

Corporate social responsibility, market reaction and accounting conservatism

Accounting
conservatism

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Abstract

Purpose – Non-financial information disclosure may reflect the quality of corporate financial reports or disclosure policy choices. The authors examine the relationship between corporate social responsibility (CSR) and accounting conservatism and also investigate channels through which such effects are transmitted. The purpose of this paper is to explore how CSR, as non-financial information that has received widespread attention, affects choices regarding corporate financial policy.

Design/methodology/approach – Using ordinary least squares regression, the authors analyze China CSR Score data for 2010–2018. They control certain influencing variables related to the nature and characteristics of enterprises and discover that CSR can effectively increase accounting conservatism. Then, they extract the components of market reactions to CSR and study the market reaction path of CSR as it affects financial policy. They also conduct a robustness test to ensure that the results are not accidental in a complex environment.

Findings – The results reveal the influence of non-financial information on firms' financial policy. In addition, the results confirm the attraction of liquidity and investor attention as the major market reaction channels by which CSR significantly promotes accounting conservatism. Additionally, other critical paths of influence deserve further exploration. The results remain robust for alternate measures of accounting conservatism, different components of CSR, other proxies on CSR, endogenous testing and alternate estimation methods.

Originality/value – The study represents the first analysis of the influence of CSR information disclosure on accounting conservatism in emerging markets, and it undertakes a preliminary exploration to clarify the mechanism of CSRs' role in accounting conservatism. The results also provide a policy reference for external supervision and internal governance of enterprises. Thus, the results can help company managers maintain a favorable corporate image and establish a high-level investor protection mechanism.

Keywords CSR, Accounting conservatism, Investor protection, Investor attention, Stock liquidity

Paper type Research paper



JEL classification – G32, G38

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1. Introduction

Accounting conservatism and corporate social responsibility (CSR) have long been topics of concern in their respective fields. With high concern but little research, the study of the interaction between these two topics is the focus of our discussion. In the early stages of development, the rough economic development model has focused excessively on the speed of economic growth and has ignored the quality of economic growth. Numerous countries have realized that balancing economic growth and social responsibility is critical. Previous studies have revealed that high standards of CSR disclosure can help corporate managers establish a positive image, achieve optimal performance, reduce the risk of stock price crash and increase their stock price (Kim *et al.*, 2014). CSR affects not just the development of the company itself but also sustainable global development and the interests of the public. For example, the shocking Chinese milk powder contamination incident in 2008 not only ruined the future of the enterprises involved but also seriously endangered public safety and damaged public trust in domestic milk powder. Another example is the “European Plastics Strategy” for plastic products in the EU introduced in 2018. This requires the reduction of plastic raw materials and restrictions on plastic products, which effectively controls plastic pollution and encourages green consumption. This strategy has become a crucial method for enterprises to respond to environmental problems and fulfill their social responsibilities while also contributing to environmental protection. Accounting conservatism is another long-term practice that eases the flow of company-specific information from insiders to outsiders and leads to a high-quality information environment (Hu *et al.*, 2014). Because listed companies are more inclined to report positive events and not report negative developments and because investors are typically more sensitive to losses than to gains, accounting conservatism helps investors to understand negative operational developments of listed companies. It also plays a crucial role in corporate information disclosure and investor protection. Our research revolves around these two critical topics, as we explore the influence of corporate CSR on accounting conservatism and the channels of this influence.

CSR is a hot topic and numerous thorough studies have been published on the subject. This research has affected the corporate CSR disclosure policy in numerous ways. Dolores Sánchez-Fernández *et al.* (2014) studied the relationship between institutional theory and CSR in the hotel industry and discovered that values and norms created by regulatory pressures, organizational activities and the organizational pursuit of legality have a positive effect on the adoption of CSR practices. The corporate image that results from highly developed CSR, increased participation in CSR activities and the perception of legality can promote CSR disclosure (Michaels and Grüning, 2018). However, managers deciding whether to undertake CSR activities must also consider the corresponding cost of capital. Huang *et al.* (2016) discussed how two complementary manufacturers should decide between CSR and costs when confronted with customer requirements for product safety assurances and the incorporation of CSR into their corporate philosophies. They also discussed the effects of increasing the degree of CSR in the production process. On the other hand, CSR has also been gradually applied to corporate reputation and business strategy, and thus, it has received even more research attention. The relevant literature has mainly focused on the relationship between CSR and two factors:

- (1) The relationship between enterprises and stakeholders and the relationship between corporate investment and financing.
- (2) Financial information disclosure and other factors.

CSR plays a critical role in improving stakeholder relationships and investment efficiency while reducing investment costs. Huang and Watson (2015) argued that although CSR

mainly appears to focus on non-shareholders, it can also enhance a company's reputation, brand and trust; attract customers and employees and ultimately improve profitability and company value. Thus, high-quality CSR disclosure can help achieve maximum shareholder value. However, numerous studies have argued that although mandatory CSR disclosure can change a company's pollutant emission behavior and can produce positive externalities, it can also reduce corporate profits and damage shareholders' interests (Chen *et al.*, 2018). Additionally, it can also greatly reduce information asymmetry between companies and creditors and mitigate conflicts of interest between managers and different stakeholders (Becchetti *et al.*, 2012; Nguyen *et al.*, 2017; Yang *et al.*, 2018). Gong and Ho (2018a) revealed that market competition provides modest incentives for managers to engage in CSR behavior that benefits all stakeholders. Digital communication tools have changed how companies interact with external stakeholders and the public. Illia *et al.* (2017) studied how companies use new media to engage with stakeholders on matters related to CSR. They discovered that companies typically engage in dialogue with stakeholders, but the dialogue is dominated by the company; only a few companies discuss the concerns of stakeholders and the wider public. Investors can use the internet to obtain information regarding merchants' and brands' reputations to strengthen their trust (Goldfarb and Tucker, 2019). Riyat (2016) argued that the introduction of digital technology into the distribution of CSR goals can provide improved results for achieving sustainable social growth. CSR also plays a major role in creating a single digital market, which creates an open, fair and seamless network environment and removes market barriers (Georgeta *et al.*, 2016). In the context of digital transformation, corporate digital responsibility integrates moral considerations at corporate, personal and social levels to provide a new direction to guide the relationship between labor and technology and to shape the ethical use of new technologies (Orbik and Zozulaková, 2019). Furthermore, digital technology can significantly increase its users' understanding of financial information and improve their financial decision-making ability (French *et al.*, 2019). This also promotes increased requirements for corporate financial information disclosure. In terms of capital allocation, high levels of CSR result in low information asymmetry, which can improve investment efficiency and reduce investment sensitivity to Tobin's Q in a variety of ways (Bhandari and Javakhadze, 2017; Benlemlih and Bitar, 2018). Therefore, high-quality CSR disclosures can also reduce a company's cost of equity capital and lead to lower loan costs, a lower risk premium on corporate bonds and increased ability to raise debt during a potential crisis (El Ghouli *et al.*, 2011; Dhaliwal *et al.*, 2014; Lins *et al.*, 2017; Cheung *et al.*, 2018; Gong *et al.*, 2018). Ee *et al.* (2018) discovered that there is no such effect in the short term. Dhaliwal *et al.* (2011) revealed that increasing equity capital and disclosing CSR activities that promote each other. CSR improves the relationships between managers and shareholders, creditors and other stakeholders, which reduces agency issues and conflicts of interest. Furthermore, CSR can increase investment efficiency and attract funds at a relatively low cost due to the reduction in information asymmetry that it provides.

