observable experiences (i.e., age, gender, working experience, functional and educational backgrounds) are more often used as proxies for actual managerial cognitions in empirical investigations of selective perception (Carpenter et al. 2004). Working experience in financial institutions (or financial working experience) is one of such proxies.

Prior studies offer some evidence on how the demographic backgrounds of TMT members affect CSR activities. For example, Brower and Mahajan (2013) find that TMTs with a chief marketing officer will be more sensitive to external stakeholders and thus achieve better CSR performance. Wiengarten et al. (2017) contend that the gender and functional background of newly appointed CSR chief officers positively affect the financial performance of CSR strategies. Lau et al. (2016) also find that TMTs with more foreigners or managers having international experience achieve increased CSR performance. As noted by Reimer et al. (2018), a complementary relationship between the TMT and CEO can explain the heterogeneity of CSR strategies. Dezső and Ross (2012) and Christensen et al. (2014) find that having female executives in the TMT improves CSR performance. However, the influence of the financial working experience of TMTs, an increasingly important demographic background, on companies' CSR has received little attention in the literature.

Different from others, corporate managers who build up their knowledge, skills, and social responsibility values through financial working experience may have conflicting effects in terms of CSR strategies. One would expect that financial experts associated with cost control do not have motivations to support nonfinancial activities, such as CSR activities. By contrast, we conjecture that senior executives with financial career experience may better understand the dependence on stakeholders, which may motivate them to advise more CSR engagement. Shahab et al. (2020) provide initial support to our conjunction by finding that financial expert CEOs positively improve a company's sustainable performance and environmental management.

3.2 Financial experience of TMT members and CSR

Unlike other financial experts who have only worked in non-financial institutions, people who have ever worked in financial institutions are more likely to establish CSR cognition and values. This is because financial institutions, particularly the regulatory-oriented financial institutions, may be more sensitive to the trend of CSR/sustainability and subject to strict CSR concerns (Guler et al. 2002; Yin and Zhang 2012). The CSR cognition that has been built in organizations' culture/policies enables their employees to be aware of socially responsible and environmentally sustainable engagement and commitment. Their employees are more likely to receive CSR-related budgeting and reporting training (Baumann-Pauly et al. 2013; Edinger-Schons et al. 2019).

Financial experience is related to a general responsibility of creating budgets and analyzing investments. Managers who lack good budgeting and investment appraisal skills may be less likely to invest in CSR projects because CSR activities are usually costly and uncertain. The relevant future cash inflows are difficult to predict. However, there is a natural link between CSR and financial professionals because of the high demand for measuring, analyzing, and reporting CSR-related information (Huang and Watson 2015). First, along with the popularity of integrated reporting and CSR reporting in the last few decades, financial professionals have a great opportunity to participate in the creation and analysis of CSR-related information. In this way, senior executives with financial experience should have a better understanding of the expenses and incomes of CSR projects and, hence, may provide useful advice on their forward-looking valuations. This may increase the likelihood of investing in CSR projects.

Second, senior executives with financial experience tend to be more proficient in risk management (Bamber et al. 2010). Research indicates that financial experts play predominant roles in risk assessment and management (Hall et al. 2015). Regarding CSR, the costs

related to environmental and social risks can be substantial. Senior executives with financial expertise are qualified to advise risk management and avoid such costs by improving CSR (Helfaya and Moussa 2017). Furthermore, the abovementioned benefits of CSR activities come from strengthened relationships with stakeholders and enhanced reputation. These benefits can moderate the impact of adverse events on shareholder value and offset firm risk (Godfrey 2005; El Ghoul et al. 2018). As such, senior executives with financial experience may be more likely to employ CSR activities as an insurance-like tool to offset firm risk in both the short and long terms.

Third, senior executives with financial experience may improve CSR performance by improving the disclosure quality of CSR information. Information disclosure is one of the general responsibilities of financial professionals. They are in a good position to understand the financial implications of good reporting practices. Regarding CSR reporting, previous literature has documented that auditing committee members with financial expertise have a good understanding of the financial implications of good CSR reporting practices and compliance with recommended best reporting practices in particular (Li et al. 2012; Appuhami and Tashakor 2017). High-quality CSR reports can, for example, reduce the cost of capital (Dhaliwal et al. 2011) and improve reputation (Brammer and Millington 2005). Dhaliwal et al. (2014) contend that CSR improves with scrutiny from financial analysts since extensive coverage exerts pressure on firms to disclose information, including information related to social issues. One would expect senior executives with financial experience to act in a similar way to improve CSR disclosure quality and, hence, CSR performance.

Finally, owing to their experience in financial institutions, senior executives may be more sensitive to stakeholder needs and expectations. This is because financial institutions' business nature plays an important role among sectors in contributing to sustainable development and is required for developing socially responsible investment (Crifo and Forget 2013).[6] In particular, the Chinese market provides a better context to investigate this research issue, as Chinese financial institutions were under stronger government supervision/control than those in other countries in the 1990s and early 2000s. China has enacted policies to encourage the financial sector to develop green finance (i.e., China's 11th and 12th five-year plans in 2006 and 2011, respectively) (Dong et al. 2021). Senior executives who used to be among such responsible investors were more likely to know the expectations of these financial stakeholders (i.e., as shareholders or debtholders). Furthermore, employees of financial institutions usually have broad networks, such as clients from various industries, peer colleagues and financial professional organizations. The different external networks enable them to be more sensitive to the demands of stakeholders (Bear et al. 2010). For these reasons, they may have high sensitivity to society and stakeholder interests and motivation to vote for CSR activities (Ramón-Llorens et al. 2019).

However, given that China is characterized by inferior governance mechanisms and weak law enforcement (Guariglia and Yang 2016), conflicts of interest between corporate executives and shareholders may be likely to result in the opportunistic use of philanthropic activities or overinvestment. Moreover, Krüger (2015) draws on the agency/negative view of CSR and argues that executives may use CSR engagement for reputation building, wasteful pet projects, and social standing at the expense of shareholder wealth. This may indicate that CSR improvement may be driven by the opportunistic

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6 See https://www.unepfi.org/about/unep-fi-statement/ for more details.

managerial use of philanthropy. In contrast, we posit that senior executives with financial working experience may better perceive the long-run benefits of CSR and the importance of stakeholder-oriented engagement. Based on the above discussions, senior executives with financial working experience have the potential to actively propel CSR practices. Therefore,

Hypothesis 1 Companies with senior executives who have financial experience have significantly better CSR performance than those without such executives, ceteris paribus.

Experiences of exposure to CSR activities also help firms take on more CSR activities (Lau et al. 2016). If a senior executive has working experience in a regulatory-oriented financial institution (i.e., regulatory commission, policy bank, stock exchange), s/he should have a CSR mindset and be more likely to support CSR strategies. This is because regulatory-oriented financial institutions owned by the government usually take CSR into consideration. For instance, private equity funds invested by government funds have better CSR performance than others (Crifo and Forget 2013). Thus,

Hypothesis 2 Companies with senior executives who have working experience in regulatory-oriented financial institutions have significantly better CSR performance than those without such executives, ceteris paribus.

As discussed earlier, firms with senior executives with financial experience have incentives and the capability to propel CSR investments and strategies, thereby pushing firms towards better sustainability performance. Finkelstein and Hambrick (1990) argue that senior executives, however, do not always have a full latitude of action (also known as managerial discretion or flexibility) in terms of decision making. According to the UET, whether senior executives' demographic characteristics have a stronger or weaker influence on firms' business plans or organizational outcomes largely depends on how much discretion these executives have (Xie 2014; Ma et al. 2019). Prior research has documented some important political and organizational factors that could affect the scope of decision-making flexibility afforded to corporate executives, for example, the control of the state (Li and Tang 2010) and the availability of slack resources (Tang et al. 2015). Motivated by these studies, we further investigate whether these factors moderate the influence of senior executives' financial experience on CSR.

The presence of government control in Chinese companies has a great influence on managerial decisions (Lau et al. 2016). To a large extent, senior executives' latitude of action is restricted by state ownership (Li and Tang 2010; Liu and Liu 2013; Shen et al. 2020). Higher state ownership and ultimate government control mean higher pressure to comply with the government's macro-level strategies (Delios et al. 2008), including, for example, maintaining and increasing the value of state-owned assets. Also, SOE firms, which are more sensitive to government policy changes and exhibit a strong state intervention (Liu et al. 2017), may not allow a high level of managerial discretion and flexibility. In other words, TMT per se has a weak influence on some of the companies' strategies. Hence, the explanatory power of senior executives' demographic backgrounds is weak. In the same way, the TMT of state-owned companies can lose control of CSR-related decisions because institutional pressure drives these companies to engage in more CSR activities to show their social responsibility and echo the call of the government regarding CSR strategies (Marquis and Qian 2014; Lau et al. 2016). Therefore, we

expect that in state-owned companies, senior executives' financial experience will have a weaker influence on CSR decisions.

Hypothesis 3 State control weakens the positive relationship between the financial experience of the TMT and CSR performance.

A firm's financial slack is a crucial factor of managerial decisions on CSR. Firms with financial slack are more likely to invest in CSR and exhibit higher CSR ratings because free resources provide corporate executives more flexibility and make them less resistant to meeting stakeholders' demands (Surroca et al. 2010; Arora and Dharwadkar 2011; Marquis and Qian 2014; Li et al. 2021b). The CSR investment advice of senior executives with financial experience may be more likely to be accepted by other senior managers when there are more free sources. Hence, we expect financial slack to strengthen the positive link between CSR and managerial financial experience.

Hypothesis 4 If a company has more financial slack, the positive link between the financial experience of the TMT and CSR performance is stronger.

4 Research design

4.1 Data and sample

We start with all Chinese A-share companies listed on either the Shenzhen Stock Exchange (SZSE) or Shanghai Stock Exchange (SSE) with CSR performance ratings during the period from 2009 to 2018, where A-shares, also known as domestic shares, are the stock shares of mainland Chinese firms that trade on the above two stock exchanges and are stock shares that are denominated in Renminbi.[7] Data on CSR performance and its dimensions are extracted from the RKS Runling rating system, which evaluates the quality of socially sustainable and environmentally friendly corporate conduct and covers Chinese listed companies issuing sustainability reports (Marquis and Qian 2014; Lau et al. 2016; McGuinness et al. 2017; Guo et al. 2018; Long et al. 2020; Li et al. 2021b).[8]

We then extract data on the TMT's financial experience, financial and accounting data, and governance quality from the China Stock Market and Accounting Research (CSMAR) Platform, and combine the information on TMTs' financial experience with these control variables. This generates an initial sample of 20,914 firm-year observations. We next exclude all financial industry companies because some financial fundamentals (i.e., the leverage ratio) that are normal for these companies may not always have the same meaning as for non-financial companies. This results in a sample of 20,688 firm-year observations.

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[7] Only A-share companies are included because A-shares companies and B-share companies are quite different in terms of their currency quotation and investor types, which may, to a large extent, influence market reactions. Therefore, including all types of these firms in our sample may bias our empirical results.

[8] *RKS* Runling ranting system is an independent and leading ratings agency and follows the evaluating system of the KLD and standards of Global Reporting Initiative activity (GRI3.0) to construct its own rating system. Its ratings are a comprehensive measure that reflects the CSR practices of a firm. We choose 2009 as the starting point because data on CSR are only available since 2009. More information is available at http://www.rksratings.cn/.

After requiring non-missing data on the TMT's financial experience, CSR performance ratings, and control variables, we are left with a panel data sample of 5,158 firm-year observations and 847 listed companies between 2009 and 2018. To eliminate the influence of outliers on our results, we winsorize all continuous variables at the 1st and 99th percentiles of their respective distributions.

4.2 Measurement of key variables

4.2.1 Proxies for CSR

The CSR performance score *(CSRSCORE)* is a composite proxy of the sustainable performance of a company. This rating ranges from 0 to 100, with a higher value indicating better CSR engagement. The CSR ratings encapsulate a firm's strategy, ability, and orientation to meet stakeholders' concerns and focus on charitable and philanthropic works. This composite performance measure includes three dimensions under the headings of *MSCORE*, *CSCORE* and *TSCORE*. The level of *MSCORE* evaluates the quality of sustainability strategies and CSR information disclosure, the quality of the engagement of stakeholder-oriented activities, the assessment of risk control mechanisms, sustainability values and codes of conduct. *CSCORE* evaluates a company's fair business operations, economic outcome, effectiveness of environmental protection, human rights and labour rights protections, customer concerns and feedback, and contributions to community development. *TSCORE* evaluates the coverage, scope, accuracy, normalization, consistency of sustainable reporting, and reporting innovation. Our study also uses the length of CSR reports (*Page*) as an alternative measurement of CSR engagement, which is measured as the natural logarithm of the number of pages in the CSR report. Regarding CSR disclosure and reporting, some companies choose to publish this information as part of their annual reports or sustainability reports. Others use stand-alone CSR reports with improved readability and more reporting material to show their dedication and attempts to increase accountability and efficiency (Li et al. 2021b). As noted by Dhaliwal et al. (2011) and Dhaliwal et al. (2014), the required rate of return by investors is generally lower for firms that issue more comprehensive and detailed standalone CSR reports.

