“Do sustainability reporting conduct and corporate governance attributes relate? Empirical evidence from China”

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DO SUSTAINABILITY REPORTING CONDUCT AND CORPORATE GOVERNANCE ATTRIBUTES RELATE? EMPIRICAL EVIDENCE FROM CHINA

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Abstract

Adopting agency and stakeholders theories, this study aims to investigate the relationship between corporate governance attributes (board size, board independence, female directors, and CEO duality) and sustainability reporting conduct in China. The empirical analysis is based on a sample of 10,330 firm-year observations of Chinese listed companies over the period from 2015 to 2018. Data are supplied by WIND and CSMAR databases, whilst regression analysis is applied to test the hypotheses. Results indicate that board size and board independence were found to be positively associated with the sustainability reporting conduct, while female directors and CEO duality both do not have a significant effect on sustainability reporting conduct in the Chinese institutional settings. This paper advances on arguments of the agency and stakeholders theories with these findings. The larger and more independent board facilitates better monitoring of the managers, what leads to decision-making based on a more appreciation of stakeholders' perspectives. The study is premised on the presence/absence of sustainability reporting, and it does not take into consideration the quality aspect, which can result in erroneous interpretation. The results should not be generalized as the sample was based on China's companies for 2015–2018. This study has policy implications for managers and policymakers alike concerning designing board composition conducive to sustainability reporting conduct.

Keywords board of directors' characteristics, corporate governance, corporate social responsibility, sustainability reporting, China

JEL Classification G34, M14, M41

INTRODUCTION

Corporate governance has long been the subject of the meticulous attention of researchers from various domains forming together a big interdisciplinary alliance. The way a company governs affects many areas of the enterprise and in general affects how it fares in a toughly competitive environment (Manning et al., 2019). Corporate social responsibility in general and sustainability reporting, in particular are the areas that are addressed and decided upon by the board of directors (Tibiletti et al., 2021). Thus, the bonds between governance structure and corporate social responsibility are of paramount importance in terms of determining the strategic progression of the firm (Andreu-Pinillos et al., 2020; Arena et al., 2020; Aureli et al., 2020; Manning et al., 2019; Tibiletti et al., 2021; Zaman et al., 2021).

In the latest years, more and more studies appeared concentrating on various aspects of the composition of boards of directors aiming to ascertain the determinants of efficacy for sound business management (Miglani et al., 2020). The abovementioned studies have focused on board's diversity

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from various angles be it gender (Kao et al., 2020), race (Field et al., 2020), professional background (Chen et al., 2020), and personal characteristics (Arnaboldi et al., 2020) to name only a few. As the vogue on all sustainability-related came to the forefront the corporate social responsibility as directed by internal governance structure acquired prominent positions in the literature. There is a growing amount of literature devoted to the effect of corporate social responsibility disclosure (CSRD) on the bond between companies and their stakeholders. Notwithstanding the abundance of papers related to the subject matter, only a few papers are focusing on China (Galli & Bassanini, 2020; Kao et al., 2020; Kılıç et al., 2021; Yang et al., 2021). Although they study CSRD they are a way off of the topic as there are discussed linkages between CSR and financial performance (Yang et al., 2021), CSR and "company dimensions, company nationality, the management of the supply chain and operation in China" (Galli & Bassanini, 2020) and whether board's attributes portend the presence of a sustainability committee, and whether the foundation of sustainability committees prompts sustainability reporting conduct (Kılıç et al., 2021) while the linkage of corporate governance attributes and sustainability reporting conduct have awaited its researchers.

Thus, there is a healthy number of prior studies that investigate corporate governance and CSR reporting in various ways, although empirical evidence is so far scarce concerning the effect of sustainability reporting conduct and corporate governance attributes, particularly from China, the jurisdiction with ever-growing influence in the world economy. Moreover, institutional theory advises being cautious while comparing various connections between phenomenon in different institutional settings (countries); it implies that the relationship between sustainability reporting conduct and corporate governance attributes may differ from country to country and, thus, it warrants a study (Djankov et al., 2003). Due to differences in reporting incentives, enforcement regimes, and institutional complementarities, findings from one jurisdiction would be unfit for another (Wysocki, 2011). Therefore, this paper contributes to CSRD literature by examining the linkage between SRC and corporate governance attributes from the underexplored Chinese context. Moreover, this study responds to the latest calls offered by Cuadrado-Ballesteros et al. (2017), Cucari (2019), and Jain and Jamali (2016).

The paper is structured as follows: following introduction, section 1 builds in a theoretical framework for the study and provides the literature review and hypothesis development. This section is followed by section 2 depicting the methods of the paper, while section 3 provides the analysis of the results. Finally, section 4 provides discussions and the paper is concluded with conclusions.