Another research aspect of CSR is the relationship between CSR information disclosure and financial information disclosure. Because of the ubiquity of CSR in modern enterprises, an increasing number of companies report CSR information on a regular basis. Numerous studies have revealed that companies with strong CSR reputations are more likely to disclose high-quality financial information than those with low CSR reputations (Labelle *et al.*, 2010; Kim *et al.*, 2012). Additionally, Huang and Watson (2015) confirmed the existence of a natural connection between CSR and accounting, in which accounting is responsible for measurement, disclosure and assurance of all information, including CSR-related information. CSR begins with self-regulation and in some cases lacks a formal regulatory

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structure, so accounting is crucial in CSR reporting. [Gong and Ho \(2018b\)](#) revealed that monitoring CSR reports reduces information asymmetry and effectively limits managerial short-termism. CSR information disclosure is affected by accounting, and it also counteracts financial information, affects the quality of financial information and improves the overall information disclosure environment. CSR research also covers many aspects, firm value ([El Ghoul et al., 2011](#); [Albuquerque et al., 2019](#); [Gong et al., 2019](#)), business performance and profitability ([Becchetti et al., 2012](#); [Chen et al., 2016](#); [Lins et al., 2017](#); [Byun and Oh, 2018](#)), Chief Executive Officer (CEO) characteristics ([Jian and Lee, 2015](#); [Petrenko et al., 2016](#); [McCarthy et al., 2017](#); [Tang et al., 2018](#)) and family control and institutional ownership ([El Ghoul et al., 2016](#); [Dyck et al., 2019](#)). These studies have revealed that the relationship between businesses and stakeholders, financing, investment and financial information are closely related to CSR and that CSR is also affected by many factors. In short, CSR, as a critical non-financial factor, is closely related to all aspects of a company and is inextricably linked to financial information.

Accounting policies profoundly affect the quality of accounting information disclosure. Accounting conservatism refers to the asymmetry of positive and negative disclosures, with delayed recognition of benefits and accelerated recognition of losses ([Basu, 1997](#)). The most intuitive effect of accounting conservatism is that net assets and accumulated net income are under-reported relative to neutral or aggressive accounting methods. The research on accounting conservatism has mainly investigated two questions:

- (1) whether accounting conservatism should be implemented; and
- (2) the role of accounting conservatism.

Two perspectives have been presented on whether the principle of accounting conservatism should be enforced. First, both the Financial Accounting Standards Board and International Accounting Standards Board have promoted the transition from conservative accounting principles to fair value accounting because of the belief that conservatism can bias accounting information, and thus, affect information neutrality. Some researchers have agreed with the view that conservative, non-neutral financial statements negatively affect the quality of financial reporting, which, in turn, leads to inefficient decision-making ([Gigler et al., 2009](#); [Guay and Verrecchia, 2006](#)). For example, underestimating net income and net asset value can affect a firms' operational performance ratios. If investors cannot effectively distinguish between underestimated ratios and actual ratios, decision bias might easily result.

However, some scholars have argued that accounting conservatism as a longstanding accounting principle is uniquely superior to accounting neutrality. [Watts \(2003\)](#) elaborated on the asymmetric verification requirement of accounting conservatism from several aspects. He argued that accounting conservatism effectively limits opportunistic managerial behavior and incentives to introduce bias and noise into valuation estimates and that it also reduces net assets and opportunistic payments to managers and other parties, which increases the value of the company and the welfare of all stakeholders. Conservatism also helps to alleviate the possibility of excessive distribution of wealth by stakeholders. [LaFond and Watts \(2008\)](#) argued that accounting conservatism can reduce the ability and incentives of managers to manipulate financial results, thus alleviating information asymmetry to some extent. The academic research has proven that conservatism includes debt value in accounting information and also reduces the information asymmetry between borrowers and lenders, thus benefiting both lenders and borrowers ([Ahmed et al., 2002](#); [Ball et al., 2008a](#)). [Ball et al. \(2008b\)](#) analyzed the syndicated loan market and revealed that conservatism increases transparency and helps to improve the efficiency of lending

contracts. [Juan *et al.* \(2014\)](#) agreed that increased conservatism leads to a subsequent reduction in information asymmetry and discovered that conservatism is not only useful to debt holders but also shareholders. Equity investors use accounting information to assess the value of stocks and make investment decisions. Additionally, accounting information can help the parties to a contract to assess the effectiveness and efficiency of contract performance obligations such as debt levels and executive compensation. To a large extent, the two different perspectives on accounting conservatism depend on the use of the accounting information because not all information is valuable to both investors and parties to a contract.

As for the role of accounting conservatism, it reduces information asymmetry and agency costs and protects investors. [Young \(2005\)](#) argued that moral hazard-related agency costs, which derive from incentives that lead to the implementation of suboptimal decisions, can be reduced by accounting conservatism. [Jenkins *et al.* \(2009\)](#) noted that during economic contractions, corporate profitability declines and management and auditors tend to report financial information more conservatively. This both reduces the information asymmetry between management and external stakeholders, which helps to attract more external financing and reduces litigation risk. Highly accurate and reliable disclosure can protect investors, and the disclosure of negative news is more informative and more representative of corporate value than non-disclosure of such negative news ([Langberg and Sivaramakrishnan, 2008](#)). According to [Hu *et al.* \(2014\)](#), accounting conservatism helps specific information flow to outsiders, resulting in a high-quality information environment. Moreover, accounting conservatism can also replace the legal system in ensuring information quality, thus effectively protecting the interests of investors. In other words, accounting conservatism can also protect investors to some extent. However, strong investor protection can also reduce corporate earnings management and conceal a company's actual performance from the external view ([Leuz *et al.*, 2003](#)). [Francis and Wang \(2008\)](#) discovered that as investor protections become stronger, earnings quality and accounting conservatism of companies audited by Big-four auditors' increase. In summary, accounting conservatism effectively improves the information disclosure environment and investor protection. We summarize the literature on CSR and accounting conservatism in [Table 1](#).

Our research is divided into two steps. The first step focuses on the relationship between CSR and accounting conservatism. CSR information is beyond the scope of financial disclosures. However, it requires the support of accounting and also supplements financial reports, which implies that it is closely related to accounting information. Thus, a discussion of how CSR relates to the quality of financial reporting may have interesting findings. Limited research has been conducted on the direct relationship between CSR and accounting conservatism. [Chih *et al.* \(2008\)](#) revealed that an increased commitment to CSR leads to reductions in the degree of earnings smoothing and the avoidance of disclosing losses and decreases in earnings, but it also leads to an increase in earnings aggressiveness.