4.2.2 Measuring TMT members' financial experience

Our main independent variable, *Financial_D*, is a categorical variable that equals one if a company has at least one senior executive with financial experience and zero otherwise. Specifically, the financial experience by CSMAR refers to the experience gained by senior executives who have working experience in regulatory commissions, policy and commercial banks, insurance firms and investment banks, fund management firms, securities depository and clearing organizations, futures and trust firms, investment management firms, and stock exchanges (Shahab et al. 2020).[9] Following Wiengarten et al. (2017), Reimer et al. (2018), Ma et al. (2019), Shen et al. (2020), and Ma et al. (2020), we define the TMT as comprising senior executives who directly engage in a company's investment and financing choices and corporate policies, including a company's CEO, executive chairperson, vice president, chief financial officer (CFO), financial controller, general manager,

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[9] For more details, please refer to CSMAR at https://us.gtadata.com/.

executive/deputy general manager, and vice manager.[10] To further examine the extent to which senior executives with financial experience influence CSR, we introduce *Financial_ Ratio*, which is calculated as the number of financial expert executives divided by the total number of TMT members as a robustness test.

4.3 Empirical model

To examine our hypotheses, we use the following ordinary least squares (OLS) regression (Ferrell et al. 2016; Liang and Renneboog 2017b):

$$CSRSCORE_{i,t} = \alpha + \beta_1 Financial\_D_{i,t-1} + \beta_2 Control_{i,t-1} + Dummy_{year} + Dummy_{industry} + \varepsilon_{i,t} \tag{1}$$

where *Financial_D* denotes the presence of senior executives with financial experience in a firm; *CSRSCORE* is a measure of the overall CSR rating of firm i in year t. Based on Hypothesis 1, we anticipate the estimate on *Financial_D* to be significantly positive.

In accordance with prior CSR studies (Ferrell et al. 2016; Liang and Renneboog 2017a; McGuinness et al. 2017; Li et al. 2021b), we control for a set of factors (*Control*) that may influence CSR. More specifically, we control for the influence of the state-owned enterprises (SOEs), a categorical variable equal to one if a corporation's ultimate controlling shareholder is the state or government, and zero otherwise. We also control for company size (*Size*), which is calculated as the book value of total assets in the form of a natural logarithm, since larger companies are likely to have more resources to propel CSR engagements (Li et al. 2021b). Firm age (*Age*), measured as the natural logarithm of the number of years since listing, can influence CSR in both directions. Mature firms are more able to engage in CSR (Boubakri et al. 2016), while new or start-up firms have incentives to invest in CSR to establish their reputation and enhance their competitive advantages (Farag et al. 2015).

A company's leverage (*Lev*) is the ratio of total liabilities to total assets and indicates resource constraints on socially responsible activities. Return on assets (*ROA*) is calculated as the earnings before interest and taxes scaled by the book value of total assets. Profitable companies are more likely to have financial resources for socially sustainable activities and thus higher CSR performance (Boubakri et al. 2016). By contrast, firms with weak past operating performance may use CSR strategies as a reputation-building tool (Farag et al. 2015), thus resulting in a negative sign for *ROA*. A firm's growth opportunities are captured by Tobin's Q (*Q*). Tobin's Q can affect CSR both positively and negatively. High-growth companies have the capability to take on CSR initiatives (Ferrell et al. 2016). By contrast, it may have a negative influence because of the financial constraints imposed by other investment projects (Li et al. 2021b).

Further, we allow for the effect of ownership concentration, *HERF10*, defined as the sum of squares of the shareholding percentage of the top ten negotiable shareholders (also

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[10] Taking Shenzhen Energy Group Company Limited (stock code: 000027), one of the leading power generation firms in China, as an example, Shenzhen Energy had nine members (CEO, CFO, managing director, financial controller, chief accountant, deputy general managers, senior managers) on its TMT in 2015, and three of them had a functional background in finance. Specifically, Chong Shao, a senior manager at Shenzhen Energy in 2015, had previously worked as a supervisor at Guotai Junan Securities Co. Ltd. (stock code: 601211) in 2006 and as the Deputy Chairman of the Board at China Great Wall Securities Co. Ltd. (stock code: 002939) in 2008. Details are available at https://webb-site.com/dbpub/officers.asp?p=134546&hide= Y&d=2017-08-21&u=1 and https://www.bloomberg.com/profile/company/002939:CH.

known as the Herfindahl index for a company's ownership by top-ten shareholders). Large shareholders may demand stronger social responsibility commitment (Li and Zhang 2010). A company's free cash flow (*FCF*), measured as the ratio of the net operating cash flow to the book value of total assets, is included as a control because cash-rich companies are better able to engage in CSR. We control for *RD_Intensity*, measured as R&D expenditures divided by total sales. If there exists a strong inclination towards R&D expenditures, companies are likely to choose to expend fewer resources on CSR (Pavelin and Porter 2008). Alternatively, drawing on the resource-based theoretical perspective, CSR and R&D activities may bring together valuable resources and establish competitive edges, thus driving a positive link between CSR and R&D intensity (Hegde and Mishra 2019; Li et al. 2021b).

Following McGuinness et al. (2017) and Li et al. (2021b), we also control for several proxies for a company's governance quality, for example, the natural logarithm of the total number of directors (*BoardSize*), CEO-chair duality (*Duality*), the proportion of independent directors (*Indep*) on the board, the size of the executive team (*Managerial),* and board gender diversity (*Female)*. Having more board directors and independent directors is associated with better CSR performance, while CEO-chair duality is negatively related to CSR ratings because companies with better internal governance quality are more likely to behave in socially responsible ways. The size of the executive team, measured as the natural logarithm of the total number of executive managers, matters in promoting effective CSR. *Female* is calculated as the proportion of female directors on board. A higher proportion of female directors is associated with higher CSR ratings. Finally, we control for a categorical variable, *SSE*, to account for the effects of stock exchange guidelines on corporate social conduct.[11] This variable is set to one if the company is listed on the SSE and zero otherwise.

This study includes year and industry dummies to capture time and industry effects. A firm fixed-effect model is used for robustness tests. We lag all explanatory variables except *SSE* by one year. The variable construction and data sources are displayed in Appendix 1.

5 Empirical results

5.1 Univariate results

Table 1 displays the annual distributions of CSR ratings and the characteristics of senior executives with financial working experience during the sample period. The percentage of firms having senior executives with financial experience has increased over the years, from nearly 24.45% in 2009 to 28.92% in 2018. In addition, the percentage of senior executives with financial experience has increased over the years. The average CSR rating in 2009 is approximately 28.8922, while it significantly increases to 41.7502 in 2018. Taken together, CSR performance increases as the percentage of firms with senior executives who have financial experience increases.

The descriptive statistics are shown in Table 2. *CSRSCORE* has a mean (median) value of 38.62 (36.03), which is comparable to the findings reported by McGuinness et al. (2017), Elmagrhi et al. (2019), and Li et al. (2021b). *CSR_Industry*, an industry-mean-adjusted

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[11] Both the Shanghai Stock Exchange and the Shenzhen Stock Exchange enacted the guidelines for social responsibility and environmental information disclosure of listed firms in 2006 and in 2008, respectively. See Sect. 2 for details.

Table 1 Full sample distribution

Year	Percentage of firms with senior executives who have financial experience	Proportion of executives with financial experience on the TMT	CSR performance	No. of obs
2009	0.2445	0.0478	28.8922	274
2010	0.2555	0.0546	31.6110	411
2011	0.2598	0.0579	34.1646	281
2012	0.2649	0.0508	36.0147	521
2013	0.2543	0.0482	37.9659	586
2014	0.2516	0.0466	39.4625	624
2015	0.2504	0.0465	41.6688	643
2016	0.1979	0.0338	41.6022	672
2017	0.2314	0.0389	42.3867	700
2018	0.2892	0.0512	41.7502	446
Average/total	0.2470	0.0462	38.6169	5158

This table displays the annual distribution of the characteristics on senior executives with financial experience and CSR performance

CSR rating, ranges between −35.67 and 47.06 and has a mean (median) value of approximately 0.03 (−1.61). The low average CSR ratings show that Chinese companies are still significantly behind in regard to implementing CSR guidelines. A total of 24.7% of the sample firms have financial experts on their management teams (*Financial_D*). The mean value (0.0462) of *Financial_Ratio* indicates that on average, 4.62% of members of the TMT have financial experience. The mean value of *Financial_regulatory* (*Financial_nonregulatory*) is 0.0111 (0.2359), suggesting that 1.11% (23.59%) of sample firms have senior executives with financial experience in regulatory authorities (nonregulatory authorities). A total of 5.33% of the sample firms have a CEO with a functional background in finance (*Financial_CEO*).

Table 3 displays the correlation matrix. The correlation coefficient between *Financial_D* and *CSRSCORE* (*MSCORE*, *CSCORE*, *TSCORE*, and *Page*) is significantly positive. This lends initial support to our Hypothesis 1 (H1). Regarding the operating performance, the correlation coefficient between *ROA* and *FCF* is 0.2019, which is at an acceptable level, indicating that our result might not be driven by the collinearity problem. None of the other variables are highly correlated, thus eliminating potential concerns with respect to multicollinearity.

5.2 Main regression results

5.2.1 Effects of the TMT's financial experience on a firm's CSR and its dimensions

To investigate the effects of senior executives' functional backgrounds in finance on a firm's social responsibility, we estimate Eq. (1) and display the results in Table 4. Model 1 presents the results of the baseline OLS regression; the coefficient on *Financial_D* is positive and significant at the 1% level, indicating that firms with senior executives who have financial experience exhibit an increase in subsequent CSR performance. Economically,

Table 2 Descriptive statistics

Variable	No. of obs	Mean	SD	Min	P25	P50	P75	Max
CSRSCORE	5158	38.6169	12.1592	14.1400	30.2800	36.0304	44.3377	87.9478
MSCORE	4884	13.2619	4.4435	2.8100	10.0800	12.8906	15.9375	27.5625
CSCORE	4884	17.2572	5.7795	2.6367	13.3447	16.3100	20.2148	39.5903
TSCORE	4884	6.9334	1.8926	1.7763	5.6250	6.5132	7.7961	17.6500
CSR_Industry	5158	0.0266	10.3259	− 35.6672	− 6.7729	− 1.6149	4.5585	47.0567
Page	3669	2.8571	0.8127	0.6931	2.1972	2.7726	3.4340	5.3083
MandatoryPolicy	20,688	0.1083	0.3107	0.0000	0.0000	0.0000	0.0000	1.0000
CSR_Presence	20,688	0.2493	0.4326	0.0000	0.0000	0.0000	0.0000	1.0000
Financial_D	5158	0.2470	0.4313	0.0000	0.0000	0.0000	0.0000	1.0000
Financial_D_ExCEOCFO	5158	0.1644	0.3707	0.0000	0.0000	0.0000	0.0000	1.0000
Financial_regulatory	5158	0.0111	0.1046	0.0000	0.0000	0.0000	0.0000	1.0000
Financial_nonregulatory	5158	0.2359	0.4246	0.0000	0.0000	0.0000	0.0000	1.0000
Financial_CEO	5158	0.0533	0.2247	0.0000	0.0000	0.0000	0.0000	1.0000
Financial_Ratio	5158	0.0462	0.1018	0.0000	0.0000	0.0000	0.0000	1.0000
SOE	5158	0.6262	0.4839	0.0000	0.0000	1.0000	1.0000	1.0000
Size	5158	22.9928	1.4450	18.2659	21.9548	22.8300	23.8405	28.5087
Age	5158	2.3638	0.6168	0.0000	2.0794	2.5649	2.8332	3.3322
Lev	5158	0.4955	0.2002	0.0478	0.3485	0.5090	0.6484	1.0548
ROA	5158	0.0468	0.0614	− 0.2878	0.0149	0.0401	0.0760	0.2300
Q	5158	1.7766	1.1987	0.5520	1.0512	1.3933	2.0524	10.4585
HERF10	5158	0.1919	0.1296	0.0141	0.0878	0.1675	0.2684	0.5636
FCF	5158	0.0362	0.1705	− 0.7972	− 0.0263	0.0631	0.1345	0.4203
RD_Intensity	5158	0.0223	0.0330	0.0000	0.0000	0.0090	0.0340	0.2170
BoardSize	5158	2.3118	0.1883	1.6094	2.1972	2.3026	2.3979	2.9444
Duality	5158	0.1634	0.3698	0.0000	0.0000	0.0000	0.0000	1.0000
Indep	5158	0.3740	0.0562	0.3077	0.3333	0.3636	0.4000	0.5714
Managerial	5158	2.0664	0.3279	0.0000	1.7918	2.0794	2.3026	3.3673
Female	5158	0.1454	0.0997	0.0000	0.0690	0.1304	0.2000	0.5556
SSE	5158	0.5931	0.4913	0.0000	0.0000	1.0000	1.0000	1.0000
AnalystCoverage	5158	2.0346	1.1007	0.0000	1.0986	2.1972	2.9444	4.1897
BigFour	5158	0.1503	0.3574	0.0000	0.0000	0.0000	0.0000	1.0000
TMT_AcademicRatio	5158	0.0996	0.1492	0.0000	0.0000	0.0000	0.1667	1.0000
TMT_ForeignRatio	5158	0.0456	0.1045	0.0000	0.0000	0.0000	0.0000	1.0000
TMT_Age	5158	3.8571	0.0773	3.5205	3.8089	3.8636	3.9120	4.1026
MTB	4526	2.4601	2.3829	0.0384	1.1450	1.8301	2.9486	25.1837