1. THEORETICAL FRAMEWORK, LITERATURE REVIEW, AND HYPOTHESIS DEVELOPMENT

The theoretical framework for studies focusing on the linkage between corporate governance attributes and SRC consists as evident by a comprehensive overview by Hussain et al. (2018, pp. 414-415) of agency theory and stakeholder theory. The theoretical framework provides the rationale as to what may push certain people or groups of people to act in a certain way, e.g. underlying intentions underpinning their action.

Stemming from Freeman (1984), stakeholder theory avers that an organization has responsibilities to a wider group of stakeholders than its investors and creditors (Manita et al., 2018; Tyson & Adams, 2020). This paper applies stakeholder theory in a way paved by the prior literature examining sustainability-related disclosures (Hussain et al., 2018).

The main tenets of stakeholders theory are that sustainability-related disclosures are treated by management as a tool to convey information to a wider array of stakeholders; there could be primary stakeholders (shareholders, employees, customers) or secondary stakeholders (local communities, public authorities, NGOs) (Lock & Seele, 2017; Manita et al., 2018). Moreover, the diversity in stakeholder relationships, together with board composition, may also be instrumental to clarify the variability of sustainability reporting practic-

es in an industry with comparable organizations (Tyson & Adams, 2020, p. 300).

While discussing sustainability reporting, legitimacy theory must also be mentioned because the urge of informing stakeholders stems mostly from the desire to increase the legitimacy in the eyes of society (Manita et al., 2018). In fact, field research testifies to that as most of the senior executives interviewed by O'Dwyer (2002) cited the aspiration to enhance corporate legitimacy as the major motive for sustainability reporting. Whilst certain managers sensed that sustainability reporting might be counterproductive to gaining corporate legitimacy as a result of widespread skepticism to corporate sustainability publications at the time of the study (Adams & McNicholas, 2007; O'Dwyer, 2002); the societal pressure nowadays is at the appropriate level to consider legitimacy theory as well needed. Recent studies have confirmed that legitimacy theory continues to predict the decision of companies to disclose sustainability-related information even after the implementation of the EU Directive 2014/95/EU on non-financial reporting (Mio et al., 2020).

Agency theory is utilized often to explicate voluntary sustainability-related disclosure practices (Mio et al., 2020). Agency theory presupposes the conflicts of interest that occur between shareholders (principals) and managers (agents), thus the antagonism between those groups stems from the separation of ownership and control. Agency theory deals with agency problems that arise when both the principal and the agent are trying to maximize their own interests, while those interests differ. Indeed the information asymmetry is the prime factor leading to the agency problem and in the present knowledge-based economy stakeholders seek and appreciate data on sustainability for their decision-making (Mio et al., 2020; Tyson & Adams, 2020). Therefore, sustainability reporting could lead to a decrease in agents' opportunistic behavior, reduce information asymmetry, and lower the cost of capital (Mio et al., 2020; Tyson & Adams, 2020).

Following Hussain et al. (2018), in the conceptual background, the board of directors is regarded as a stakeholder party and subsequently utilizes both agency and stakeholder theories for hypothesizing on the inherent corporate governance-sustainability reporting nexus. Table 1 provides an overview of the main empirical literature to the date studying the SRC and corporate governance attributes relationship.

Thus, the variables applied most regularly in the literature to depict the structure of corporate governance are as follows: board size, board independence, board gender diversity, and CEO duality. The findings to the date are contradicting each other as evident from Table 1.

Board size is believed to be one of the most widely studied board characteristics for several reasons (Tibiletti et al., 2021). First, the number of directors can affect the functioning of the board and, consequently, the corporate performance (Biswas et al., 2018). Secondly, the boards of directors are studied also from the perspective of group dynamics and workgroup effectiveness as the decision-making process of those groups is of paramount importance for companies' they oversight. In this regard, size is analyzed in terms of a "pool of expertise" (Tibiletti et al., 2021) and "faultlines strength" potential (Ali & Ayoko, 2020). The large membership on the board leads in the case of a proportional approach to more diverse knowledge and skills sets at the board's disposal without the need for external advice. Moreover, it is believed that large boards may be in the position to alternate the variety of perspectives on corporate strategy and may make the CEO less dominant (Tibiletti et al., 2021). Board size also could facilitate the desire for subgroup interactions (Hart & Van Vugt, 2006). In this regard it is believed that "a small board is likely to have strong faultlines strength because the distinction between the ingroup and outgroup will more likely be sharper and more pronounced" (Ali & Ayoko, 2020, p. 1209).