The second step of our research explores the path by which CSR promotes accounting conservatism. We follow the market reaction channel of [Hou and Moskowitz \(2005\)](#) propose two channels between investor attention and liquidity. Investor attention may be a channel by which accounting conservatism is promoted. [Brennan and Tamarowski \(2000\)](#) suggested that companies attract analyst coverage through highly transparent disclosures and financial statements that reduce the cost of information acquisition, and it has a positive effect on stock liquidity. After the disclosure of mandatory CSR reports, the number of analysts following a company increases and market information asymmetry declines, especially for companies with low initial analyst coverage ([Hung *et al.*, 2013](#)). [Lin \(2016\)](#)

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Research topics	Authors	The research found	
<i>CSR</i>			
Stakeholder relations	Becchetti <i>et al.</i> (2012)	Mitigate conflicts	
	Huang and Watson (2015)	Maximum shareholder value	
	Nguyen <i>et al.</i> (2017)	Create shareholder value	
	Yang <i>et al.</i> (2018)	Reduce information asymmetry	
	Gong and Ho (2018a)	+	
Investment	Bhandari and Javakhadze (2017)	Reduce investment sensitivity to Tobin's Q	
	Benlemlih and Bitar (2018)	+	
Capital cost	El Ghouli <i>et al.</i> (2011)	-	
	Dhaliwal <i>et al.</i> (2011)	-	
	Dhaliwal <i>et al.</i> (2014)	-	
	Ye and Zhang (2011)	U-shape	
	Lins <i>et al.</i> (2017)	Increase the ability to raise the debt	
	Cheung <i>et al.</i> (2018)	-	
	Gong <i>et al.</i> (2018)	-	
	Kim <i>et al.</i> (2012)	+	
Financial information disclosure	Huang and Watson (2015)	Have a natural connection	
	Gong and Ho (2018b)	Limits managerial short-termism	
Characteristics of CEO	Jian and Lee (2015)	+	
	Petrenko <i>et al.</i> (2016)	+	
	McCarthy <i>et al.</i> (2017)	-	
	Tang <i>et al.</i> (2018)	-	
	Aupperle <i>et al.</i> (1985)	-	
Business performance/ profitability/firm value	McWilliams and Siegel (2000)	-	
	Lins <i>et al.</i> (2017)	+	
	Byun and Oh (2018)	+	
	Chen <i>et al.</i> (2018)	-	
	Albuquerque <i>et al.</i> (2019)	+	
	Gong <i>et al.</i> (2019)	+	
	<i>Conservatism</i>		
	Efficiency of contracts	Guay and Verrecchia (2006)	-
Ball <i>et al.</i> (2008b)		+	
Information environment	Ahmed <i>et al.</i> (2002)	+	
	Guay and Verrecchia (2006)	-	
	Ball <i>et al.</i> (2008a)	+	
	Ball <i>et al.</i> (2008b)	+	
	Gigler <i>et al.</i> (2009)	-	
	Jenkins <i>et al.</i> (2009)	+	
	Juan <i>et al.</i> (2014)	+	
	Hu <i>et al.</i> (2014)	+	
Beneficiary	Watts (2003)	Stakeholders	
	Juan <i>et al.</i> (2014)	Debt holders and shareholders	
	Hu <i>et al.</i> (2014)	Investors	
Managerial behavior	Watts (2003)	Limit opportunistic behavior	
	LaFond and Watts (2008)	Reduce manipulation behavior	
<i>CSR and conservatism</i>			
Mandated CSR	Kurniawan and Wibowo (2009)	Insignificant	
	Karsalari <i>et al.</i> (2017)	-	
	Cheng and Kung (2016)	+	
Voluntary CSR	Pyo and Lee (2013)	+	
Mandated and voluntary CSR	Salewski and Zulch (2014)	-	

Table 1.

Literature form

Note: This table provides a summary of the literature on CSR and accounting conservatism

proved that the level of institutional investor ownership is closely related to accounting conservatism. Short-term institutional investors who hold diversified portfolios have a high portfolio turnover rate, focus on short-term investment returns and trade on current earnings news. Therefore, as such transient institutional investor ownership increases, firms exhibit lower accounting conservatism. By contrast, increases in dedicated, long-term institutional ownership lead to increased accounting conservatism. Therefore, investor attention may be the first channel by which CSR affects accounting conservatism. Information disclosure may directly affect market liquidity, and thus, also lead to accounting conservatism. Disclosure policies affect market liquidity, and a transparent disclosure policy can reduce information asymmetry and effectively reduce transaction costs, thereby increasing the liquidity of the company's stock (Welker, 1995; Heflin *et al.*, 2005). Chung *et al.* (2010) discovered that companies can improve their stock liquidity by adopting corporate governance standards that mitigate information asymmetry. Thus, we assume that the second medium of CSRs' influence on accounting conservatism is stock liquidity. In summary, we draw on Hou and Moskowitz (2005) to define two influence paths by which CSR affects accounting conservatism. The first path is CSRs' ability to attract investor attention and the second path is its ability to increase stock liquidity.

Our research has three main contributions. First, whereas prior research on CSR and accounting conservatism has been limited, we study the effect of CSR on accounting conservatism, thus enriching the relevant literature. Our exploration of two potential market reaction channels represents the first such survey in the literature, and thus, expands upon prior research. We use the ordinary least squares method to extract the investor attention component, the liquidity component and the remaining component of CSR when we examine CSR market reaction channels that affect accounting conservatism. This method clearly distinguishes the different channels of influence, and it is both simple and practical. Our study clarifies the influence mechanism of CSR and accounting conservatism and it reveals that CSR has a positive effect on accounting conservatism. Additionally, the results remain robust when we apply alternate accounting conservatism measures and various CSR measures. Investor attention is the major path by which CSR affects accounting conservatism. Specifically, high CSR scores affect firms' accounting conservatism by attracting investors. Liquidity is another critical channel of influence. Our findings also reveal that other critical channels of influence exist, in addition to investor attention and stock liquidity. Second, many countries have realized the importance of balancing the relationship between CSR and economic development. However, compared with developed countries, much room remains for the improvement of CSR in developing countries. China is among the worlds' most dynamic economies and has developed rapidly, but its level of CSR development is not high, the supervision of CSR disclosure started late and its CSR disclosure exhibits certain representativeness. Research on CSR in China, despite its low base, has developed rapidly (Moon and Shen, 2010). We study the influence of CSR on accounting conservatism in the Chinese market, which has critical implications for understanding emerging markets. Moreover, the high-quality CSR rating indicators that we use to cover many aspects of social responsibility; these indicators are widely used in research and practice and can accurately evaluate CSR performance. They are, thus high-quality scoring indicators, which increases the accuracy of our study. Third, CSR information is non-financial reporting information and a supplement to the shortcomings of financial disclosure. It also reduces information asymmetry, and its quality can also reflect the quality of financial information. We analyze the effect of non-financial reporting information on the characteristics and quality of financial reporting information, which facilitates users' assessments of the conservativeness of financial statements, increases their

ability to obtain accurate financial numbers and helps them to make optimal decisions. At the same time, accounting conservatism is also related to investor protection. Our research provides a basis for investors to identify the characteristics and quality of enterprises' financial information disclosure. It also provides a new way of evaluating the level of investor protection.