Table 3 Correlation matrix

	Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
(1)	CSRSCORE	1.0000										
(2)	MSCORE	0.9144*	1.0000									
(3)	CSCORE	0.9308*	0.7379*	1.0000								
(4)	TSCORE	0.8172*	0.7377*	0.6934*	1.0000							
(5)	Page	0.8799*	0.8361*	0.8279*	0.7266*	1.0000						
(6)	Financial_D	0.0616*	0.0578*	0.0529*	0.0775*	0.1038*	1.0000					
(7)	SOE	0.1180*	0.0676*	0.1516*	0.0717*	0.1194*	-0.1206*	1.0000				
(8)	Size	0.4748*	0.3984*	0.4332*	0.4114*	0.4277*	0.0874*	0.2895*	1.0000			
(9)	Age	0.0343*	0.0504*	-0.0222	0.0466*	0.0101	-0.0509*	0.2845*	0.1924*	1.0000		
(10)	Lev	0.1095*	0.0864*	0.1196*	0.0913*	0.1554*	0.0442*	0.2330*	0.4895*	0.2475*	1.0000	
(11)	ROA	0.0153	-0.0292*	0.0633*	0.0038	0.0556*	0.0289*	-0.1470*	-0.0341*	-0.1533*	-0.4310*	1.0000
(12)	Q	-0.1091*	-0.0895*	-0.1654*	-0.0688*	-0.1270*	-0.0237*	-0.1616*	-0.4099*	0.0300*	-0.3373*	0.2078*
(13)	HERF10	0.2029*	0.1485*	0.2159*	0.1376*	0.1633*	-0.0092	0.2831*	0.3442*	-0.1297*	0.0755*	0.0722*
(14)	FCF	0.0509*	0.0204	0.0786*	0.0293*	0.0208	-0.0411*	0.0356*	-0.0063	0.0019	-0.0774*	0.2019*
(15)	RD_Intensity	0.0184	0.0479*	-0.0487*	-0.0178	-0.0661*	-0.0535*	-0.2655*	-0.2240*	-0.2069*	-0.3012*	-0.0063
(16)	BoardSize	0.1174*	0.0721*	0.1559*	0.0847*	0.1273*	-0.0146	0.2442*	0.2117*	0.0542*	0.1024*	-0.0019
(17)	Duality	-0.0362*	-0.0142	-0.0581*	-0.0320*	-0.0450*	0.0544*	-0.2806*	-0.1101*	-0.1562*	-0.1204*	0.0703*
(18)	Indep	0.0503*	0.0515*	0.0244*	0.0379*	0.0275*	0.0549*	-0.0228	0.1222*	-0.0301*	0.0343*	-0.0126
(19)	Managerial	0.2280*	0.1877*	0.2432*	0.1524*	0.2279*	0.0104	0.1357*	0.2739*	-0.0255*	0.1528*	0.0225
(20)	Female	-0.0479*	-0.0016	-0.1053*	-0.0262*	-0.0508*	0.0483*	-0.2866*	-0.2316*	0.0188	-0.1757*	0.1005*
(21)	SSE	-0.0088	-0.0711*	0.0158	0.0263*	-0.0150	0.0324*	0.3266*	0.1818*	0.1671*	0.2099*	-0.0987*

Table 3 (continued)

	Variable	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)
(12)	Q	1.0000									
(13)	HERF10	-0.1657*	1.0000								
(14)	FCF	0.0267*	0.1125*	1.0000							
(15)	RD_Intensity	0.2714*	-0.1880*	-0.0423*	1.0000						
(16)	BoardSize	-0.1640*	0.0578*	0.0481*	-0.1140*	1.0000					
(17)	Duality	0.0917*	-0.1014*	-0.0255*	0.1964*	-0.1579*	1.0000				
(18)	Indep	0.0318*	0.0891*	-0.0351*	0.0329*	-0.3835*	0.0933*	1.0000			
(19)	Managerial	-0.1141*	0.0352*	0.0099	0.0323*	0.2188*	0.0237*	0.0051	1.0000		
(20)	Female	0.1753*	-0.1912*	-0.0487*	0.0982*	-0.1818*	0.1221*	0.0180	-0.1984*	1.0000	
(21)	SSE	-0.1346*	0.2021*	0.0294*	-0.2463*	0.1280*	-0.1760*	-0.0170	0.0357*	-0.1195*	1.0000

The * indicates significance at least the 10% level

Table 4 Effects of TMT's financial experience on a firm's CSR and its dimensions

Dependent variable =	CSRSCORE Baseline OLS	CSRSCORE Firm fixed effects	MSCORE Overall quality of CSR strategy, disclosure, and risk control	CSCORE The effectiveness of the implemented environmental and social strategy	TSCORE The extent and accuracy of CSR reporting	Page Sustainability report pages
	(1)	(2)	(3)	(4)	(5)	(6)
Financial_D	1.5652***	1.0081***	0.5566***	0.6815***	0.2929***	0.1374***
	(4.6222)	(3.6999)	(4.5618)	(3.8824)	(4.9369)	(4.7429)
SOE	0.9243**	0.3330	0.3152**	0.5866***	−0.0121	0.0819**
	(2.4873)	(0.4467)	(2.3870)	(2.9605)	(−0.2070)	(2.4994)
Size	3.9677***	1.2908***	1.2456***	1.8310***	0.5619***	0.2679***
	(23.6325)	(4.1919)	(21.2281)	(21.5962)	(19.9030)	(20.5388)
Age	−1.4797***	−0.9651*	−0.5494***	−0.6330***	−0.2774***	−0.1200***
	(−5.2333)	(−1.8390)	(−5.4272)	(−4.3638)	(−5.7486)	(−5.0487)
Lev	−5.0179***	0.9502	−1.6139***	−2.3036***	−0.8435***	−0.2248**
	(−5.1065)	(0.9023)	(−4.4280)	(−4.4697)	(−5.1493)	(−2.5089)
ROA	−7.1133***	5.2476**	−4.7652***	−0.9341	−1.7307***	−0.4526*
	(−2.7334)	(2.4354)	(−4.7653)	(−0.6681)	(−4.1635)	(−1.8974)
Q	0.4130***	−0.1148	0.2030***	0.0864	0.0869***	0.0240**
	(2.9870)	(−0.9921)	(4.0850)	(1.1960)	(3.8800)	(1.9757)
HERF10	5.5505***	−0.3029	2.0320***	2.6378***	0.5229**	0.2998**
	(4.0059)	(−0.1573)	(4.2422)	(3.5742)	(2.4386)	(2.4833)
FCF	2.5112***	0.0367	0.4643*	1.6090***	0.4858***	0.1416***
	(3.3549)	(0.0741)	(1.6769)	(3.9517)	(4.2194)	(2.0353)
RD_Intensity	7.4721	−0.1284	1.7468	4.4191	0.3299	0.0471
	(1.3318)	(−0.0211)	(0.8948)	(1.4963)	(0.4048)	(0.1011)
BoardSize	2.2529**	0.6121	0.8834***	1.2177**	0.3466**	0.1950**
	(2.3953)	(0.6291)	(2.6120)	(2.5329)	(2.1782)	(2.5488)

Table 4 (continued)

Dependent variable =	CSRSCORE	CSRSCORE	MSCORE	CSCORE	TSCORE	Page
	Baseline OLS	Firm fixed effects	Overall quality of CSR strategy, disclosure, and risk control	The effectiveness of the implemented environmental and social strategy	The extent and accuracy of CSR reporting	Sustainability report pages
	(1)	(2)	(3)	(4)	(5)	(6)
Duality	−1.0818***	−0.3287	−0.3501***	−0.4357**	−0.1698***	−0.0836***
	(−2.9462)	(−0.9560)	(−2.6129)	(−2.2678)	(−2.8595)	(−2.6908)
Indep	−0.2382	−3.7755	0.4720	−0.1821	−0.0324	−0.0050
	(−0.0902)	(−1.4589)	(0.4946)	(−0.1310)	(−0.0732)	(−0.0219)
Managerial	3.1500***	0.4867	0.9262***	1.7159***	0.2259***	0.2254***
	(6.6541)	(1.0790)	(5.4379)	(7.0962)	(2.9994)	(5.7905)
Female	4.3538***	−2.2359	1.7960***	1.7211**	0.7017***	0.4282***
	(2.8079)	(−1.3125)	(3.2709)	(2.1130)	(2.8559)	(3.3202)
SSE	−1.6981***	–	−0.9634***	−0.7816***	−0.0584	−0.1867***
	(−5.6754)	–	(−8.7198)	(−4.8951)	(−1.2276)	(−7.2683)
_intercept	−68.8300***	0.2462	−22.9928***	−29.0217***	−7.3801***	−4.4075***
	(−17.0539)	(0.0350)	(−15.4883)	(−13.8197)	(−11.1943)	(−13.2877)
Year effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry effects	Yes	No	Yes	Yes	Yes	Yes
Firm fixed effects	No	Yes	No	No	No	No
No. of obs	5158	5158	4884	4884	4884	3669
Adj. R-square	0.405	0.273	0.446	0.322	0.379	0.300

This table displays the results with respect to the effects of senior executives with financial experience on CSR. The explained variable is CSRSCORE in Models (1)–(2), MSCORE in Model (3), CSCORE in Model (4), TSCORE in Model (5), and Page in Model (6). The key independent variable is Financial_D, which is a categorical variable assigned a value of one if any executives on the TMT have a career background in finance, and zero otherwise. All independent variables except SSE are lagged by one year. Models (1) and (3)–(6) control for industry and year fixed effects. Model (2) controls for firm fixed effects. In all OLS regreesions, we cluster standard errors by year and firm. The 0.01, 0.05, and 0.1 significance levels are denoted by ***, **, and * (two-tailed), respectively

the CSR rating is approximately 4.05% higher in companies with financial expert executives than in companies without.[12] In addition, we introduce a firm fixed-effects model to address concerns related to unobservable time-invariant firm-specific issues and report the results in Model 2. Notably, the estimate on *Financial_D* remains positive and significant (coefficient = 1.0081, t = 3.6999), and the magnitude of the estimate is similar to that reported in Model 1.

Table 4 also displays the regression results using CSR subcategories (*MSCORE* in Model 3, *CSCORE* in Model 4, and *TSCORE* in Model 5) as the dependent variables. The coefficients on *Financial_D* in these three models are significantly positive at the 1% level, which further conforms to H1. Finally, we employ *Page* as a dependent variable in Model 6 to investigate whether firms with senior executives who have financial experience issue lengthier sustainability reports to enhance the readability of CSR disclosure. The positive and highly significant coefficient on *Financial_D* indicates that senior executives with financial career experience have a positive influence on the contents and readability of corporate sustainable reporting. Overall, the evidence affirms that senior executives with financial experience drive firms to adopt better CSR strategies, thus supporting H1.

5.2.2 TMT's financial experience in regulatory authorities and nonregulatory authorities

To test the validity of Hypothesis 2 (H2), we introduce two key independent variables to our model specification to investigate the influence of TMT members' financial experience in regulatory authorities and in nonregulatory authorities on a firm's CSR. Specifically, *Financial_regulatory* is a categorical variable assigned a value of one if any executives on the TMT have financial working experience in regulatory authorities (i.e., policy banks, regulatory commissions, or stock exchanges) and zero otherwise. *Financial_nonregulatory* is a categorical variable assigned a value of one if any executives on the TMT have financial working experience in nonregulatory authorities, and zero otherwise. We replace *Financial_D* with *Financial_regulatory* and *Financial_nonregulatory* in Eq. (1) and re-estimate the specification using the overall CSR and its subcategories and report the results in Table 5. In all models, the coefficients on *Financial_regulatory* and *Financial_nonregulatory* are positive and significant; notably, the magnitudes of the coefficients on *Financial_regulatory* are generally larger than those of the coefficients on *Financial_nonregulatory*. For example, in Model 1 of Table 5, the estimate on the former is 3.5712 and that on the latter is 1.4740. We reasonably conclude that the improvement in CSR is, to a large extent, driven by senior executives who have work experience in regulatory-oriented financial institutions. Taken together, these results suggest that companies with senior executives who have ever worked in financial regulatory authorities exhibit higher CSR scores than firms with senior executives who have financial experience in nonregulatory authorities, thereby strongly supporting H2.

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[12] In Model 1, the coefficient on *Financial_D* is 1.5652, and the average CSR performance is 38.6169, as reported in Table 2, which together indicate that the CSR performance for firms with senior executives with financial expertise is expected to increase by an average of approximately 4.05% (i.e., 1.5652/38.6169 = 0.04053148).