There are disadvantages of large boards concerning coordination costs and free-rider problems (Guest, 2009, p. 387). The big board could bring with it some coordination problems related to the time of organizing meetings, it is more problematic to reach consensus as well, and therefore it can lead to less effective decision-making. Moreover, the disproportionally large board might lead to a less cohesive board because "board members will be less likely to share a common purpose, commu-

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Table 1. Prior studies on the effect of sustainability reporting conduct and corporate governance attributes*

Source: Kılıç et al. (2021) and authors own investigation.

References	Dependable variables	Corporate governance attributes	Sample	Main findings
Kılıç et al. (2021)	Sustainability reporting	Board size	772 firm-year records of the H&T industry from Thomson Reuters Eikon database from 2013 and 2018	+ ve association
		Board gender diversity		+ ve association
		Board independence		no association
		CEO duality		no association
Uyar et al. (2020)	CSR performance	Board gender diversity	Eikon (940 firm-year observations) 2011–2018	+ ve association
		Board diligence		+ ve association
		Board independence		+ ve association
		Sustainability committee		+ ve association
Tibiletti et al. (2021)	CSR report	Board size	200 Italian listed companies for 3 years, 2016, 2011 and 2008	no association
		CEO duality		- ve association
		Independent directors		- ve association
		Female directors		no association
Naciti (2019)	Sustainability performance	Board independence	362 large industrial firms Fortune Global 500 list 2013-2016	- ve association
		Board diversity		+ ve association
		CEO duality		- ve association
Pucheta-Martínez and Gallego-Álvarez (2018)	CSR	Board size	Total of 13,178 observations belonging to 39 countries were obtained from the Thomson Reuters Eikon database	+ ve association
		Board independence		- ve association
		Board gender diversity		+ ve association
		CEO duality CEO		+ ve association
Biswas et al. (2018)	Environmental performance	Board gender diversity	407 firms listed in the Australian Securities Exchange (2,188 firm-year observations) 2004–2015	+ ve association
		Board independence		+ ve association
	Social performance	Sustainability committee		+ ve association
Hussain et al. (2018)	Sustainability Performance	Board size	100 U.S. firms listed in the Global Fortune 2013 (152 firm-year observations) 2007–2011	+ ve association
		Board independence		+ ve association
		CEO duality		- ve association
		Women on the board		+ ve association
		Board meetings		+ ve association
		CSR committees		+ ve association
Liao et al. (2015)	GGD	Board gender diversity	329 firms listed in the 2011 CDP FTSE350 2011 407	+ ve association
		Board independence		+ ve association
		Environmental committee		+ ve association
Giannarakis (2014)	CSR disclosure	Board size	100 companies from the Fortune 500 listed for 2011	no association
		CEO duality		no association
		Women on the board		no association
		Board Competence		no association
		Board Meetings		no association
		Board composition		no association
		CSR Committee		+ ve association
Jizi et al. (2014)	CSR reporting	Board size	US national commercial banks from 2009 to 2011	+ ve association
		Board independence		+ ve association
		CEO duality		+ ve association
		Board meetings		+ ve association

Note: * + ve – positive; - ve – negative.

nicate with each other clearly and reach a consensus that builds on the directors' different points of view" (Guest, 2009, p. 387). Finally, the large board is much more likely to have director free-riding problem, as it is more plausible that some directors will play a purely symbolic role (Guest, 2009; Tibiletti et al., 2021).

Board independence is another corporate governance attribute that affects SRC. Independent

directors are especially useful in the areas prone to conflict of interest such as financial control, remuneration, and nomination (Giannarakis, 2014; Tibiletti et al., 2021). This inside, outside, and independent directors' distinction is grounded in agency theory and presupposes that independent directors are safeguarding shareholders' interests, particularly minority shareholders' interests (Giannarakis, 2014).

Moreover, independent directors may favor and advocate sustainability reporting following such rationales. First, independent directors are to a smaller extent exposed to influences from managers and shareholders than internal directors, and therefore are prone to be more stakeholder-oriented (Hussain et al., 2018; Kılıç et al., 2021). Secondly, to fend off any stains to their reputation, independent directors are more likely to respect the company's stakeholder obligations (Mallin & Michelon, 2011) and thus they, as a rule, are more preferential toward the sustainability reporting as the growing chorus of stakeholders demanding it (Kılıç et al., 2021; Younas et al., 2019).