The remainder of this paper is organized as follows. Section 2 discusses the related literature and develops our hypothesis. Section 3 describes our data and variable construction. Section 4 describes the empirical methodology and presents our main results. Section 5 presents our discussions and implications. Section 6 concludes the paper.

2. Literature review and hypothesis development

In this section, we establish assumptions to test the effect of firms' CSR information disclosure quality on accounting conservatism and the channel of this effect.

Corporate management and governance and information disclosure ratings are interdependent. Excellent profitability and operating conditions can increase a company's level of voluntary disclosure (Healy and Palepu, 2001; Francis *et al.*, 2008). High levels of disclosure can significantly reduce a company's cost of capital (Leuz and Verrecchia, 2000; Hail, 2002; Lambert *et al.*, 2007; Shroff *et al.*, 2013), affect a company's financing decisions (Pan *et al.*, 2015) and increase its stock value, returns and investor expectations of future performance (Jiao, 2011). Companies with relatively high board independence tend to provide comprehensive payroll disclosure, thereby reducing agency conflicts (Sheu *et al.*, 2010). Chung *et al.* (2015) revealed that voluntary disclosure of comprehensive information can alleviate the negative relationship between excess executive compensation and company value. Hermalin and Weisbach (2012) noted that disclosure and other governance reforms can be a double-edged sword. Although increased corporate information can improve the ability of shareholders and board directors to oversee management, mandatory increases in disclosure partly explain the recent increase in CEO compensation and CEO turnover.

Bushman and Smith (2001) defined the governance role of financial accounting information as the use of externally reported financial accounting data in a control mechanism that promotes effective corporate governance. They argued that financial accounting information can influence how a firm invests. Additionally, CSR can influence the choice of accounting policies (Bozzolan *et al.*, 2015). Financial information and non-financial information can complement each other, and the effect of poor accounting quality can be offset by other sources of non-accounting information that can serve as a substitute mechanism for a company to maintain information transparency (Callen *et al.*, 2013). Dhaliwal *et al.* (2011) revealed that financial and CSR disclosures can replace each other in reducing the cost of equity capital. Once companies report their CSR performance, they have a stronger motivation than previously to improve the quality of their financial statements because of ethical issues (Kim *et al.*, 2012). Bereskin *et al.* (2018) framed CSR as a critical component of a company's culture and used the similarity of CSR characteristics as a proxy variable for cultural similarity. In addition, corporate financial information disclosure is affected by a company's culture.

Modern accounting standards emphasize non-financial indicators as a means of compensating for weaknesses in financial indicators. Non-financial information supplements financial information and can also affect financial information disclosure. Therefore, we propose *H1*:

H1. CSR helps to enhance accounting conservatism.

Further analysis of the influence channels is necessary to understand the effect of CSR information disclosure on accounting conservatism. We mainly study the intermediary effects of investor attention and stock liquidity. CSR information and financial statement information complement and influence each other, which results in both increased information disclosure quality and timeliness. Regina (2008) revealed that conservative reporting reduces borrower information asymmetry and increases the efficiency of secondary debt securities transactions. Dyck *et al.* (2019) revealed that investor requirements can promote the environmental and social performance of global companies, and financial motivations and cultural origin are critical for improving environmental and social performance for investors.

Most scholars have argued that increased levels of disclosure attract additional analyst coverage, whereas reduced disclosure has the opposite effect. Analysts are critical market participants who gather and interpret stock information so that investors can engage in more informed trading decisions than would otherwise be the case. Large, global companies voluntarily provide higher levels of forward-looking and historical non-financial disclosures than other companies, which effectively and improves the accuracy of financial analysts' earnings forecasts (Vanstraelen *et al.*, 2003). Lee *et al.* (2018) examined analyst recommendations from an informational perspective and discovered that a company's voluntary disclosure of CSR-related information or the release of CSR-related information by third-party rating agencies can cause a decline in the value of stock analysis and recommendations. As such, CSR information reduces the influence of financial analysts on price discovery by reducing the degree of information opacity, which helps investors make informed decisions using their judgment. Tsao *et al.* (2016) studied the relationship between voluntary monthly earnings disclosure and analyst coverage, and they discovered that companies that disclose monthly income attract more analyst coverage than companies that do not disclose monthly income. Diamond and Verrecchia (1991) argued that public information disclosure reduces information asymmetry and attracts large investors, thereby increasing the liquidity of securities and reducing the company's capital cost. Core (2001) summarized the relevant literature and argued that analysts and institutions generate information, which reduces information asymmetry; but for informed investors, they are more inclined to reduce disclosure. Dhaliwal *et al.* (2011) revealed that companies with outstanding social responsibility performance attract specialized institutional investors and analyst coverage than companies with weak social responsibility performance. Analyst coverage and increased institutional ownership are also associated with increased liquidity in corporate stocks (Roulstone, 2003; Boone and White, 2015). Healy *et al.* (1999) discovered that increased disclosure evaluations lead to increased stock returns, institutional ownership, analyst coverage and stock liquidity. However, Beyer *et al.* (2010) noted that not all companies' stock liquidity improves when analyst coverage increases, and the causal relationship between analyst coverage and stock liquidity is also unclear. Benlemlih and Bitar (2018) also studied the benefits of CSR and revealed that companies with higher CSR participation have lower information asymmetry than other companies. Furthermore, CSR can effectively shape corporate investment behavior and improve investment efficiency. Albuquerque *et al.* (2019) revealed that consumers are more crucial determinants of a company's CSR policy than investors, but not all CSR activities are aimed at promoting customer loyalty. Employee loyalty also has a critical influence on CSR. CSR information disclosure can attract investor attention, improving the company's information environment and increasing its liquidity.

In addition to increasing liquidity through investor attention, information disclosure can increase liquidity directly. An *et al.* (2012) examined panel data on real estate investment

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trusts and discovered that information asymmetry plays a critical role in corporate liquidity management. Liquidity interacts with corporate governance. Specifically, liquidity improves corporate governance, information disclosure and corporate value. Corporate governance can increase corporate transparency, reduce adverse selection and attract increased transactions (i.e. liquidity) in the company's stock. This demonstrates that when corporate governance quality improves, the stock liquidity is significantly improved (Prommin *et al.*, 2014). Ng (2011) revealed that improved information quality is associated with reduced liquidity risk, and when a substantial effect on market liquidity occurs, the negative correlation between information disclosure quality and liquidity risk is stronger than when such an effect does not occur.