Table 5 Effects of TMT's financial experience in regulatory authorities and nonregulatory authorities on a firm's CSR and its dimensions

Dependent variable =	CSRSCORE	CSRSCORE	MSCORE	CSCORE	TSCORE	Page
	OLS	Firm fixed effects	Overall quality of CSR strategy, disclosure, and risk control	The effectiveness of the implemented environmental and social strategy	The extent and accuracy of CSR reporting	Sustainability report pages
	(1)	(2)	(3)	(4)	(5)	(6)
Financial_regulatory	3.5712***	2.8805**	1.6736***	1.1123*	0.6330***	0.2087*
	(2.7962)	(2.5103)	(3.7600)	(1.8301)	(2.8711)	(1.8283)
Financial_nonregulatory	1.4740***	0.9321***	0.5033***	0.6610***	0.2767***	0.1337***
	(4.2778)	(3.3751)	(4.0585)	(3.6889)	(4.5687)	(4.5350)
SOE	0.9356**	0.3590	0.3223**	0.5894***	−0.0099	0.0824**
	(2.5154)	(0.4816)	(2.4393)	(2.9719)	(−0.1694)	(2.5115)
Size	3.9716***	1.2830***	1.2480***	1.8320***	0.5626***	0.2681***
	(23.6443)	(4.1671)	(21.2576)	(21.5987)	(19.9246)	(20.5233)
Age	−1.4952***	−0.9435*	−0.5585***	−0.6366***	−0.2802***	−0.1209***
	(−5.2885)	(−1.7977)	(−5.5302)	(−4.3827)	(−5.7991)	(−5.0678)
Lev	−5.0283***	0.9724	−1.6212***	−2.3064***	−0.8457***	−0.2254**
	(−5.1174)	(0.9234)	(−4.4475)	(−4.4754)	(−5.1656)	(−2.5149)
ROA	−7.2735***	5.1783**	−4.8577***	−0.9698	−1.7589***	−0.4587*
	(−2.7967)	(2.4033)	(−4.8657)	(−0.6933)	(−4.2364)	(−1.9231)
Q	0.4203***	−0.1112	0.2072***	0.0881	0.0882***	0.0244**
	(3.0367)	(−0.9603)	(4.1644)	(1.2170)	(3.9324)	(1.9995)
HERF10	5.5455***	−0.3644	2.0258***	2.6354***	0.5210**	0.2992**
	(4.0023)	(−0.1892)	(4.2308)	(3.5697)	(2.4302)	(2.4767)
FCF	2.5481***	0.0574	0.4861*	1.6175***	0.4925***	0.1427***
	(3.4048)	(0.1159)	(1.7577)	(3.9685)	(4.2849)	(2.0493)
RD_Intensity	7.8198	−0.3140	1.9590	4.5010	0.3946	0.0663
	(1.3929)	(−0.0516)	(1.0027)	(1.5219)	(0.4841)	(0.1419)
BoardSize	2.2036**	0.5398	0.8540**	1.2063**	0.3376**	0.1923**
	(2.3414)	(0.5544)	(2.5252)	(2.5054)	(2.1199)	(2.5060)

Table 5 (continued)

Dependent variable =	CSRSCORE	CSRSCORE	MSCORE	CSCORE	TSCORE	Page
	OLS	Firm fixed effects	Overall quality of CSR strategy, disclosure, and risk control	The effectiveness of the implemented environmental and social strategy	The extent and accuracy of CSR reporting	Sustainability report pages
	(1)	(2)	(3)	(4)	(5)	(6)
Duality	−1.0658***	−0.3180	−0.3410**	−0.4322**	−0.1670***	−0.0834***
	(−2.9004)	(−0.9250)	(−2.5463)	(−2.2467)	(−2.8103)	(−2.6821)
Indep	−0.2898	−3.9537	0.4387	−0.1950	−0.0426	−0.0093
	(−0.1095)	(−1.5268)	(0.4581)	(−0.1401)	(−0.0959)	(−0.0402)
Managerial	3.1848***	0.4718	0.9457***	1.7234***	0.2318***	0.2264***
	(6.7102)	(1.0459)	(5.5378)	(7.1125)	(3.0693)	(5.8121)
Female	4.4276***	−2.2454	1.8372***	1.7370**	0.7143***	0.4306***
	(2.8579)	(−1.3183)	(3.3541)	(2.1326)	(2.9084)	(3.2399)
SSE	−1.6856***	–	−0.9565***	−0.7789***	−0.0563	−0.1860***
	(−5.6369)	–	(−8.6667)	(−4.8796)	(−1.1839)	(−7.2369)
_intercept	−68.8070***	0.6395	−22.9867***	−29.0193***	−7.3783***	−4.4058***
	(−17.0459)	(0.0910)	(−15.4915)	(−13.8175)	(−11.1945)	(−13.2799)
Year effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry effects	Yes	No	Yes	Yes	Yes	Yes
Firm fixed effects	No	Yes	No	No	No	No
No. of obs	5158	5158	4884	4884	4884	3669
Adj. R-square	0.405	0.274	0.447	0.322	0.379	0.300

This table presents the results regarding the influence of TMT's financial experience in regulatory authorities and the influence of TMT's financial experience in nonregulatory authorities on a firm's CSR. *Financial_regulatory* is a categorical variable assigned a value of one if any executives on the TMT have financial work experience in regulatory authorities (i.e., policy banks, regulatory commissions, or stock exchanges), and set to zero if a firm does not have any executives with financial experience, or if a firm has senior executives with financial experience in nonregulatory authorities. *Financial_nonregulatory* is a categorical variable assigned a value of one if any executives on the TMT have financial work experience in nonregulatory authorities, and set to zero if a firm does not have executives with financial experience, or if a firm has executives with financial work experience in regulatory authorities. The explained variable is *CSRSCORE* in Models (1)–(2), *MSCORE* in Model (3), *CSCORE* in Model (4), *TSCORE* in Model (5), and *Page* in Model (6). All independent variables except *SSE* are lagged by one year. Models (1) and (3)–(6) control for industry and year fixed effects. Model (2) controls for firm fixed effects. In all OLS regressions, we cluster standard errors by firm and year. The 0.01, 0.05, and 0.1 significance levels are denoted by ***, **, and * (two-tailed), respectively

5.2.3 Moderating effects of SOEs and slack resources

To test the validity of Hypothesis 3 (H3), we re-estimate Eq. (1) by introducing an interaction term *Financial_D × SOE*. This interaction term captures the moderating effect of SOEs. The results are presented in Panel A of Table 6. The coefficient on *Financial_D* in all models is significantly positive, while that on *Financial_D × SOE* is negative and significant at the 5% level, broadly meaning that TMT members' financial experience indeed has a positive influence on firms' CSR and that such a positive influence is more pronounced in non-SOEs than in SOEs. In line with H3, senior executives tend to have a lower latitude of action in SOEs (Li and Tang 2010; Liu and Liu 2013; Shen et al. 2020), mainly due to the higher pressure that managers face regarding compliance with the government's macro-level strategies (Delios et al. 2008); hence, the influence of senior executives' financial experience on CSR is greatly weakened.

Similarly, we re-run Eq. (1) by including an interaction term *Financial_D × FCF*, which captures the moderating effect of corporate slack resources (measured by free cash flow) (Li et al. 2021b). The results are displayed in Panel B of Table 6. In all models, the coefficient on *Financial_D* remains positive and significant at the 1% level. The coefficient on *Financial_D × FCF* in Models 1–2 and 4–5 is significantly positive at the conventional levels and the coefficient on *FCF* in Models 1, 4, and 5 is also significantly positive. These results suggest that firms whose executives have financial expertise exhibit a significant increase in future CSR and that such a positive influence is more prominent in cash-abundant firms, which strongly conforms to H4.

In sum, our findings support that when a company with senior executives with financial working experience will exhibit better CSR performance. In particular, the performance is even better when such working experience is from regulatory-oriented financial institutions and when the company is non-state-owned or has more financial slack.

5.3 Robustness checks

5.3.1 Percentage of financial experts on the TMT

As discussed, we use *Financial_Ratio* as an alternative measure of *Financial_D* and report the results of OLS and firm fixed effects in Models 1–2 of Table 7, respectively. The estimate on *Financial_Ratio* is significantly positive in both models; specifically, the estimate indicates that a unit increase in this ratio is associated with an increase in a firm's CSR performance of approximately 4.1400 (3.4966) units in Model 1 (2). These results are consistent with our baseline result.

5.3.2 Effect of CEOs with financial expertise on CSR

We next investigate the effect of CEOs' financial experience because CEOs may have a greater impact on companies' strategic management process, implementation of policies, and decision making than other senior executives (Custódio and Metzger 2014; Shahab et al. 2020). As noted by Zhang and Wiersema (2009), the attributes of the CEO send important signals to the investment community regarding the credibility of the CEO certification. Hence, the quality of the company's financial statements, in turn, affects the stock market reaction to CEO certification. Early formative experiences, such as financial

Table 6 Role of TMT's latitude of action in the link between financial experience and a firm's CSR and its dimensions

Dependent variable =	CSRSCORE	CSRSCORE	MSCORE	CSCORE	TSCORE	Page
	OLS	Firm fixed effects	Overall quality of CSR strategy, disclosure, and risk control	The effectiveness of the implemented environmental and social strategy	The extent and accuracy of CSR reporting	Sustainability report pages
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A Moderating effect of state-own-enterprises (SOEs) in the link between TMT's financial experience and CSR						
Financial_D	2.4892***	1.7489***	0.8239***	1.0881***	0.3487***	0.1496***
	(5.1621)	(4.2308)	(4.9237)	(4.3408)	(4.2645)	(3.6449)
Financial_D×SOE	−1.6509**	−1.2820**	−0.4832**	−0.7348**	−0.1009	−0.0234
	(−2.4675)	(−2.3819)	(−2.0371)	(−2.1175)	(−0.8770)	(−0.4094)
SOE	1.3329***	0.6206	0.4347***	0.7683***	0.0129	0.0875**
	(3.4650)	(0.8222)	(3.1213)	(3.7167)	(0.2166)	(2.5151)
Size	3.9868***	1.2887***	1.2509***	1.8390***	0.5630***	0.2681***
	(23.6913)	(4.1873)	(21.2511)	(21.6382)	(19.9488)	(20.4982)
Age	−1.4814***	−0.9156*	−0.5508***	−0.6352***	−0.2777***	−0.1204***
	(−5.2568)	(−1.7444)	(−5.4558)	(−4.3888)	(−5.7636)	(−5.0513)
Lev	−5.2466***	0.8769	−1.6788***	−2.4023***	−0.8570***	−0.2275**
	(−5.3185)	(0.8327)	(−4.5783)	(−4.6482)	(−5.2420)	(−2.5291)
ROA	−7.1734***	5.1266**	−4.7864***	−0.9664	−1.7351***	−0.4532*
	(−2.7500)	(2.3799)	(−4.7808)	(−0.6898)	(−4.1732)	(−1.8984)
Q	0.4084***	−0.1095	0.2015***	0.0841	0.0865***	0.0240**
	(2.9436)	(−0.9459)	(4.0426)	(1.1603)	(3.8601)	(1.9715)
HERF10	5.5669***	−0.3656	2.0349***	2.6422***	0.5235**	0.2994***
	(4.0161)	(−0.1899)	(4.2462)	(3.5791)	(2.4416)	(2.4802)
FCF	2.5646***	0.0467	0.4767*	1.6278***	0.4884***	0.1421**
	(3.4153)	(0.0944)	(1.7177)	(3.9894)	(4.2350)	(2.0410)
RD_Intensity	7.1507	−0.2608	1.6537	4.2776	0.3105	0.0413
	(1.2677)	(−0.0428)	(0.8427)	(1.4428)	(0.3803)	(0.0885)

Table 6 (continued)

Dependent variable =	CSRSCORE	CSRSCORE	MSCORE	CSCORE	TSCORE	Page
	OLS	Firm fixed effects	Overall quality of CSR strategy, disclosure, and risk control	The effectiveness of the implemented environmental and social strategy	The extent and accuracy of CSR reporting	Sustainability report pages
	(1)	(2)	(3)	(4)	(5)	(6)
BoardSize	2.2493**	0.5703	0.8842***	1.2189**	0.3467**	0.1955**
	(2.3943)	(0.5864)	(2.6165)	(2.5385)	(2.1788)	(2.5554)
Duality	−1.0997***	−0.3174	−0.3563***	−0.4452**	−0.1711***	−0.0841***
	(−2.9884)	(−0.9236)	(−2.6565)	(−2.3108)	(−2.8761)	(−2.6985)
Indep	−0.1416	−3.7588	0.5000	−0.1396	−0.0266	−0.0027
	(−0.0537)	(−1.4532)	(0.5245)	(−0.1004)	(−0.0600)	(−0.0118)
Managerial	3.1827***	0.4807	0.9351***	1.7293***	0.2277***	0.2259***
	(6.7260)	(1.0663)	(5.4937)	(7.1536)	(3.0129)	(5.7970)
Female	4.3919***	−2.1174	1.8104***	1.7430**	0.7047***	0.4296***
	(2.8305)	(−1.2787)	(3.2974)	(2.1368)	(2.8706)	(3.2280)
SSE	−1.6805***	–	−0.9579***	−0.7732***	−0.0572	−0.1863***
	(−5.6146)	–	(−8.6696)	(−4.8404)	(−1.2023)	(−7.2297)
_intercept	−69.6344***	0.1453	−23.2086***	−29.3499***	−7.4252***	−4.4164***
	(−17.1902)	(0.0207)	(−15.5539)	(−13.9134)	(−11.2151)	(−13.2331)
Year effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry effects	Yes	No	Yes	Yes	Yes	Yes
Firm fixed effects	No	Yes	No	No	No	No
No. of obs	5158	5158	4884	4884	4884	3669
Adj. R-square	0.406	0.274	0.447	0.323	0.379	0.300
Panel B Moderating effect of corporate free cash flow in the link between TMT's financial experience and CSR						
Financial_D	1.4523***	0.9389***	0.5315***	0.6344***	0.2733***	0.1345***