Nevertheless, irrespective of the referred to rationales the independent directors might still be a hinder to SR for example due to not being in fact independent and autonomous in decision-making (Kılıç et al., 2021). In this respect, some authors acknowledge that CSR is correlated with board independence but indicate that this linkage has stuck (Calderón et al., 2020). They believe that it is due to the use of the first generation of the definition of independence (the status-based approach and the contextual approach) and aver that "a consistent definition that identifies the characteristics of independent directors" (Calderón et al., 2020) could be a breakthrough factor as it offers a second-generation interpretation of independence founded on a positive resemblance to the concept.

Female directors are expected to be positively associated with the SRC due to several intertwined reasons. It is believed that "women directors are an important resource linking the firm to its external environment and nomination committees concerned with aligning board composition with the societal and investor expectations" (Ruigrok et al., 2006, p. 128). Thus, women on the board positively signal into the outside world (Ruigrok et al., 2006).

Female directors are favorable to sustainability reporting because women display higher levels of environmental concerns (Hur et al., 2016), are usually deeper engaged in pro-environment behaviors, and tend to have a better perception of environmental risks (Birindelli et al., 2019). Besides, female directors tend to develop liaise with the exterior to the company world and supply top management with discerning guidance about stakeholders' expectancies (Kılıç et al., 2021; Mallin & Michelon, 2011). Thus, higher female representation on the board is likely to push the boardroom to discussions concerning wider stakeholder issues (Biswas et al., 2018; Kılıç et al., 2021; Manita et al., 2018).

CEO duality which occurs when the CEO and the board chairman is the same person presents a disputable disposition from the viewpoint of agency theory as the CEO happens to be accountable to her/himself (Khlif et al., 2021). Although stakeholders pressure firms to separate those roles aiming to put stricter control on the management as a matter of fact half of S&P 500 firms do combine them citing "unified leadership" as a reason for it (Goergen et al., 2020).

The mainstream view is that from the stakeholder theory's perspective, independent directors are better advocating the stakeholders' needs and interests (Nadeem, 2021), whereas the CEO duality is viewed as deleterious to board independence (Hussain et al., 2018; Kılıç et al., 2021). Thus, the combination of the roles of CEO and board's chairman expands the gulf between managerial and stakeholder interests (Nadeem, 2021), which in turn, may have a detrimental effect on the board's proclivity to invest time and effort into sustainability reporting (Kılıç et al., 2021). Several studies have proved a negative impact of CEO duality on sustainability performance and reporting (Mallin & Michelon, 2011; Naciti, 2019) and confirmed that "CEOs seem to play a critical role in environmental stakeholder issues" (Walls et al., 2012).

Thus, this paper aims to examine how board composition, particularly board size, board independence, female directors, and CEO duality affect sustainability reporting conduct (SRC) in a sample comprising 10,330 firm-year observations from China covering 2015–2018.

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Accordingly, the following hypotheses are put forward:

H1: *There is a positive association between board size and SRC.*

H2: *There is a positive association between independent directors and SRC.*

H3: *There is a positive association between female directors and SRC.*

H4: *There is a negative relationship between CEO duality and SRC.*

Therefore, the abovementioned assertions regarding board size (hypothesis 1), board independence (hypothesis 2), CEO duality (hypothesis 4) are founded primarily, but not entirely, on agency theory, whilst the assertion on female directors (hypothesis 3) has been developed predominantly through stakeholder theory application. Nevertheless, it should be stressed that a comprehensive approach is needed as "any theory independently falls short in explaining the relationship completely" (Hussain et al., 2018, p. 415).

2. METHODS

The paper selects China's A-share main board listed companies from 2015 to 2018 as the research sample. The reason why 2015 was chosen as the initial year of the study was mainly that the Global Reporting Initiative (GRI) released the G4 Chinese version of the Sustainability Reporting Guidelines in Beijing on January 16, 2014. It takes a certain amount of time to establish and improve the internal sustainable development system. Therefore, it is more reasonable to select the reliability and validity of the sustainable-related data after 2014. The sample selection procedure is reported in Table 2.

Financial data comes from the WIND database, corporate governance and other related data come from the China Stock Market & Accounting Research (CSMAR) database, and data processing and statistical software used is Stata16.0.

Table 3 provides the details of the governance and control variables used in this study. To test the hypotheses, Model (1) was created:

$$SUS = \beta_0 + \beta_1 BOARD + \beta_2 INDE + \\ +\beta_3 FEMALE + \beta_4 DUALITY + \\ +\beta_5 TOP1 + \beta_6 ROA + \beta_7 SIZE + \\ +\beta_8 AGE + \beta_9 LEV + \beta_{10} STATE + \varepsilon. \quad (1)$$

The regression analysis is used to test the relationship between the corporate governance variables and SRC.