In summary, we argue that CSR, investor attention, accounting conservatism and stock liquidity are inextricably linked. Thus, we follow the market reaction channel of Hou and Moskowitz (2005) propose *H2*:

H2. CSR further contributes to increased accounting conservatism the market reaction channel.

3. Data and variable construction

The data on CSR in our study comes from a third-party agency, Rankins CSR ratings (RKS). The RKS database covers the 2009–2018 period. However, due to the incomplete collection of CSR information in 2009, our sample comprises the performance of all listed common stocks on the Shanghai Stock Exchange (SHSE) and the Shenzhen Stock Exchange (SZSE) in 2010–2018. Other data on the Chinese stock market comes from the China Stock Market financial database – statement notes of China stock market and accounting research. Considering the availability of data, we exclude the following from our sample: companies that lack CSR reports and companies that lack enough disclosed information to measure accounting conservatism. Following these exclusions, 4,472 observations are included in our sample.

3.1 Corporate social responsibility

According to a 2008 survey by the Chinese Academy of Social Sciences, CSR is a concern among most investors. The Chinese government realizes the importance of balancing economic growth and social responsibility and has issued a series of relevant guidelines. In 2007, the State-owned Assets Supervision and Administration Commission of the State Council issued the “guidelines for central CSR information disclosure.” In January 2009, the China Banking Industry Association issued the “guidelines for CSR of Chinese Banking Financial Institutions.” In September 2018, the China Securities Regulatory Commission issued the revised “guidelines for corporate governance of listed companies.” The revision strengthened the leading role of listed companies in social responsibility and established a basic framework for disclosure of CSR information.

In addition, China's two major exchanges have launched CSR guides. On September 25, 2006, the SZSE issued the “guidelines for social responsibility of listed companies,” which mandated the inclusion of CSR reports attached to annual disclosure reports of SZSE 100 index components and encouraged other enterprises to voluntarily disclose CSR reports. On May 14, 2008, the SHSE strengthened the required social responsibility information disclosure and issued the “guidelines for environmental information disclosure of listed companies,” which required three types of companies (i.e. components of the SHSE corporate governance sector index, financial companies and listed overseas joint-stock

companies) to provide CSR reports. In December 2008, the SHSE and the SZSE jointly issued the “notice on doing a good job in the 2008 annual report of listed companies.” In 2009, the SHSE launched the CSR Index.

CSR requires people to pay attention to corporate profits, but it also requires systematic thinking to make decisions and to take actions on a very broad basis (Knez-Riedl *et al.*, 2006). However, interpretations of CSR in the literature have varied and no single consistent definition has been commonly accepted. The CSR performance data that we examine is from the RKS database, which measures CSR by four dimensions, namely, the macrocosm, content, technique and industry dimensions. Integrity refers to the effectiveness of CSR strategies, the effectiveness of management governance and the evaluation of various stakeholders. Content refers to the evaluation of social responsibility in terms of community, environment, product strategy and sustainable social development. The technique dimension considers the relative balance of content and related innovation capabilities. The industry dimension is an evaluation of a company’s compliance with relevant industry norms. RKS publishes CSR rating scores ranging from 1 to 100 during the 2009–2018 period and is an effective measure of CSR among Chinese companies. Thus, the data is applicable for empirical research (Gong and Ho, 2018a, Gong and Ho, 2018b). With the increasing importance of CSR and the recognition of the quality of the CSR data in the RKS database, the number of CSR reports disclosed has gradually increased over the years. In 2009, 371 listed companies issued CSR reports and that number grew to 851 by 2018.

Table 2 lists and describes the main variables used in our study (Table 3).

3.2 Accounting conservatism

Accounting conservatism is a critical feature of accounting information quality, and typically imposes higher requirements for positive news disclosure than for negative news disclosure. This can result in undervalued net assets (Basu, 1997). We apply two measures of accounting conservatism. The first measure is the level of accounting conservatism at the annual level as described by Khan and Watts (2009). We construct this measure of accounting conservatism based on the cross-sectional regression model of Basu (1997):

$$X_i = \beta_0 + \beta_1 D_i + \beta_2 R_i + \beta_3 D_i R_i + \varepsilon_i \quad (1)$$

among which X_i is the earnings per share divided by the beginning-of-period stock price; R_i is the stock return of the company in the respective year; D_i is a dummy variable that is 1 when R_i is less than zero and is otherwise 0; and ε_i is a random error term. The coefficient β_2 indicates the timeliness of positive news disclosure, the coefficient β_3 indicates the degree of improvement in the timeliness of negative news disclosure relative to positive news disclosure (i.e. the level of conservatism) and $\beta_2 + \beta_3$ indicates the timeliness of the overall negative news disclosure. The annual-enterprise level factor or the timeliness of positive news confirmation β_2 and accounting conservatism β_3 , can be expressed as a linear function, as follows:

$$GScore = \beta_2 = \mu_0 + \mu_1 SIZE_i + \mu_2 MB_i + \mu_3 LEV_i \quad (2)$$

$$CScore = \beta_3 = \omega_0 + \omega_1 SIZE_i + \omega_2 MB_i + \omega_3 LEV_i \quad (3)$$

where $SIZE_i$ is the natural logarithm of total assets, MB_i is the ratio of the market value of equity to book value and LEV_i is the firms’ leverage ratio. Equations (2) and (3) are not