Table 6 (continued)

Dependent variable =	CSRSCORE	CSRSCORE	MSCORE	CSCORE	TSCORE	Page
	OLS	Firm fixed effects	Overall quality of CSR strategy, disclosure, and risk control	The effectiveness of the implemented environmental and social strategy	The extent and accuracy of CSR reporting	Sustainability report pages
	(1)	(2)	(3)	(4)	(5)	(6)
	(4.2596)	(3.4114)	(4.3212)	(3.5842)	(4.6326)	(4.5801)
Financial_D×FCF	3.8910**	1.9736*	0.8951	1.6838*	0.6993**	0.0980
	(2.2181)	(1.7673)	(1.4119)	(1.8120)	(2.4682)	(0.6312)
SOE	0.8947**	0.2995	0.3086**	0.5743***	−0.0172	0.0811**
	(2.4063)	(0.4017)	(2.3345)	(2.8990)	(−0.2945)	(2.4701)
Size	3.9643***	1.3059***	1.2446***	1.8292***	0.5611***	0.2677***
	(23.6486)	(4.2403)	(21.2376)	(21.5920)	(19.9194)	(20.5279)
Age	−1.4854***	−0.9891*	−0.5499***	−0.6340***	−0.2778***	−0.1202***
	(−5.2601)	(−1.8846)	(−5.4322)	(−4.3745)	(−5.7584)	(−5.0563)
Lev	−4.9571***	0.9355	−1.6021***	−2.2813***	−0.8342***	−0.2226**
	(−5.0612)	(0.8886)	(−4.4059)	(−4.4373)	(−5.1087)	(−2.4878)
ROA	−7.0424***	5.2235**	−4.7474***	−0.9006	−1.7168***	−0.4519*
	(−2.7124)	(2.4248)	(−4.7518)	(−0.6458)	(−4.1285)	(−1.8980)
Q	0.4022***	−0.1163	0.2001***	0.0810	0.0846***	0.0238*
	(2.9151)	(−1.0049)	(4.0358)	(1.1215)	(3.7864)	(1.9531)
HERF10	5.6227***	−0.2885	2.0521***	2.6755***	0.5386**	0.3017**
	(4.0618)	(−0.1498)	(4.2842)	(3.6279)	(2.5110)	(2.4985)
FCF	1.5758*	−0.3997	0.2465	1.1993***	0.3157**	0.1189
	(1.9008)	(−0.7220)	(0.7889)	(2.6347)	(2.5096)	(1.5052)
RD_Intensity	7.4984	−0.5729	1.7556	4.4357	0.3368	0.0487
	(1.3386)	(−0.0940)	(0.9002)	(1.5033)	(0.4141)	(0.1046)

Table 6 (continued)

Dependent variable =	CSRSCORE	CSRSCORE	MSCORE	CSCORE	TSCORE	Page
	OLS	Firm fixed effects	Overall quality of CSR strategy, disclosure, and risk control	The effectiveness of the implemented environmental and social strategy	The extent and accuracy of CSR reporting	Sustainability report pages
	(1)	(2)	(3)	(4)	(5)	(6)
BoardSize	2.2792**	0.6054	0.8913***	1.2327**	0.3528**	0.1958**
	(2.4206)	(0.6224)	(2.6330)	(2.5603)	(2.2142)	(2.5575)
Duality	−1.0964***	−0.3478	−0.3539***	−0.4428**	−0.1727***	−0.0843***
	(−2.9839)	(−1.0114)	(−2.6400)	(−2.3025)	(−2.9072)	(−2.7108)
Indep	−0.2455	−3.7610	0.4733	−0.1798	−0.0314	−0.0056
	(−0.0930)	(−1.4536)	(0.4958)	(−0.1293)	(−0.0710)	(−0.0241)
Managerial	3.1588***	0.4829	0.9270***	1.7174***	0.2265***	0.2255***
	(6.6721)	(1.0708)	(5.4421)	(7.1027)	(3.0091)	(5.7909)
Female	4.3555***	−2.2489	1.7924***	1.7144**	0.6989***	0.4284***
	(2.8163)	(−1.3204)	(3.2684)	(2.1087)	(2.8510)	(3.2246)
SSE	−1.7010***	–	−0.9644***	−0.7835***	−0.0592	−0.1872***
	(−5.6865)		(−8.7250)	(−4.9083)	(−1.2448)	(−7.2734)
_intercept	−68.9086***	0.0299	−23.0115***	−29.0570***	−7.3948***	−4.4058***
	(−17.0917)	(0.0043)	(−15.5112)	(−13.8454)	(−11.2363)	(−13.2783)
Year effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry effects	Yes	No	Yes	Yes	Yes	Yes
Firm fixed effects	No	Yes	No	No	No	No
No. of obs	5158	5158	4884	4884	4884	3669
Adj. R-square	0.406	0.274	0.446	0.323	0.379	0.300

This table presents the results regarding the moderating effects of government control and corporate free cash flow in the association between TMT's financial experience and CSR. The explained variable is *CSRSCORE* in Models (1)–(2), *MSCORE* in Model (3), *CSCORE* in Model (4), *TSCORE* in Model (5), and *Page* in Model (6). All independent variables except *SSE* are lagged by one year. Models (1) and (3)–(6) control for industry and year fixed effects. Model (2) controls for firm fixed effects. In all OLS regressions, we cluster standard errors by firm and year. The 0.01, 0.05, and 0.1 significance levels are denoted by ***, **, and * (two-tailed), respectively

experience, may shape individuals' belief systems and behaviours and may influence their actions when they become senior executives, such as CEOs (Gibbons and Waldman 2004; Ma et al. 2019, 2020). We, therefore, employ a categorical variable, *Financial_CEO*, and re-estimate Eq. (1). *Financial_CEO* is assigned a value of one if the CEO has a functional background in finance and 0 otherwise. Given our theoretical inference, the coefficient on *Financial_CEO* is expected to be positive. The results of OLS and firm fixed effects reported in Models 3–4 of Table 7 confirm a positive influence of CEOs' financial expertise on improving a company's CSR ratings.

5.3.3 Excluding CEOs and CFOs from the TMT

There is no denying that the CEO is one of the most important characters within a firm. Moreover, CFOs are responsible for managing firms' financial actions and investment affairs (Ma et al. 2019, 2020). Their duties generally include tracking cash flow and financial planning, such as CSR investments. Together, these findings demonstrate the essential role that CEOs/CFOs hold. However, the role of TMT cannot be underestimated, as the management literature has long pointed out the importance of the roles of all TMT members in day-to-day operations and in decision-making and business strategies (Ma et al. 2020). UET (Hambrick and Mason 1984; Hambrick 2007) argues that it is the positive interaction among all TMT members that creates a magnified impact on firm policies. Our current measure that includes all financial experts on the TMT may, to some extent, result in biased results because the positive relationship may be largely driven by CEOs or CFOs. Hence, it is not clear whether the financial experience of TMT members other than CEOs or CFOs plays a part in improving CSR.

To address this concern and validate the importance of the general TMT, we repeat our main analysis by using a redefined proxy for the TMT's financial experience, that is, *Financial_D_ExCEOCFO*, which is a categorical variable assigned a value of one if at least one of the executives on the TMT (i.e., executive chairperson, vice president, general manager/managing director, executive/deputy general manager, and vice manager) has financial working experience and zero otherwise.[13] Model 5 of Table 7 shows a coefficient on *Financial_D_ExCEOCFO* of 1.2012 (t = 3.1422), which is similar to that reported in Model 1 of Table 4 (coefficient = 1.5652, t = 4.6222), implying that other TMT members with financial experience, other than CEOs or CFOs with financial expertise, can improve a firm's CSR.

5.3.4 Industry-adjusted CSR performance

Since CSR scores vary widely across different industries, we follow Li et al. (2021b) and use an industry-mean-adjusted CSR measure to assess a company's CSR engagement compared with that of its peers within the same industry. This measure (*CSR_Industry*) is calculated as the deduction of the company's CSR rating from the average rating for all listed companies operating in the same sector for a fiscal year.[14] We replace *CSRSCORE* with

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[13] Please note that this definition of the TMT excludes CEOs and CFOs.

[14] The industry classification follows the 2012 China Securities Regulatory Commission industry categories.

Table 7 Robustness checks

	Percentage of financial experts on the TMT		Effects of CEOs with financial experience		Excluding CEOs and CFOs from the TMT	Industry-mean-adjusted CSR	Analyst coverage	Audit quality	TMT heterogeneity	Sample and weights issues	2009–2013	2014–2018
Dependent variable =	CSRSCORE	CSRSCORE	CSRSCORE	CSRSCORE	CSRSCORE	CSR_Industry	CSRSCORE	CSRSCORE	CSRSCORE	CSRSCORE	CSRSCORE	CSRSCORE
	OLS	Firm fixed effects	OLS	Firm fixed effects	OLS	OLS	OLS	OLS	OLS	WLS	OLS	OLS
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Financial_Ratio	4.1400***	3.4966**										
	(2.6544)	(2.0985)										
Financial_CEO			3.3809***	2.1323***								
			(4.5981)	(3.9079)								
Financial_Ratio_ExCEOCFO					1.2012***							
					(3.1422)							
Financial_D						1.4726***	1.5870***	1.6868***	1.5772***	1.0900***	1.0012*	2.0416***
						(4.4423)	(4.6896)	(5.0430)	(4.7229)	(3.6356)	(1.8817)	(4.5813)
AnalystCoverage							0.2210	0.2893*	0.2960*			
							(1.3434)	(1.7982)	(1.8530)			
BigFour								4.9688***	4.8706***			
								(8.8371)	(8.6909)			
TMT_AcademicRatio									5.5745***			
									(5.7251)			
TMT_ForeignRatio									4.6388***			
									(3.1606)			
TMT_Age									6.2294***			
									(3.0803)			
SOE	0.8319**	0.2818	0.8564**	0.1484	0.8195**	0.8890**	0.9457**	0.9709***	0.7337**	1.0886***	0.5559	1.0738**
	(2.2156)	(0.2728)	(2.3155)	(0.1458)	(2.1832)	(2.4237)	(2.5419)	(2.6551)	(1.9959)	(3.3061)	(0.9390)	(2.1773)
Size	4.0129***	1.3141***	4.0162***	1.2733***	4.0364***	3.8723***	3.8667***	3.1673***	2.9198***	3.1324***	4.1639***	3.9528***
	(23.9427)	(2.6683)	(24.2145)	(2.5955)	(24.1683)	(23.5640)	(20.8322)	(16.8548)	(15.4907)	(20.4609)	(15.6018)	(17.7132)

Table 7 (continued)

	Percentage of financial experts on the TMT		Effects of CEOs with financial experience		Excluding CEOs and CFOs from the TMT	Industry-mean-adjusted CSR	Analyst coverage	Audit quality	TMT heterogeneity	Sample and weights issues	2009–2013	2014–2018
Dependent variable =	CSRSCORE	CSRSCORE	CSRSCORE	CSRSCORE	CSRSCORE	CSR_Industry	CSRSCORE	CSRSCORE	CSRSCORE	CSRSCORE	CSRSCORE	CSRSCORE
	OLS	Firm fixed effects	OLS	Firm fixed effects	OLS	OLS	OLS	OLS	OLS	WLS	OLS	OLS
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Age	−1.5503***	−1.0472	−1.6186***	−1.0510	−1.5080***	−1.4934***	−1.4321***	−1.2335***	−1.1027***	−1.1116***	−2.1420***	−1.0142***
	(−5.4919)	(−1.1588)	(−5.7496)	(−1.1654)	(−5.3358)	(−5.4211)	(−5.0380)	(−4.3198)	(−3.9168)	(−4.3123)	(−4.6315)	(−2.7904)
Lev	−5.0507***	0.9794	−5.0481***	0.8895	−5.1248***	−4.6428***	−4.9588***	−3.8227***	−3.7630***	−3.9191***	−5.2434***	−4.6224***
	(−5.1224)	(0.7206)	(−5.1325)	(0.6643)	(−5.1894)	(−4.8275)	(−5.0434)	(−3.8858)	(−3.8637)	(−4.3806)	(−3.2955)	(−3.5649)
ROA	−7.3130***	5.3035*	−6.8708***	5.3812*	−7.4627***	−7.7310***	−8.3880***	−8.3076***	−7.7136***	−4.1391*	−8.9869***	−7.0902**
	(−2.8069)	(1.8449)	(−2.6551)	(1.8896)	(−2.8650)	(−3.0430)	(−3.0088)	(−3.0006)	(−2.7991)	(−1.6649)	(−2.0714)	(−2.1240)
Q	0.4179***	−0.1207	0.4109***	−0.1356	0.4365***	0.3871***	0.3839***	0.3128**	0.2523*	0.2888**	0.5557**	0.4302**
	(3.0178)	(−0.8649)	(2.9730)	(−0.9783)	(3.1713)	(2.9177)	(2.7688)	(2.2681)	(1.8329)	(2.1536)	(2.0996)	(2.5453)
HERF10	5.4744***	−0.4194	5.3827***	−0.4845	5.5628***	5.1969***	5.6410***	4.5963***	4.5228***	5.2377***	3.4932	7.0026***
	(3.9492)	(−0.1625)	(3.8764)	(−0.1892)	(4.0060)	(3.7794)	(4.0663)	(3.4051)	(3.3996)	(4.2551)	(1.6332)	(3.7479)
FCF	2.4715***	0.0359	2.5277***	0.0467	2.4868***	2.1549***	2.5751***	1.9881***	1.8607**	1.8301***	2.6035**	1.9581**
	(3.3004)	(0.0773)	(3.3676)	(0.1005)	(3.3232)	(2.9439)	(3.4365)	(2.6635)	(2.4796)	(2.6422)	(2.1777)	(2.0432)
RD_Intensity	7.1406	−0.4486	7.6273	0.1276	7.6619	10.1714*	6.6749	4.3319	2.8265	4.9016	32.1277***	0.2089
	(1.2728)	(−0.0643)	(1.3659)	(0.0183)	(1.3612)	(1.8952)	(1.1801)	(0.7689)	(0.5018)	(0.8801)	(2.9727)	(0.0313)
BoardSize	2.2579**	0.6925	2.3931**	0.7392	2.2076**	2.2067**	2.1955**	1.9482**	2.0659**	2.2272**	0.4455	3.3066***
	(2.3967)	(0.4990)	(2.5425)	(0.5343)	(2.3448)	(2.4093)	(2.3367)	(2.0999)	(2.2356)	(2.5701)	(0.2760)	(2.8055)
Duality	−1.0745***	−0.3416	−1.2467***	−0.4237	−1.0093***	−1.1958***	−1.0840***	−1.0414***	−1.2580***	−0.6831*	−0.3467	−1.6252***
	(−2.9125)	(−0.7504)	(−3.3252)	(−0.9390)	(−2.7568)	(−3.3110)	(−2.9514)	(−2.8468)	(−3.4408)	(−1.9580)	(−0.5413)	(−3.6027)
Indep	−0.0539	−3.7097	0.1892	−3.7096	−0.0235	−0.0721	−0.1807	−1.9915	−3.0363	0.3788	−1.9361	1.1585
	(−0.0204)	(−0.9391)	(0.0721)	(−0.9366)	(−0.0089)	(−0.0279)	(−0.0683)	(−0.7576)	(−1.1654)	(0.1523)	(−0.4700)	(0.3302)
Managerial	3.3192***	0.6195	3.1671***	0.5360	3.1281***	3.0474***	3.0862***	2.9132***	2.9474***	3.4223***	3.7591***	2.8468***
	(6.8922)	(1.0510)	(6.7033)	(0.9054)	(6.6009)	(6.6040)	(6.4471)	(6.2546)	(6.3713)	(7.9761)	(4.8912)	(4.6540)