3. RESULTS

The data set explicated in the preceding section is analyzed by first putting into the spotlight the descriptive results (Table 4).

The overall level of voluntary disclosure of sustainability reports by Chinese listed companies is not high and varies greatly (mean 0.261, standard deviation 0.439). The average board size is 8.3 (natu-

Table 2. Sample selection procedure

Source: Developed by the authors.

Steps	Explanation	Observations
1	A – share listed company on China's Shanghai and Shenzhen stock	13,023
2	Less: the financial industry companies	353
3	Less: *ST Company	529*
4	Less: ST Company	325*
5	Less: companies with missing data	1,486
6	Final sample	10,330

Note: * – When a company has suffered losses for two consecutive years or its net assets are lower than the par value of the stock, "ST" will be added before the stock name, which means "special treatment", and the daily rise and fall shall not exceed 5%. It is used to warn investors to pay attention to investment risks. If In the third year, the company's operations have not improved and it is still in a state of loss, in addition to the "ST" before the stock name, "*" will be added, which means delisting risk.

Table 3. Description of the variables

Source: Developed by the authors.

Variable	Mnemonics	Role	Measurement	Unit
Sustainability reporting conduct	SUS	Dependent	Sustainability reporting conduct: equals 1 if a firm issues sustainability reporting, and 0 otherwise.	Dummy variable
Board size	BOARD	Independent	Natural logarithm of the total number of board's member	Natural logarithm
Board independence	INDE	Independent	The percentage of independent directors on the board	Percent
Female directors	FEMALE	Independent	The percentage of female directors on the board	Percent
CEO duality	DUALITY	Independent	CEO duality, if the same person holds the positions of CEO and chairman in a company equals 1, otherwise 0.	Dummy variable
Ownership concentration	TOP1	Control	Ownership concentration, the shareholding ratio of the first major shareholder.	Percent
Return on assets	ROA	Control	Net income/Total assets	Percent
Firm size	SIZE	Control	Total assets	Number
Firm age	AGE	Control	Natural logarithm of the number of years since the firm was founded	Natural logarithm
Leverage	LEV	Control	Total debt /Total assets	Percent
Type of property rights holder	STATE	Control	Property rights, the actual controller is a state-owned company, equals 1, otherwise 0.	Dummy variable

Table 4. Descriptive statistics

Source: Developed by the authors.

Variables	(1)	(2)	(3)	(4)	(5)	(6)
	N	mean	sd	min	max	median
SUS	10,330	0.261	0.439	0	1	0
BOARD	10,330	2.120	0.200	1.099	2.833	2.197
INDE	10,330	0.376	0.0559	0	0.800	0.363
FEMALE	10,330	0.178	0.151	0	0.889	0.142
DUALITY	10,330	0.275	0.447	0	1	0
TOP1	10,330	0.343	0.145	0.0339	0.900	0.322
ROA	10,330	0.0399	0.0762	–1.859	0.669	0.037
SIZE	10,330	22.31	1.302	15.98	28.51	22.155
AGE	10,330	2.026	0.941	0	3.332	2.079
LEV	10,330	0.424	0.221	0.0174	8.009	0.410
STATE	10,330	0.355	0.478	0	1	0

ral logarithm 2.120) vacillating from a minimum of 3 (1.099) to a maximum of 17 persons (2.833). On average board includes approximately 1/3 of independent directors with the highest percent on this indicator – 80% of board independence. Female directors on average represent 18% of the total number of directors with a maximum of 89%. 27.5 % of companies in the sample practice CEO duality.

The correlation matrix (Table 5) incorporates all variables under study. Pearson analysis results show that BOARD (board size: correlation coefficient 0.163), TOP1 (ownership concentration: correlation coefficient 0.108), ROA (return on assets: correlation coefficient 0.024), SIZE (company size: correlation coefficient 0.456), AGE (company age: correlation coefficient 0.264), LEV (financial leverage: correlation coefficient 0.166), STATE (property right: correlation coefficient 0.291); FEMALE (female directors: correlation coefficient –0.086) and DUALITY (CEO duality: correlation coefficient –0.116) are significantly negatively correlated with sustainability information disclosure. The Pearson test also shows that the absolute value of the correlation coefficient between the variables does not exceed 0.5, so this paper excludes the existence of multicollinearity between variables.

Table 6 and Table 7 convey the statistical test results of the difference in the sustainability report-

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Table 5. Correlations matrix

Source: Developed by the authors.