Variables	Variable definitions
<i>Accounting conservatism measures</i>	
<i>CON_KIM</i>	See equation (1) as follow Kim and Zhang (2016)
<i>CON_KHAN</i>	See equation (2) as follow Khan and Watts (2009)
<i>CSR measures</i>	
<i>CSR</i>	The CSR score ranging from 1 (the lowest) to 100 (the highest)
<i>CSR_{ATT}</i>	The CSR component of investor attention channel
<i>CSR_{LIQ}</i>	The CSR component of investor liquidity channel
<i>CSR_{error}</i>	$CSR_{error} = CSR - CSR_{ATT} - CSR_{LIQ}$
<i>CSRS</i>	The standardized CSR score, defined as the difference between CSR and the average value of CSR, scaled by the standard deviation of CSR for firm <i>i</i> at time <i>t</i>
<i>CSRS_{ATT}</i>	The CSRS component of investor attention channel
<i>CSRS_{LIQ}</i>	The CSRS component of investor liquidity channel
<i>CSRS_{error}</i>	$CSRS_{error} = CSRS - CSRS_{ATT} - CSRS_{LIQ}$
<i>Investor attention measures</i>	
<i>IO</i>	Institutional ownership (%) = stock ownership of foreign institutions, domestic funds and securities companies
<i>ANA</i>	A unique number of analysts providing earnings forecasts
<i>EMP</i>	A number of employees
<i>SH</i>	A number of shareholders
<i>ADV</i>	The natural log of (1 + advertising expense). Adv is set to zero when advertising expense is missing
<i>Liquidity measures</i>	
<i>PRC</i>	Average daily share price
<i>TRD</i>	A total number of trading days
<i>ILR</i>	The natural log of Amihud (2002)'s illiquidity ratio defined as average daily absolute return divided by dollar trading volume
<i>Instrumental variables measures</i>	
<i>CI</i>	Capital intensity defined as the ratio of property, plant and equipment to total assets
<i>OM</i>	Operating margin defined as sales minus cost of goods sold scaled by sales
<i>OC</i>	The operating cycle defined as average receivables divided by sales plus average inventory divided by the cost of goods sold
<i>BIG4</i>	The big-4 auditor is a dummy variable that has a value of one if the firm has a Big-4
<i>Control variables measures</i>	
<i>AZ</i>	Altman's Z-score, defined as (3.3*operating income + sales + 1.4*retained earnings + 1.2*(current assets - current liability))/total assets
<i>CFV</i>	The standard deviation of cash flows over the past three years
<i>DUAL</i>	CEO duality: a dummy variable, with 0 for a company having separate CEO and chairman and 1 otherwise
<i>GROWTH</i>	Percentage change in sales in the fiscal year
<i>LEV</i>	The total long-term debt divided by total assets
<i>LISTAGE</i>	Firm age, measured by the natural logarithm of (1 + the firm's established period)
<i>LOSS</i>	The relative frequency of losses in the previous three years (the number of loss years divided by three). A loss year is one in which net income before extraordinary items is negative
<i>MB</i>	The ratio of the market value of equity to book value of equity
<i>ROA</i>	Income before extraordinary items divided by lag total assets for the fiscal year preceding the investment date/period
<i>SIGMA</i>	The standard deviation of firm-specific weekly returns over the fiscal year period
<i>SIZE</i>	Market capitalization (billions)
<i>SOE</i>	A dummy variable that equals 1 if the ultimate controlling shareholder of a listed firm in the state, and 0 otherwise
<i>TOP (%)</i>	Percentage of total outstanding shares owned by the largest shareholder

Table 2.

Variable definitions

Note: This table defines each dependent and the independent variable used in the empirical analysis

Accounting conservatism

Variable	Mean	SD	First (%)	First quartile	Median	Third quartile	99th (%)
<i>Accounting conservatism measures</i>							
<i>CON_KIM</i>	0.12	0.14	-0.09	0.02	0.08	0.21	0.45
<i>CON_KHAN</i>	-0.84	2.96	-10.15	-0.13	0.01	0.15	0.76
<i>CSR measures</i>							
<i>CSR</i>	36.62	11.18	13.33	29.40	35.04	41.92	68.74
<i>CSRS</i>	-0.07	0.82	-1.29	-0.64	-0.27	0.26	2.56
<i>Investor attention measures</i>							
<i>IO</i>	1.53	0.81	0.00	0.97	1.66	2.12	3.05
<i>ANA</i>	2.05	1.17	0.00	1.10	2.30	3.04	3.89
<i>EMP</i>	1.88	1.41	0.14	0.90	1.54	2.42	8.11
<i>SH</i>	3.62	1.32	0.00	2.94	3.71	4.53	6.21
<i>ADV</i>	0.25	1.09	0.00	0.00	0.00	0.00	6.25
<i>Liquidity measures</i>							
<i>PRC</i>	2.69	0.61	1.33	2.25	2.67	3.09	4.16
<i>TRD</i>	5.44	0.10	5.02	5.46	5.48	5.49	5.50
<i>ILR</i>	-6.97	1.02	-8.73	-7.76	-7.07	-6.35	-4.09
<i>Instrumental variables</i>							
<i>CI</i>	0.23	0.17	0.00	0.09	0.20	0.33	0.69
<i>OM</i>	0.29	0.17	0.01	0.17	0.27	0.38	0.76
<i>OC</i>	0.82	1.13	0.03	0.25	0.45	0.87	6.70
<i>BIG4</i>	0.08	0.28	0.00	0.00	0.00	0.00	1.00
<i>Control variables</i>							
<i>AZ</i>	3.25	5.71	-0.06	1.25	2.53	4.08	13.77
<i>CFV</i>	0.05	0.25	0.00	0.01	0.03	0.05	0.22
<i>DUAL</i>	0.20	0.40	0.00	0.00	0.00	0.00	1.00
<i>GROWTH</i>	0.12	0.29	-0.55	-0.02	0.11	0.26	0.96
<i>LEV</i>	0.22	0.40	0.00	0.00	0.05	0.33	1.54
<i>LISTAGE</i>	2.28	0.63	0.77	1.78	2.44	2.83	3.15
<i>LOSS</i>	0.12	0.32	0.00	0.00	0.00	0.00	1.00
<i>MB</i>	2.15	2.19	0.13	0.83	1.49	2.70	10.32
<i>ROA</i>	0.06	0.06	-0.10	0.02	0.04	0.08	0.24
<i>SIGMA</i>	0.05	0.02	0.02	0.04	0.05	0.06	0.11
<i>SIZE</i>	0.09	0.20	0.00	0.01	0.03	0.09	0.88
<i>SOE</i>	0.46	0.50	0.00	0.00	0.00	1.00	1.00
<i>TOP (%)</i>	35.54	16.41	7.93	21.84	34.05	47.33	76.07

Notes: The summary statistics of the main variables. Corporate social responsibility score includes *CSR* is the CSR score ranging from 1 (the lowest) to 100 (the highest) and *CSRS* is the standardized CSR score, defined as the difference between *CSR* and the average value of *CSR*, scaled by the standard deviation of *CSR* for firm *i* at time *t*. *Accounting conservatism measure* is accounting conservatism level include *CON_KIM* and *CON_KHAN*. Investor attention variables including institutional ownership (*IO*), analyst coverage (*ANA*), number of employees (*EMP*) and number of shareholders (*SH*), advertising expense (*ADV*) and stock liquidity variables including share price (*PRC*), number of trading days (*TRD*) and Amihud (2002) illiquidity ratio (*ILR*). Instrumental variables such as capital intensity (*CI*), operating margin (*OM*), operating cycle (*OC*) and Big-four auditor dummy (*BIG4*). Control variables include Altman's Z-score (*AZ*), volatility of cash flows (*CFV*), CEO duality (*DUAL*), sales revenue growth rate (*GROWTH*), firm's leverage (*LEV*), firm age (*LISTAGE*), relative loss frequency (*LOSS*), market value of equity to book value of equity (*MB*), the return of asset (*ROA*), volatility (*SIGMA*), firms' size (*SIZE*), state-owned enterprise (*SOE*) and largest shareholder ratios (*TOP%*). [Table 2](#) provides details of all the main variables

Table 3.
Summary statistics

estimation equations. We combine [equations \(2\)](#) and [\(3\)](#) into [equation \(1\)](#) to obtain regression [equation \(4\)](#) to estimate accounting conservatism, as follows:

$$\begin{aligned}
 X_i = & \beta_0 + \beta_1 D_i + R_i(\mu_0 + \mu_1 SIZE_i + \mu_2 MB_i + \mu_3 LEV_i) \\
 & + D_i R_i(\omega_0 + \omega_1 SIZE_i + \omega_2 MB_i + \omega_3 LEV_i) \\
 & + (\vartheta_1 SIZE_i + \vartheta_2 MB_i + \vartheta_3 LEV_i + \vartheta_4 D_i SIZE_i + \vartheta_5 D_i MB_i + \vartheta_6 D_i LEV_i) + \varepsilon_i
 \end{aligned}
 \tag{4}$$

We estimate [equation \(4\)](#) on a year-by-year basis and obtain the coefficients ω_0 , ω_1 , ω_2 and ω_3 , which we input into [equation \(3\)](#) to obtain the annual-enterprise accounting conservatism index.