Table 7 (continued)

	Percentage of financial experts on the TMT		Effects of CEOs with financial experience		Excluding CEOs and CFOs from the TMT	Industry-mean-adjusted CSR	Analyst coverage	Audit quality	TMT heterogeneity	Sample and weights issues	2009–2013	2014–2018
Dependent variable =	CSRSCORE	CSRSCORE	CSRSCORE	CSRSCORE	CSRSCORE	CSR_Industry	CSRSCORE	CSRSCORE	CSRSCORE	CSRSCORE	CSRSCORE	CSRSCORE
	OLS	Firm fixed effects	OLS	Firm fixed effects	OLS	OLS	OLS	OLS	OLS	WLS	OLS	OLS
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Female	4.3001***	−2.2340	3.9031**	−2.5235	4.3541***	4.5244***	4.2927***	4.5780***	5.1678***	6.4286***	8.4047***	2.4463
	(2.7714)	(−0.9215)	(2.5089)	(−1.0378)	(2.8070)	(2.9575)	(2.7641)	(3.0216)	(3.3987)	(4.2987)	(3.0144)	(1.3045)
SSE	−1.6502***	–	−1.6294***	–	−1.6177***	−1.5967***	−1.6603***	−1.8958***	−1.4504***	−1.9969***	−1.6387***	−1.7264***
	(−5.4957)		(−5.4460)		(−5.3816)	(−5.4126)	(−5.5275)	(−6.4071)	(−4.7669)	(−7.2521)	(−3.2947)	(−4.4504)
_intercept	−69.7859***	−0.4748	−69.5088***	0.7826	−70.0237***	−91.7208***	−66.8679***	−50.7366***	−70.3375***	−49.9554***	−63.1054***	−66.4104***
	(−17.2527)	(−0.0427)	(−17.2461)	(−0.0708)	(−17.3749)	(−23.8799)	(−15.4930)	(−11.4346)	(−8.5165)	(−13.4131)	(−10.4616)	(−12.3394)
Year effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry effects	Yes	No	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	No	Yes	No	Yes	No	No	No	No	No	No	No	No
No. of obs	5158	5158	5158	5158	5158	5158	5158	5158	5158	5158	2073	3085
Adj. R-square	0.403	0.392	0.406	0.394	0.404	0.206	0.405	0.420	0.427	0.405	0.383	0.343

This table presents the results of a battery of robustness tests. In Models (1) and (2), the key independent variable is *Financial_Ratio*, measured as the number of financial experts on the TMT divided by the total number of TMT members. Models (3)–(4) report the results of the impact of CEOs' financial experience on CSR performance. *Financial_CEO* is equal to one if the CEO of a firm has financial experience, and receives a value of zero otherwise. Model (5) displays the result regarding the influence of the presence of a top executive (other than CEOs or CFOs) with financial experience on CSR performance. The key independent variable – *Financial_D_ExCEOCFO* is a categorical variable set to one if any executives on the TMT (i.e., executive chairperson, vice president, general manager/managing director, executive/deputy general manager, and vice manager) has a career background in finance, and zero otherwise. In Model (6), the dependent variable is *CSR_Industry*, which is an industry-mean-year-adjusted CSR rating. Models (7)–(9) control for additional variables. *AnalystCoverage*, defined as the natural logarithm of the number of unique analysts covering a particular firm (plus one), is included as a control variable in Model (7). Model (8) additionally controls for *BigFour*, which is a categorical variable assigned a value of one if the client-company is audited by a Big Four auditor in a given fiscal year, and equal to zero otherwise. The Big Four accounting organisations include PricewaterhouseCoopers, Ernst & Young, Deloitte, and KPMG. Model (9) additionally controls for TMT heterogeneity. *TMT_AcademicRatio* is measured as the fraction of senior executives with academic career experience on the TMT. *TMT_ForeignRatio* is measured as the percentage of senior executives with foreign work experience or study experience on the TMT. *TMT_Age* is the natural logarithm of the average age of senior executives. Model (10) presents the result using the weighted least squares. The regression results of the role of CSR guidelines by the Chinese government in the relationship between TMT's financial experience and CSR performance for the period 2009–2013 and those for the period of 2014–2018 are reported in Models (11) and (12), respectively. Models (2) and (4) controls for firm fixed effects. In all OLS regressions, we cluster standard errors by firm and by year. The 0.01, 0.05, and 0.1 significance levels are denoted by ***, **, and * (two-tailed), respectively

CSR_Industry and re-estimate Eq. (1). The result in Model 6 of Table 7 is consistent with our baseline result.

5.3.5 Accounting for analyst coverage, audit quality, and TMT heterogeneity

Next, we test whether our key result is robust to controlling for additional variables. First, external monitoring can mitigate opportunistic managerial behaviour and thus improve social engagement and practices. For example, Dhaliwal et al. (2014) contend that CSR improves with scrutiny from financial analysts since extensive coverage exerts pressure on firms to disclose information, including information related to social issues. Brammer and Millington (2005) document that analyst coverage helps firms accumulate more reputational capital through CSR by improving organizational visibility, which in turn encourages firms to engage in more philanthropy. To rule out the impact of external monitoring, we account for the influence of analyst coverage on CSR performance by augmenting Eq. (1) with *AnalystCoverage*, which is measured as the natural logarithm of the number of financial analysts covering a focal company in a fiscal year. The result in Model 7 of Table 7 demonstrates a significantly positive estimate on *Financial_D* at the 1% level, supporting H1.

Next, prior studies have documented that better due diligence by large auditing firms plays an external monitoring role in facilitating a firm's stakeholder-oriented activities (De Beelde and Tuybens 2015; Pucheta-Martínez et al. 2019). Thus, we additionally include a categorical variable *BigFour* as a proxy for audit quality, which is assigned a value of one if the client company is audited by a Big Four auditor in a fiscal year, and zero otherwise. The result presented in Model 8 of Table 7 is robust.

Ma et al. (2020) and Shahab et al. (2020) find that other demographic characteristics (i.e., academic career experience, foreign experience, and age) of senior executives are positively associated with a company's CSR performance or disclosure behaviours. Specifically, academic career experience may instil in senior executives a sense of social responsibility and shape the ways they run a firm and engage with stakeholders (Cho et al. 2017; Ma et al. 2019, 2020; Shahab et al. 2020). Lau et al. (2016) and Shahab et al. (2020) find that under the institutional background of China, top executives with foreign experience are likely to align institutional guidelines and regulations with the international standards of advanced markets, consequently driving better CSR implementation. Further, Shahab et al. (2020) argue that young executives may engage in empire building activities and focus more on short-term profit maximization, while older executives are more experienced and more likely to emphasize social capital enhancement and long-term objectives, such as socially responsible practices. To mitigate the concern that our results may be driven by the omitted executive team heterogeneity, we additionally control for *TMT_AcademicRatio*, measured as the proportion of executives with academic career experience on the TMT; *TMT_ForeignRatio*, measured as the percentage of senior executives with foreign work experience or study experience on the TMT; and *TMT_Age*, the natural logarithm of the average age of TMT members.[15] We then re-run Eq. (1) and present the result in Model 9 of Table 7. It is worth noting that the coefficient on *Financial_D* remains significantly

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[15] Specifically, the academic career experience is referred to as the work experience obtained by TMT members as faculty members at a college or a university or through academic work in an organization or institution for scientific research (Ma et al. 2019, 2020; Shahab et al. 2020; Shen et al. 2020).

positive (coefficient = 1.5772, t = 4.7229), indicating that our key finding is robust to controlling for TMT heterogeneity.

5.3.6 Weighted least squares

As shown in Table 1, our sample is unevenly distributed across years, with 274 observations in 2009 and 446 observations in 2018. Given that each firm-year observation may not be treated equally, which drives potential concerns regarding the homogeneity of error terms, we follow Callan and Thomas (2011) to introduce the WLS regression to maximize the parameter estimation efficiency. The result is displayed in Model 10 of Table 7; the estimate on *Financial_D* is significantly positive at the 1% level, confirming the positive link between the TMT members' financial experience and CSR as posited in H1.

5.3.7 Role of CSR rules by the regulatory authority in the link between financial experts and CSR

The Chinese government and regulatory authorities have widened socially responsible engagement in more recent years. For instance, the CSRC has enacted guidelines for Chinese listed firms regarding how to voluntarily disclose CSR information and environmental management in the annual report since 2013.[16] Therefore, one might argue that the enhancement in firms' CSR is not mainly driven by financial expert executives but attributable to the government's motive for social reputation building. We then empirically examine the varying scope of the influence of financial expert executives on CSR performance by partitioning our sample around 2013 as a cut-off point and present the regression results in Models 11 and 12 of Table 7, respectively. Notably, *Financial_D* attracts a significantly positive coefficient in both models. Although the magnitude of the coefficient on *Financial_D* is larger during the period 2014–2018 (coefficient = 2.0416) than that in the period 2009–2013 (coefficient = 1.0012), the seemingly unrelated test shows no systematic difference between these estimates, which is evidenced by a *p* value of 0.1338 in the Chi test. These results suggest that such a change in CSR-related regulations does not bias our main finding because senior executives with financial working experience intrinsically initiate efforts in propelling CSR in both periods.

6 Endogeneity concerns

We cannot completely rule out endogeneity in our empirical context because socially responsible firms may attract senior executives with financial expertise. It is also possible that CSR and the appointment of financial expert managers are simultaneously influenced by omitted variables. Although the fixed-effect model in prior sections could help alleviate these concerns, this model cannot sufficiently rule out reverse causality concerns and capture unobserved characteristics because of sample selection bias. In this section, we carry out the PSM analysis, the Heckman correction model, and the dynamic GMM approach to further address these concerns. For brevity, we report the results based on the baseline model.

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[16] For details, see http://www.csrc.gov.cn/pub/csrc_en/newsfacts/release/201210/t20121012_215704.html.

6.1 PSM approach

There may exist differences in observable firm fundamentals between firms with senior executives with a career background in finance and firms without, thereby driving biased results in our study. We follow Ma et al. (2019) to carry out a PSM analysis to address concerns that firms with executives with financial expertise are fundamentally different from firms without. Along with the caliper set at 0.01, we adopt a matching process with a 'replacement' procedure and use the nearest neighbour PSM technique to match each firm-year observation with senior executives who have financial experience with a firm-year observation without such executives based on a battery of factors used as control variables in Eq. (1). The industry and time dummies are included as matching criteria. We first estimate the average treatment effect on the treated (ATT). Specifically, the ATT is the average difference between the CSR performance of firms with senior executives with a career background in finance and their counterfactual peers' CSR. Next, we re-estimate Eq. (1) based on the PSM sample to test the validity of H1. Table 8 reports the results of the PSM analysis. Panel A shows that firms run by senior executives with financial experience are associated with higher CSR ratings than firms headed by senior executives without such experience (ATT = 1.834, t = 3.05). After matching, our univariate results from the balancing test reported in Panel B show that the mean values of control variables (matching criteria) are not statistically different between firms with financial expert TMTs and those without, suggesting our sample is well matched. In Panel C, the estimate on *Financial_D* is positive and significant; this indicates that senior executives with financial experience have the potential to propel CSR practices.