	SUS	*BOARD*	*INDE*	*FEMALE*	*DUALITY*	*TOP1*	*ROA*	*SIZE*	*AGE*	*LEV*	*STATE*
SUS	1	2	3	4	5	6	7	8	9	10	11
BOARD	0.163***	1									
INDE	0.00500	–0.568***	1								
FEMALE	–0.086***	–0.116***	0.040***	1							
DUALITY	–0.116***	–0.192***	0.124***	0.109***	1						
TOP1	0.108***	0.019*	0.040***	–0.037***	–0.040***	1					
ROA	0.024**	0.024**	–0.032***	0.0130	0.039***	0.104***	1				
SIZE	0.456***	0.255***	–0.00200	–0.151***	–0.183***	0.213***	0.00700	1			
AGE	0.264***	0.162***	–0.042***	–0.093***	–0.235***	–0.049***	–0.159***	0.408***	1		
LEV	0.166***	0.111***	0.00900	–0.072***	–0.113***	0.062***	–0.396***	0.472***	0.298***	1	
STATE	0.291***	0.260***	–0.052***	–0.173***	–0.295***	0.236***	–0.075***	0.364***	0.459***	0.249***	1

Note: Robust t-statistics: *** p < 0.01, ** p < 0.05, * p < 0.1.

ing conduct between state-owned enterprises and private enterprises. The findings show that sustainability reporting conduct of state-owned enterprises is significantly higher than that of private enterprises and this result is significant at the 1% level.

Based on the setting of model (1), the multiple regression model is used to examine the specific impact of the board size on the SRC of the company to verify whether hypothesis 1 is valid (Table 8). The result is 0.109, and it has passed the statistical significance test under the 1% confidence lev-

Table 6. *T*-test results on type of property rights holder

Source: Developed by the authors.

Variables mnemonics	STATE=1		STATE=0		mean-diff	T
	Obs (1)	mean (1)	Obs (0)	mean (0)		
SUS	3663	0.434	6667	0.166	0.267***	30.942
BOARD	3663	2.190	6667	2.081	0.109***	27.408
INDE	3663	0.373	6667	0.379	–0.006***	–5.242
FEMALE	3663	0.143	6667	0.198	–0.055***	–17.808
DUALITY	3663	0.097	6667	0.373	–0.276***	–31.407
TOP1	3663	0.390	6667	0.318	0.072***	24.682
ROA	3663	0.032	6667	0.044	–0.012***	–7.684
SIZE	3663	22.949	6667	21.958	0.991***	39.744
AGE	3663	2.608	6667	1.706	0.901***	52.434
LEV	3663	0.498	6667	0.383	0.115***	26.151

Note: Robust t-statistics: *** p < 0.01, ** p < 0.05, * p < 0.1.

Table 7. *T*-test results on sustainability reporting conduct

Source: Developed by the authors.

Variables mnemonics	SUS=1		SUS=0		mean-diff	T
	Obs (1)	mean (1)	Obs (0)	mean (0)		
BOARD	2698	2.174	7632	2.100	0.074***	16.768
INDE	2698	0.377	7632	0.376	0.001	0.510
FEMALE	2698	0.157	7632	0.186	–0.029***	–8.746
DUALITY	2698	0.188	7632	0.306	–0.118***	–11.865
TOP1	2698	0.370	7632	0.334	0.036***	11.062
ROA	2698	0.043	7632	0.039	0.004**	2.454
SIZE	2698	23.308	7632	21.957	1.351***	52.053
AGE	2698	2.444	7632	1.878	0.566***	27.864
LEV	2698	0.485	7632	0.402	0.083***	17.057
STATE	2698	0.589	7632	0.272	0.317***	30.942

Note: Robust *t*-statistics: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 8. Multiple regression results

Source: Developed by the authors.

Variables	(1) STATE=1	(2) STATE=0	(3)	(4)
	SUS	SUS	SUS	SUS
BOARD	0.139***	0.068**	0.109***	0.015***
	(3.35)	(2.08)	(4.20)	(4.91)
INDE	0.238	0.276***	0.341***	0.355***
	(1.62)	(2.59)	(3.94)	(4.25)
FEMALE	–0.028	0.026	0.005	0.005
	(–0.49)	(0.96)	(0.19)	(0.19)
DUALITY	–0.025	0.012	0.005	0.005
	(–1.03)	(1.31)	(0.60)	(0.64)
TOP1	0.030	–0.090***	–0.017	–0.016
	(0.57)	(–2.66)	(–0.58)	(–0.53)
ROA	–0.338**	0.226***	0.049	0.050
	(–2.15)	(3.93)	(0.92)	(0.94)
SIZE	0.169***	0.111***	0.140***	0.139***
	(30.41)	(20.62)	(33.86)	(33.50)
AGE	0.023**	0.037***	0.027***	0.027***
	(2.16)	(7.59)	(5.98)	(6.02)
LEV	–0.376***	–0.043	–0.160***	–0.159***
	(–8.32)	(–1.52)	(–4.73)	(–4.74)
STATE	–	–	0.117***	0.115***
			(10.89)	(10.71)
Constant	–3.711***	–2.559***	–3.240***	–3.123***
	(–27.51)	(–17.95)	(–32.24)	(–36.51)
Observations	3,663	6,667	10,330	10,330
R-squared	0.208	0.137	0.235	0.235
F test	0	0	0	0
r2_a	0.206	0.136	0.234	0.235
F	176.2	98.60	378.1	380.9