Our second indicator of accounting conservatism is based on [Kim and Zhang \(2016\)](#), who used a five-year rolling panel to estimate the CScore indicator. This estimation method, which is based on the improved [Basu \(1997\)](#) model, uses panel data to estimate accounting conservatism. The coefficient can be changed for each examined company and time period, and the indicators that are obtained are highly reliable. Therefore, the empirical research in this paper mainly focuses on this index. Companies with higher CScores are considered to be more conservative in their accounting than companies with lower CScores.

3.3 Market reaction variables

We select five variables to properly measure investor attention between 2010 and 2018, namely, institutional ownership (*IO*), analyst attention (*ANA*), number of employees (*EMP*), number of shareholders (*SH*) and advertising expenses (*ADV*). Institutional ownership comprises stock ownership by foreign institutions, domestic funds and securities companies. We summarize the number of analysts (or teams) who followed the company in each year as a measure of analyst interest. The number of employees refers to the number of employees in service in any given year. The number of shareholders refers to the number of shareholders in each year, reflecting that the degree of market competition and the company's equity capital costs are significantly affected by asymmetric information ([Armstrong et al., 2011](#)). Advertising costs are the amount spent on advertising in each calendar year. The specific variables are defined in [Table 2](#).

Referring to [Hou and Moskowitz \(2005\)](#), we define the natural logarithm (*PRC*) of the stock price, the natural logarithm of the trading day (*TRD*) and the illiquidity ratio of [Amihud \(2002\)](#), for which we adopt the natural logarithm value (*ILLR*), as our liquidity variable. Specifically, stock price refers to the average daily stock price during a calendar year and the number of trading days is the sum of the stocks' actual trading days during each year. Amihud's (2002) illiquidity ratio is defined as the daily average absolute rate of return divided by the trading volume (in millions of Chinese yuan) during a given year.

3.4 Instrumental variables

[Healy and Palepu \(2001\)](#) argued that companies with strong operating performance tend to disclose higher-quality information than companies with weak operations. Companies with superior fundamentals may also have a higher quality of disclosure and higher accounting conservatism than those with weak fundamentals. Thus, the disclosure rating may be an endogenous variable that causes a deviation from the final result. Following the steps suggested by [Larcker and Rusticus \(2010\)](#), we perform endogenous testing, the results of which indicate that endogeneity is a problem that is worth considering. To alleviate the possible problem of endogeneity, we consider economic theory and select the six

instrumental variables proposed by Larcker and Rusticus (2010), the natural logarithm of the number of common shareholders, sales growth in a given year, capital intensity, operating margin, length of the operating cycle and a dummy variable that indicates whether the firm is audited by a Big-four accounting firm. Next, we evaluate the instrumental variables to check for problems of overidentification and weak instrumental variables. The null hypothesis of the overidentification test is that all instrumental variables are exogenous. In the weak instrumental variable test, a Kleibergen–Paap Wald F statistic that is greater than 10 indicates that no weak instrumental variable problem exists. Finally, four eligible instrumental variables are selected, namely, capital intensity (CI), operating margin (OM), length of the operating cycle (OC) and whether the firm is audited by a Big-four accounting firm (BIG4). The specific variable definitions are presented in Table 2.

3.5 Control variables

To ensure that the results are accurate, we also control other variables that may affect accounting conservatism. Referring to the relevant literature, these variables comprise Altman's Z-score (AZ) (Nikolaev, 2010; Lara *et al.*, 2016), cash flow volatility (CFV) (Lara *et al.*, 2016), sales revenue growth rate (GROWTH) (Ahmed and Duellman, 2013), firm leverage (LEV) (Watts, 2003; Khan and Watts, 2009; Juan *et al.*, 2014; Kim and Zhang, 2016), relative loss frequency (LOSS) (Lara *et al.*, 2016), return on assets (ROA) (Nikolaev, 2010; Kim and Zhang, 2016) and volatility (SIGMA) (Kim and Zhang, 2016). We also control company characteristics such as the shareholding ratio of the largest shareholder, board structure (Lara *et al.*, 2007), market-to-book ratio (Watts, 2003; Khan and Watts, 2009; Juan *et al.*, 2014; Kim and Zhang, 2016), firm size (Watts, 2003; Khan and Watts, 2009; Juan *et al.*, 2014; Kim and Zhang, 2016) and firm age. The corporate governance structure of China's state-owned enterprises (SOEs) is very different from Western SOEs and non-SOEs, so we also control for whether a firm is an SOE (Gong and Ho, 2018a). Again, the specific variable definitions are presented in Table 2.

3.6 Average firm characteristics of corporate social responsibility separated portfolios

Table 4 presents the average firm characteristics of CSR in separate portfolios. In our classification, the CSR scores were divided into Groups 1 to 5, from low to high. A clear difference exists between Groups 1 and 5. We discover that companies with higher CSR scores tend to have higher accounting conservatism than companies with lower CSR scores. The difference between CON_KIM of the highest score group and the lowest score group is 0.08 and significantly. The investor attention indicators exhibit statistically significant differences between groups, indicating that the value of the high-CSR score group is significantly larger than that of the low-CSR score group. In other words, the values of the investor attention variables for companies with high CSR scores are larger, and such companies tend to have higher levels of institutional ownership, more analyst coverage, more employees and shareholders and higher advertising costs than companies with low CSR scores. Among the liquidity measures, only the Amihud (2002) illiquidity ratio exhibits significant differences between the groups. Compared to companies with low CSR scores, companies with high CSR scores tend to be more value-oriented (MB), more regulated in terms their corporate governance (DUAL) and larger (SIZE); their largest shareholder also tends to have a higher shareholding ratio (TOP). These firms include a greater number SOEs, and they tend to have longer firm ages (LISTAGE), higher leverage (LEV) and higher profitability (ROA) than companies with low CSR scores.