6.2 Heckman two-stage procedure

Not all Chinese listed companies disclose sustainability reports every year; hence, this may introduce a sample selection bias to our study (Kong et al. 2020; Li et al. 2021b). We turn to the Heckman (1979) two-stage estimator to test whether our key finding is robust. First, we conduct a probit model, as specified in Eq. (2) to estimate the likelihood that companies issue sustainability reports and obtain social responsibility ratings from the RKS Runling rating system to calculate the inverse Mills ratio (also known as *Lambda*) from the residuals. Next, we include *Lambda* as a control variable in Eq. (3) as follows:

$$CSR\_Presence_{i,t} = \alpha + \beta_1 MandatoryPolicy_{i,t-1} + \beta_2 Control_{i,t-1} + Dummy_{year} + Dummy_{industry} + \varepsilon_{i,t} \tag{2}$$

$$CSRSCORE_{i,t} = \alpha + \beta_1 Financial\_D_{i,t-1} + \beta_2 Lambda_{i,t-1} \\ + \beta_3 Control_{i,t-1} + Dummy_{year} + Dummy_{industry} + \varepsilon_{i,t} \tag{3}$$

where *MandatoryPolicy* is measured as a categorical variable set to one if a company is mandated to disclose a sustainability report in a fiscal year and 0 otherwise.[17] *CSR_Presence* is a categorical variable that is assigned a value of one if a company issues a sustainability report and is rated by the RKS Runling rating system in a fiscal year; otherwise, it

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[17] Firms listed on the SSE Corporate Governance Sector, cross-listed firms, and financial firms listed on the SSE are required to disclose CSR reports, and the SZSE requires firms included in the Shenzhen 100 index to issue sustainability reports. See Chen et al. (2018), Kong et al. (2020), and Li et al. (2021b) for details.

Table 8 Propensity-score-matching (PSM) analysis

Panel A ATT in PSM

Estimated ATT with replacement

Outcome variable=CSRSCORE	ATT (T-Statistics)	Treatment group's CSR level	Control group's CSR level	No. of obs	Treated: control
Financial_D	1.834*** (3.05)	39.9571	38.1231	5075	1243 : 3832

Panel B Average firm characteristics in the treatment group and the control group

Variables in the matching process	Mean of the treatment group	Mean of the control group	Difference	Significance level (p value)
SOE	0.5326	0.5157	0.0169	0.399
Size	23.2280	23.2550	−0.0270	0.662
Age	2.3205	2.3106	0.0099	0.701
Lev	0.5128	0.5223	−0.0095	0.222
ROA	0.0499	0.0482	0.0018	0.432
Q	1.7187	1.6372	0.0815	0.073
HERF10	0.1901	0.1837	0.0064	0.238
FCF	0.0240	0.0218	0.0023	0.745
RD_Intensity	0.0195	0.0203	−0.0008	0.546
BoardSize	2.3065	2.3082	−0.0017	0.829
Duality	0.1939	0.2076	−0.0137	0.395
Indep	0.3795	0.3798	−0.0003	0.914
Managerial	2.0738	2.0830	−0.0092	0.500
Female	0.1511	0.1525	−0.0015	0.711
SSE	0.6291	0.6155	0.0137	0.482

Table 8 (continued)

Panel C PSM sample

Outcome (Explained) variable = CSRSCORE	PSM sample with replacement
Financial_D	1.9366***
	(3.7024)
SOE	− 0.0852
	(− 0.1001)
Size	4.5759***
	(12.9400)
Age	− 1.1990**
	(− 2.1548)
Lev	− 3.1149
	(− 1.3223)
ROA	− 13.2002**
	(− 2.4174)
Q	0.2345
	(0.9169)
HERF10	10.5217***
	(3.6707)
FCF	5.1502***
	(3.1093)
RD_Intensity	23.1471*
	(1.8496)
BoardSize	− 0.1797
	(− 0.0854)
Duality	− 0.3639

Table 8 (continued)

Panel C PSM sample

Outcome (Explained) variable = CSRSCORE	PSM sample with replacement
Indep	(−0.5018)
	1.3523
	(0.2266)
Managerial	3.0218***
	(2.7781)
Female	−1.7561
	(−0.5173)
SSE	−0.0122
	(−0.0160)
_intercept	−77.9790***
	(−9.1827)
Year effects	Yes
Industry effects	Yes
No. of obs	5075
Adj. R-square	0.520

In Panel A, the estimated ATT is the difference between average CSR performance of companies with the presence of financial expert executives and their counterfactual peers' CSR. The outcome variable is CSR performance (*CSRSCORE*). Panel B displays the average firm characteristics of the treatment group and the control groups after matching. Panel C presents the regression result based on a matched sampe with replacement. year and industry dummies are included. Standard errors are clustered at the firm and year level. 0.01, 0.05, and 0.1 significance levels are denoted by ***, **, and * (two-tailed), respectively

is assigned a value of zero. *MandatoryPolicy* influences CSR at the company level but has no direct impact on the appointment of senior executives with financial experience (Chen et al. 2018; Kong et al. 2020).

The regression results are presented in Table 9. In Model 1, the estimate on *Mandatory-Policy* is significantly positive (coefficient = 2.7400, t = 30.8129), meaning that companies that are subject to a mandatory CSR reporting policy tend to issue CSR reports and are highly likely to be rated by the RKS Runling rating agency. In Model 2, the coefficient on *Financial_D* is significantly positive (coefficient = 1.5175, t = 4.5699), strongly supporting H1.

6.3 Dynamic GMM approach

The dynamic nature of our variables, according to which the current values of the independent variables are a function of past values of the explained variable, may drive endogeneity issues in our empirical setting. Following Blundell and Bond (1998), Wintoki et al. (2012), and Cui et al. (2018), we include the one-year lagged CSR ratings as an independent variable in Eq. (1) to implement the dynamic GMM estimation. We employ the Arellano–Bond system GMM method, which is a procedure involving two models. One is the dynamic regression that is transformed into a first-differenced mode. The other is the dynamic regression that is transformed into a level form (Arellano and Bover 1995; Blundell and Bond 1998).[18]

The result from the dynamic panel system GMM approach presented in Model 1 of Table 10 shows that the estimate on *Financial_D* is significantly positive. The results of the Arellano-Bond test—AR(1) and AR (2) for first-order and second-order serial correlation in the first-differenced residuals—support the null hypothesis of no serial correlation because AR(1) is serially correlated, but AR(2) is uncorrelated. To validate the use of our instruments, we adopt the Hansen test of overidentification and find a *p* value of 0.271, suggesting that the instruments are uncorrelated with the error terms.

In summary, our findings still hold when we employ the PSM technique, Heckman selection analysis, and the dynamic system GMM approach.[19]

7 Further analysis

As an extension, we empirically explore whether the enhancement in a firm's philanthropic activities driven by financial expert executives may influence business outcomes. Indeed, stakeholder-oriented engagements have significant effects on business strategies (Boubakri

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[18] First-differencing the dynamic regression helps address the concerns that unobserved heterogeneity and omitted factors may have an influence on CSR performance. The system of equations is estimated via GMM using lagged values of the endogenous variables as instruments. The lagged levels are employed as instruments for the differenced equation, and lagged differences are used as instruments for the level equation in the Arellano–Bond system GMM procedure. Hence, this method controls for unobservable heterogeneity, simultaneity, and the association between the presence of a senior executive with financial experience and CSR performance.

[19] Although according to Burak Güner et al. (2008) we believe that our result is less likely to be a consequence of reverse causality, we still attempt to employ a 'change analysis' following Li et al. (2021a) to tackle this potential concern. The results reported in Appendix 2 are consistent with our prediction.

Table 9 Heckman selection model

Dependent variable =	CSR_Presence	CSRSCORE
	First-stage regression	Second-stage regression
	(1)	(2)
MandatoryPolicy	2.7400***	
	(30.8129)	
Financial_D		1.5175***
		(4.5699)
Lambda		3.2443***
		(6.6069)
SOE	0.1588***	1.5090***
	(5.2541)	(4.0225)
Size	0.4679***	4.9023***
	(28.3980)	(21.3414)
Age	0.0338	−0.8268***
	(1.5616)	(−2.7678)
Lev	−0.7034***	−6.1065***
	(−9.0951)	(−6.1879)
ROA	0.9700***	−3.4696
	(4.0656)	(−1.3222)
Q	0.0646***	0.5714***
	(6.0793)	(4.1572)
HERF10	0.0857	3.9504***
	(0.7643)	(2.7993)
FCF	0.1590**	2.9256***
	(2.4056)	(3.9028)
RD_Intensity	0.6128	13.0847**
	(1.4112)	(2.3395)
BoardSize	0.1562*	2.2845**
	(1.8689)	(2.4670)
Duality	−0.0414	−1.1287***
	(−1.3742)	(−3.1005)
Indep	0.7467***	0.3363
	(2.9199)	(0.1282)
Managerial	0.2299***	3.7122***
	(5.3944)	(7.7168)
Female	−0.2891**	2.9386*
	(−2.2986)	(1.8797)
SSE	0.1287***	−0.1416
	(4.6610)	(−0.3587)
_intercept	−12.4177***	−96.0718***
	(−29.3300)	(−16.0516)
Year effects	Yes	Yes
Industry effects	Yes	Yes
No. of obs		20,688
Selected		5158

Table 9 (continued)

Dependent variable =	CSR_Presence	CSRSCORE
	First-stage regression	Second-stage regression
	(1)	(2)
Censored obs		15,530
Wald test of independent equations Chi2 (p-value)		40.10***(0.0000)
ρ		0.3582***
σ		2.2451***

This table presents the results with respect to the influence of TMT's financial expertise on CSR based on Heckman two-step regressions. Heckman (1979) provides a two-stage estimation remedy to adjust for a self-selection issue brought-on by endogeneity. In the 1st stage, a probit regression is employed to predict the likelihood of firms receiving a CSR rating from the RKS Runling rating agency. In the 2nd stage model specification, we include *Lambda* (the inverse Mills Ration obtained from the 1st stage) as an additional independent variable in our baseline model. We lag all independent variables except *SSE* by one year and cluster standard errors by firm and year. T-statistics (or Z-statistics) are displayed in parentheses. The 0.01, 0.05, and 0.1 significance levels are denoted by ***, **, and * (two-tailed), respectively

et al. 2016; Ferrell et al. 2016; Liang and Renneboog 2017a; Lins et al. 2017; Li and Wang 2021); the positive view of CSR suggests that if a company behaves socially responsibly in its operation, actively addresses stakeholder concerns and develops relationships of mutual trust with stakeholders, then the company will be financially rewarded. In markets where investors have relatively high social consciousness and awareness, CSR activities can improve brand value and corporate reputation, which eventually leads to stronger firm performance (Li et al. 2021b). Hence, we specify Eq. (4) to examine whether companies are rewarded by the market because of the superior CSR performance driven by senior executives with financial expertise by introducing *MTB* as a dependent variable:

$$
\begin{aligned}
MTB_{i,t} = &\alpha + \beta_1 Financial\_D_{i,t-1} + \beta_2 CSRSCORE_{i,t-1} + \beta_3 Financial\_D_{i,t-1} \times CSRSCORE_{i,t-1} \\
&+ \beta_4 Control_{i,t-1} + Dummy_{year} + Dummy_{industry} + \varepsilon_{i,t},
\end{aligned}
\tag{4}
$$

where *MTB*, a proxy for firm value, is measured as the market value of equity divided by the book value of equity. *Financial_D × CSRSCORE* captures the incremental effects of CSR through the presence of senior executives with financial experience on company performance.

Models 1 and 2 of Table 11 display the regression results. We find that the estimate on *Financial_D × CSRSCORE* in Model 2 is significantly positive at the 1% level, implying that the CSR enhancement attributed to senior executives with financial experience results in higher firm value. Moreover, consistent with Boubakri et al. (2016), firms with higher CSR performance indeed exhibit higher investor valuations, as evidenced by the significantly positive coefficient on *CSRSCORE* in both models.