Note: Robust *t*-statistics in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

el, thus hypothesis 1 is confirmed: the larger the board size, the better the corporate sustainability reporting conduct.

The results hold for both state (0.139, $p < 0.01$) and private companies (0.068, $p < 0.05$), signaling that board size plays an obvious role in promoting proactive SRC.

The regression coefficient on independent directors and SRC is 0.341 (Table 8) and it has passed the statistical significance test under the 1% confidence level, indicating that independent directors lead to the enhancement of the company's sustainable reporting conduct. Thus, hypothesis 2 has been confirmed. It shows that the higher the proportion of independent directors, the better the corporate sustainability information disclosure. The paper's findings imply that board independence is not that very significant for state-owned companies (0.238, not passed the statistical significance test), whereas conducive for a boost in SRC for privately owned firms (0.276, $p < 0.01$).

The findings testify that female directors on board although have a positive influence (0.005) but as it has not passed the statistical significance test hypothesis 3 has been rejected meaning that female directors have an insignificant impact on SRC. Moreover, in state-owned companies, the proportion of women on the board of directors has even an insignificant negative impact (–0.028, not passed the statistical significance test) on sustainability reporting conduct, whilst in private-owned – an insignificant positive (0.026, not passed the statistical significance test).

The regression results of CEO duality on SRC (Table 8, based on the regression model (1) is insignificantly positive (0.005), but it has not passed the statistical significance test. Thus, hypothesis 4 is rejected. However, as well as in the case of fe-

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male directors, CEO duality pushes state and private companies into contrasting directions. CEO duality in state-owned companies has a negative regression coefficient (–0.025) to SRC, which does not pass the statistical significance test, whereas in private companies – positive (0.012) but also statistically insignificant.

Among the control variables, worth noting two indicators the size of the company (SIZE) and the age of the company (AGE) which both significantly positively correlated at the level of 1%, indicating that large-scale and older companies have a higher level of sustainability reporting conduct. The STATE coefficient is positive (0.117, $p < 0.01$) indicating that the level of SRC of state-owned enterprises is higher than that of non-state-owned enterprises. The debt-to-asset ratio (LEV) is significantly negatively correlated at the 1% level (–0.160), indicating that companies with a low debt-to-asset ratio perform better in the disclosure of sustainability information.

Interestingly enough among state-owned companies (1), the size of the company (SIZE) and the age of the company (AGE) are significantly positively correlated at the levels of 1% and 5% respectively, while return on assets (ROA) and financial leverage (LEV) are significantly negatively correlated at 5% and 1% respectively. It shows that state-owned companies with large scale, solid age, low return on assets, and low asset-liability ratio have a higher level of sustainability information disclosure. Among private companies (2), return on assets (ROA), enterprise size (SIZE), and company age (AGE) are all significantly positively correlated at the 1% level, and (TOP1) are significantly negatively correlated at the 1% level. It shows that private enterprises with a high return on assets, large scale, solid age, and low ownership concentration have a higher level of SRC.

To test the robustness of the estimated relationship between corporate governance attributes and sustainability reporting conduct, another set of regressions was performed using the variable substitution method (Table 8). For this, the core variables of this paper were replaced. Such as the number of directors serving on the board was replaced by the original natural logarithm of the number of directors serving on the board by the number of directors serving on the board to verify the research hypotheses 1-4 proposed in this paper. Through the variable substitution method, it was found that the conclusions are still intact and valid.

4. DISCUSSIONS

This paper aims to explore the association between sustainability reporting conduct and corporate governance attributes in Chinese intuitional settings. The study posits that sustainability reporting conduct is decided by corporate governance structure and in a particular board of directors as its bone and therefore the composition of the board reflects in a firm's position toward sustainability-related reporting. This study investigates the CG-SR nexus in China based on 10,330 years/company observations from 2015 to 2018. Concretely, it was examined what effect board size, board independence, female directors and CEO duality have on the sustainability reporting conduct. The rationale for all of the hypothesized relationships was found within stakeholder and agency theory and empirical analysis to confirm/reject those assertions within the Chinese institutional settings was conducted.

The findings show that board size and board independence have are positively associated with SRC, whereas female directors and CEO duality have a positive although statistically insignificant impact. Therefore, the fact-based empirical analysis allows the confirmation of two of the hypotheses (*H1* – board size and *H2* – board independence) and reject the two remainings (*H3* – female directors and *H4* – CEO duality), whereas "the relationship pole" runs counter to the predictions only in respect to CEO duality (posited negative and as a matter of fact – positive).

It is demonstrated that in Chinese institutional settings board size and board independence play an obvious role in promoting SRC. The results in regards to board size do not differ from previous studies that found a similar relationship (Jizi et al., 2014; Kılıç et al., 2021; Pucheta-Martínez & Gallego-Álvarez, 2018). As for board independence, board independence is not considered to be conducive to sustainability-related disclosure.

While Uyar et al. (2020) found board independence to be conducive to CSRD. The findings of Giannarakis (2014) revealed a negative relation between the presence of independent and sustainability-related disclosures. Those findings are congruent with the agency and stakeholder theory arguments that external directors exhibit and exercise more responsibility and accountability to a wider variety of stakeholders (Hussain et al., 2018; Kılıç et al., 2021). The results match the conventional wisdom that "a more sovereign board is the superior governance structure" (Hussain et al., 2018, p. 428) and the paper demonstrates that this wisdom holds within the Chinese institutional settings. Moreover, a positive relationship in both state and private companies was found. The latter cannot be said in regards to *H3* – female directors and *H4* – CEO duality. CEO duality pushes state and private companies into contrasting directions: CEO duality in state-owned companies has a negative regression coefficient (–0.025) to SRC, which does not pass the statistical significance test, whereas in private companies – positive (0.012) but also statistically insignificant. As a precious measure, it is worth stressing that *H3* – female directors and *H4* – CEO duality both have been found not to have a significant effect to provide the framework of a discussion. It can be credited to the role women play in Chinese society, which differ from that in Western societies on which positive relationship was hypothesized. The findings on CEO duality and SRC relationship in Chinese institutional settings run counter to the assertions of agency theory and it warrants further studies into this relationship.

This study contributes to the literature in several ways. First, regarding the literature on board structure and SRC, the findings show that board composition affects sustainability reporting conduct. Thus, the results provide support for the theoretical assertions of agency and stakeholder theories concerning this relationship. Furthermore, the evidence extends the knowledge and support specialists on how to enhance sustainability reporting through a balanced composition of the corporate governance structure. Thus, a strong corporate governance mechanism can be a powerful instrument to lessen agency problems and inspire managers to steer the company appropriately for stakeholders' interests to be properly considered.

The study has several limitations. The main research limitations are related to its design as the sample is limited to only companies listed in 2015–2018. This design is justified by the general logic of the study. However, the next rating for 2020 will allow extending the study time by two years. Moreover, the study is premised on the presence/absence of sustainability reporting, and it does not take into consideration the quality aspect, which can result in erroneous interpretation. The results should not be generalized as the sample was based on China's companies for 2015–2018. It is advisable for future research to mitigate those limitations through the expansion of the sample selection range and the selection period. Next, in terms of research content, there is still a big gap between the CSRD of Chinese private companies and state-owned companies. Therefore, in the follow-up research, scrutiny should be placed to the differences between the CSRD of private companies and large state-owned companies, and the improvement of the evaluation system, to enrich the research on CSDR of private companies.

CONCLUSIONS

This paper investigates the association between sustainability reporting conduct and corporate governance attributes in Chinese intuitional settings.

It was found that board size and board independence are positively associated with SRC, whereas female directors and CEO duality have a positive although statistically insignificant impact.

Thus, in the Chinese institutional setting, board size and board independence are positively associated with SRC, whereas CEO duality is negatively associated with SRC. The fact that some attributes of corporate governance have a positive effect on SRC and some have a negative effect indicates that firms

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need to take this into account and build their boards of directors accordingly. In the Chinese institutional setting, in particular, the composition of boards designated by a large size and the predominance of independent directors is conducive for SRC. In contrast, having more female directors on boards does not have an impact on SRC. Thus, managers who engage with SRC should aim to a certain board structure because not all board characteristics affect positively SRC as evident by the study. In the same vein, policymakers are also to consider and propose and endorse large and independent boards.

AUTHOR CONTRIBUTIONS

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