Table 10 Dynamic GMM estimation

Dependent variable = CSRSCORE	Dynamic panel-data estimation System GMM (1)
Financial_D	0.6580***
	(5.6242)
LAG_CSRSCORE	0.7706***
	(103.1311)
SOE	0.5953***
	(2.8431)
Size	1.0060***
	(10.4593)
Age	−0.6270***
	(−4.9040)
Lev	0.4680
	(0.8432)
ROA	0.4463
	(0.4132)
Q	0.2069***
	(4.1717)
HERF10	2.1314**
	(2.3719)
FCF	0.3483*
	(1.8110)
RD_Intensity	−0.2499
	(−0.0947)
BoardSize	2.0132***
	(4.1978)
Duality	−0.5162***
	(−3.7830)
Indep	5.2272***
	(4.3418)
Managerial	0.5162**
	(2.3100)
Female	0.1206
	(0.1354)
SSE	−0.5298***
	(−2.9779)
Year effects	Yes
Industry effects	Yes
AR(1) test (p value)	0.000
AR(2) test (p value)	0.321
Standard errors	Corrected
Sargan test over-identification (p value)	0.000
Hansen test over-identification (p value)	0.271
No. of obs	4226

Table 10 (continued)

Dependent variable = CSRSCORE	Dynamic panel-data estimation
	System GMM
	(1)
No. of Firms	770

This table displays the result from the dynamic GMM approach. We treat *Financial_D*, *LAG_CSRSCORE*, *SOE*, *Size*, *Age*, *Lev*, *ROA*, *Q*, *HERF10*, *FCF*, *RD_Intensity*, *BoardSize*, *Duality*, *Indep*, *Managerial*, *Female*, and *SSE* as endogenous variables. Levels of these variables, which are lagged twice, are used as instruments in the first-differenced equation, and first-differences of these same variables that are lagged once, as additional instruments in the level equation. The results of Arellano-Bond test for AR(1) and AR (2) in first differences, Sargan test of overidentification restrictions, and Hansen test of overidentification restrictions are displayed at the bottom of this table. Z-statistics are displayed in parentheses. The 0.01, 0.05, and 0.1 significance levels are denoted by ***, **, and * (two-tailed), respectively

8 Conclusions

This study, conducted in the context of Chinese listed firms, investigates the influence of TMT members' financial working experience on CSR performance and reporting behaviours. Our analyses are mainly informed by the predictions of UET (Hambrick and Mason 1984; Hambrick 2007). Our findings demonstrate that senior executives with a career background in finance play a vital and integral role in the successful implementation of institutionally oriented social and environmental practices. In particular, firms with senior executives with financial expertise are more likely to be associated with CSR performance improvement and have longer sustainability reports than firms without. In addition, we confirm that the significant improvement in future CSR is mainly attributed to senior executives who have financial work experience in regulatory authorities. Next, by investigating the role of senior executives' latitude of action in the relation between the TMT members' financial experience and CSR, we reveal that this positive influence is more salient in non-SOE entities or more prominent in cash-abundant firms. Our result still holds when we carry out a series of robustness checks and endogeneity tests. Our further analysis illustrates that the CSR improvement attributed to financial experts on the TMT results in higher firm value.

This study is subject to common limitations. First of all, there may be other firm characteristics that are not investigated in this study but are affected by the presence of financial experts on the TMT. To provide convincing evidence on the mechanisms that link financial experience to CSR performance, it will be necessary to collect more consistent information on firm policies. We next provide some suggestions for future research. Conditional on the results of the current study, it would be interesting to see how the increase in CSR ratings driven by financial experts might affect investment efficiency. As indicated by Cook et al. (2019), socially responsible companies may invest more efficiently, and the incremental effects of CSR may lead to higher capital allocation efficiency.

This study sheds light on the influence of senior executives' financial career experience on CSR strategies. Our findings have valuable implications for policymakers, corporate managers, and professionals in China and other countries, especially those with

Table 11 Incremental effect of CSR on firm value

Dependent variable=	MTB (1)	MTB (2)
Financial_D	0.1499**	−0.3726
	(2.0077)	(−1.6366)
CSRSCORE	0.0128***	0.0086***
	(4.9353)	(3.0613)
Financial_D×CSRSCORE		0.0135***
		(2.6196)
SOE	0.1627*	0.1658*
	(1.8480)	(1.8761)
Size	−0.7958***	−0.7986***
	(−17.8648)	(−17.9244)
Age	0.2725***	0.2834***
	(3.6667)	(3.8009)
Lev	2.2256***	2.2409***
	(6.4790)	(6.5378)
ROA	0.2998	0.3098
	(0.2210)	(0.2285)
HERF10	1.3995***	1.3968***
	(4.2678)	(4.2582)
BoardSize	−0.0912	−0.0720
	(−0.4928)	(−0.3882)
Duality	0.0454	0.0499
	(0.4954)	(0.5461)
Indep	2.1335***	2.1258***
	(3.1564)	(3.1473)
_intercept	19.4528***	19.6150***
	(20.7528)	(20.9106)
Year effects	Yes	Yes
Industry effects	Yes	Yes
No. of obs	4526	4526
Adj. R-square	0.279	0.280

In this table, *MTB*, key dependent variable, is measured as the market value of equity divided by the book value of equity. Model (1) displays the effects of the presence of senior executives with financial experience and the influence of CSR level in firm value. Model (2) displays the result of the incremental effect of CSR attributed to senior executives with financial experience on *MTB*. In both regressions, we lag all explanatory variables by one year and cluster standard errors by firm and year. The 0.01, 0.05, and 0.1 significance levels are denoted by ***, **, and * (two-tailed), respectively

similar institutional backgrounds (i.e., other emerging countries in Asia with inferior social preference and governance quality). Instead of appointing CSR experts whom the executive labour markets in emerging countries may have a shortage of, firms could consider appointing top executives with financial working experience since these executives may better incorporate ethical values and social norms into their business strategies, potentially

generating capital market benefits for various stakeholders. In particular, the experience in regulatory-oriented financial institutions can provide an essential avenue for firms in the emerging markets to engage more in CSR-relevant activities.

Appendix 1: Variable definition and data sources

	Definition
Dependent variables	
CSRSCORE	A composite measure of the overall sustainable performance of a company, this composite CSR measure which includes three dimensions (i.e., Macrocosm, Content, and Technique). Source: RKS Runling rating agency http://www.rksratings.cn/
MSCORE	MSCORE (Macrocosm dimension) evaluates the quality of sustainability strategies and CSR information disclosure, the quality of stakeholder-oriented engagement, the assessment of risk control mechanisms, sustainability values, and codes of conduct. Source: RKS Runling rating agency http://www.rksratings.cn/
CSCORE	CSCORE (Content dimension) evaluates a company's fair business operations, economic outcome, the effectiveness of environmental protection, human rights, and labour rights protections, customer concerns and feedback, and contributions to community development. Source: RKS Runling rating agency http://www.rksratings.cn/
TSCORE	TSCORE (Technique dimension) evaluates the coverage, scope, accuracy, normalization, consistency of sustainable reporting, and reporting innovation. Source: RKS Runling rating agency http://www.rksratings.cn/
CSR_Industry	CSR_Industry is calculated as a company's overall sustainability rating less the mean value of the sustainability rating for all companies in the same industrial sector in a given fiscal year. Source: RKS Runling rating agency http://www.rksratings.cn/
Page	The 'Page' is measured as the length of CSR or sustainability reports (in the form of natural logarithm) issued by a firm in a given fiscal year. Source: RKS Runling rating agency http://www.rksratings.cn/
CSR_Presence	CSR_Presence is assigned a value of one if a company issues a sustainability report and obtains a CSR rating from the 'RKS Runling' Rating Provider in a given fiscal year, and it is set to zero otherwise. Source: CSMAR and RKS Runling rating agency
Key independent variables	
Financial_D	An indicator variable set to one if any executives on the TMT (i.e., executive chair, CEO, CFO, vice president, financial controller, chief accountant, executive/deputy general manager, general manager/managing director, and vice manager) has a career background in finance, and zero otherwise. Source: CSMAR
Financial_Ratio	Financial_Ratio is measured as the number of senior executives who have financial experience divided by the total number of TMT members. Source: CSMAR
Financial_D_ExCEOCFO	A categorical variable set to one if any executives (excluding CEOs and CFOs) on the TMT has financial experience, and zero otherwise

	Definition
Financial_regulatory	A categorical variable assigned a value of one if any executives on the TMT have financial work experience in regulatory authorities (i.e., policy banks, regulatory commissions, or stock exchanges), and set to zero if a firm does not have any executives with financial experience, or if a firm has executives with financial work experience in nonregulatory authorities
Financial_nonregulatory	A categorical variable assigned a value of one if any executives on the TMT have financial work experience in nonregulatory authorities, and set to zero if a firm does not have executives with financial experience, or if a firm has executives with financial work experience in regulatory authorities
Financial_regulatory_increase	A dummy variable set to one if there are no senior executives with financial experience in regulatory authorities in the previous year but the firm appoints a senior executive with financial experience in regulatory authorities this year, and zero otherwise
Financial_nonregulatory_increase	A dummy variable set to one if there are no senior executives with financial experience in nonregulatory authorities in the previous year but the firm appoints a senior executive with financial experience in nonregulatory authorities this year, and zero otherwise
Financial_CEO	A categorical variable assigned a value of one if the CEO of a company has financial experience and zero otherwise. Source: CSMAR
MandatoryPolicy	MandatoryPolicy is a categorical variable assigned a value of one if a company is mandated to disclose a CSR report and zero otherwise. Companies listed on the SSE Corporate Governance Sector, cross-listed companies, and financial companies listed on the SSE are required to disclose their sustainability/CSR reports, and the SZSE requires firms included in the Shenzhen 100 index to issue their sustainability reports. For details, please refer to Li et al. (2021b)
Control variables	
SOE	A categorical variable that is set to one if a company's ultimate controlling shareholder is the central or a local government, or a government agency; otherwise, it is assigned a value of zero. Source: CSMAR
Size	Total assets in the form of natural logarithm. Source: CSMAR
Age	Listing age of firm, measured as the number of years since listing (in the form of natural logarithm). Source: CSMAR
Lev	The ratio of total liabilities to total assets. Source: CSMAR
ROA	A profitability ratio of the earnings before interests and taxes (EBIT) to total assets. Source: CSMAR
Q	Total liabilities plus the market value of equity, all divided by total assets. Source: CSMAR
HERF10	HERF10 is a proxy for ownership concentration (i.e., Herfindahl index for ownership by top-ten shareholders). Source: CSMAR
FCF	Net operating cash flow divided by total assets. Source: CSMAR
RD_Intensity	R&D expenditures divided by total sales. Source: CSMAR
BoardSize	The natural logarithm of the total number of directors in the boardroom in a given fiscal year. Source: CSMAR
Duality	A categorical variable set to one if the CEO of a firm and its chairperson in the boardroom is the same, and it receives a value of zero otherwise. Source: CSMAR
Indep	The proportion of independent directors on board in a given fiscal year. Source: CSMAR

	Definition
Managerial	The total number of TMT members (in the form of natural logarithm) in a given fiscal year. Source: CSMAR
Female	Fraction of female directors on board in a given fiscal year. Source: CSMAR
SSE	A categorical variable assigned a value of one if the company is listed on the Shanghai Stock Exchange; otherwise, it is assigned a value of zero. Source: CSMAR
AnalystCoverage	The number of unique analysts covering a particular firm (plus one) in a given year, in the form of natural logarithm. Source: CSMAR
BigFour	A categorical variable assigned a value of one if the client-company is audited by a Big Four auditor in a given fiscal year, and equal to zero otherwise. The Big Four accounting organizations include Price-waterhouseCoopers, Ernst & Young, Deloitte, and KPMG. Source: CSMAR
TMT_AcademicRatio	The proportion of senior executives with academic career experience on the TMT. Source: CSMAR
TMT_ForeignRatio	The percentage of senior executives with foreign work experience or study experience on the TMT. Source: CSMAR
TMT_Age	The average age of TMT members (in the form of natural logarithm) of a company in a given fiscal year. Source: CSMAR
Extended study	
MTB	This is a proxy for firm value; the market-to-book ratio is measured as the market value of equity divided by the book value of equity. Source: CSMAR

Appendix 2: Change in the number of financial experts from regulatory authorities and nonregulatory authorities

This table reports the result of the influence of the increase in the number of financial experts from regulatory authorities (*Financial_regulatory_increase*) and nonregulatory authorities (*Financial_nonregulatory_increase*) on CSR performance. Specifically, *Financial_regulatory_increase* is a dummy variable equal to one if there are no senior executives with financial experience in regulatory authorities in the previous year but the firm appoints a senior executive with financial experience in regulatory authorities this year, and zero otherwise. *Financial_nonregulatory_increase* is a dummy variable equal to one if there are no senior executives with financial experience in nonregulatory authorities in the previous year but the firm appoints a senior executive with financial experience in nonregulatory authorities this year, and zero otherwise. We cluster standard errors by year and firm. The 0.01, 0.05, and 0.1 significance levels are denoted by ***, **, and * (two-tailed), respectively.

Dependent variable =	CSRSCORE
	(1)
Financial_regulatory_increase	5.3979**
	(2.4619)
Financial_nonregulatory_increase	1.3952*

Dependent variable =	CSRSCORE
	(1)
	(1.9102)
SOE	1.3509***
	(3.8308)
Size	2.9173***
	(17.3202)
Age	−0.8650***
	(−3.0040)
Lev	−2.7029***
	(−2.8103)
ROA	−3.5217
	(−1.3516)
Q	0.2890**
	(2.2012)
HERF10	4.6152***
	(3.4558)
FCF	1.3756*
	(1.9036)
RD_Intensity	7.8302
	(1.2948)
BoardSize	2.7351***
	(2.8140)
Duality	−0.4426
	(−1.0978)
Indep	−1.1854
	(−0.4170)
Managerial	2.7622***
	(6.1278)
Female	9.5689***
	(5.6131)
SSE	−2.0658***
	(−6.8794)
_intercept	−49.2272***
	(−11.6595)
Year effects	Yes
Industry effects	Yes
No. of obs	4208
Adj. R-square	0.405

Declarations

Conflict of interest There are no conflicts of interest to declare.

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