K

	1	2	3	4	5	5-1
<i>CSR rank</i>						
CSR	25.65	31.03	34.48	39.49	52.53	26.88 (38.55) ^{***}
CSRS	-0.93	-0.56	-0.27	0.15	1.24	2.17 (53.24) ^{***}
<i>Accounting conservatism measures</i>						
CON_KIM	0.10	0.09	0.10	0.13	0.18	0.08 (5.67) ^{***}
CON_KHAN	-1.02	-0.77	-0.87	-0.83	-0.69	0.33 (1.20)
<i>Investor attention measures</i>						
IO	1.42	1.45	1.58	1.62	1.60	0.18 (2.64) ^{***}
ANA	1.79	1.95	2.08	2.12	2.34	0.55 (5.71) ^{***}
EMP	1.35	1.46	1.67	2.28	2.63	1.28 (11.70) ^{***}
SH	3.43	3.51	3.64	3.55	3.99	0.56 (5.07) ^{***}
ADV	0.11	0.03	0.36	0.19	0.59	0.48 (4.29) ^{***}
<i>Liquidity measures</i>						
PRC	2.67	2.71	2.67	2.74	2.64	-0.03 (-0.60)
TRD	5.44	5.45	5.44	5.44	5.45	0.01 (1.10)
ILR	-7.22	-7.17	-6.92	-6.91	-6.61	0.61 (6.98) ^{***}
<i>Instrumental variables</i>						
CI	0.21	0.24	0.23	0.23	0.25	0.04 (2.71) ^{***}
OM	0.30	0.29	0.28	0.30	0.28	-0.02 (-1.23)
OC	0.98	0.82	0.82	0.69	0.78	-0.20 (-1.82) [*]
BIG4	0.05	0.02	0.06	0.09	0.22	0.17 (6.31) ^{***}
<i>Control variables</i>						
AZ	3.23	2.98	3.95	3.25	2.83	-0.39 (-0.65)
CFV	0.07	0.07	0.04	0.05	0.04	-0.02 (-0.77)
DUAL	0.23	0.21	0.22	0.20	0.16	-0.06 (-1.87) [*]
GROWTH	0.14	0.10	0.12	0.12	0.13	-0.01 (-0.34)
LEV	0.22	0.21	0.21	0.18	0.29	0.06 (1.91) [*]
LISTAGE	2.21	2.20	2.26	2.29	2.42	0.21 (3.80) ^{***}
LOSS	0.16	0.13	0.11	0.08	0.12	-0.04 (-1.30)
MB	2.47	2.26	2.27	2.11	1.66	-0.81 (-4.29) ^{***}
ROA	0.05	0.05	0.06	0.06	0.06	0.01 (2.48) ^{***}
SIGMA	0.05	0.05	0.05	0.05	0.05	-0.01 (-4.84) ^{***}
SIZE	0.08	0.08	0.08	0.11	0.11	0.04 (2.61) ^{***}
SOE	0.37	0.39	0.46	0.54	0.59	0.22 (5.25) ^{***}
TOP (%)	33.99	35.02	35.73	36.52	36.55	2.56 (1.78) [*]

Notes: This table reports equally-weighted firm characteristics of portfolios separated by the corporate social responsibility CSR from 2010 to 2018. Group 1 includes firms with the lowest CSR rating score. Group 5 includes firms with the highest CSR rating score. *Accounting conservatism measure* is accounting conservatism level include *CON_KIM* and *CON_KHAN*. Investor attention variables including institutional ownership (*IO*), analyst coverage (*ANA*), number of employees (*EMP*) and number of shareholders (*SH*), advertising expense (*ADV*) and stock liquidity variables including share price (*PRC*), number of trading days (*TRD*) and Amihud (2002) illiquidity ratio (*ILR*). Instrumental variables such as capital intensity (*CI*), operating margin (*OM*), operating cycle (*OC*) and Big-four auditor dummy (*BIG4*). Control variables include Altman's Z-score (*AZ*), volatility of cash flows (*CFV*), CEO duality (*DUAL*), sales revenue growth rate (*GROWTH*), firm's leverage (*LEV*), firm age (*LISTAGE*), relative loss frequency (*LOSS*), market value of equity to book value of equity (*MB*), the return of asset (*ROA*), volatility (*SIGMA*), firm's size (*SIZE*), state-owned enterprise (*SOE*) and largest shareholder ratios (*TOP%*). The *t*-statistics are reported in parenthesis. ^{***}, ^{**}, ^{*} denote statistical significance at 1%, 5% and 10%, respectively

Table 4.
Characteristics of
CSR ranking-
separated portfolios

In addition, our results reveal that companies with high CSR scores attract more investor attention than those with low scores. For example, the difference between the high-scoring and low-scoring companies is 0.55, and the difference between EMP is 1.28. The other variables of investor attention (i.e. IO, SH and ADV) are significantly larger in the high-scoring group than companies in the low-scoring group, which indicates that companies with high scores attract more investor attention.

Companies with high CSR scores also have higher stock liquidity than those with low scores. ILR differs by 0.61 between the highest-scoring group and the lowest-scoring group, and the p values are all less than 0.01.

3.7 Pearson correlation coefficients among variables

Table 5 exhibits the Pearson correlation coefficient matrix and variance inflation factors (VIF) between the variables used in our study. As expected, CSR (CSRS) exhibits a significant positive correlation with accounting conservatism CON_KIM (CON_KHAN); that is a relatively high CSR disclosure score is related to accounting conservatism. We also observe that both SIZE and SOE are positively correlated with CSR score (CSRS), but MB is negatively correlated with CSRS.

The higher a firms' CSR score, the more attention it attracts from investors. Among the investor attention indicators, IO, ANA, EMP, SH and ADV are all positively correlated with CSR, suggesting that companies with higher CSR scores attract more institutional shareholders, analyst coverage, employees and shareholders and such firm also tends to have higher advertising expenses than companies with lower CSR scores. Among the liquidity indicators, the correlation between TRD and CSR is negative, whereas the relationship between ILR and CSR is positive. All VIF in Table 5 are less than 6, indicating no serious linear correlation.

4. Methodology and empirical results

4.1 Corporate social responsibility and accounting conservatism

We run the regression illustrated in equation (5) to examine how a firms' CSR influences its accounting conservatism.

$$CON_{i,t} = \forall_0 + \forall_1 CSR_{i,t} + \sum \forall_{i,t} CONTROL_{i,t} + \varepsilon_{i,t} \quad (5)$$

where $CON_{i,t}$ is the enterprise accounting conservatism index; $CSR_{i,t}$ is the company's CSR score; and $CONTROL_{i,t}$ is a control variable that includes Altman's Z-score (AZ), cash flow volatility (CFV), CEO duality (DUAL), sales revenue growth rate (GROWTH), firm leverage (LEV), firm age (LISTAGE), relative loss frequency (LOSS), market-to-book ratio (MB), the total return on assets (ROA), volatility (SIGMA), firms' size (SIZE), SOE and largest shareholder ratio (TOP). The regression considers year and industry fixed effects. Table 2 provides details of all the variables.

Table 6 presents the results of this regression. We can see that CSRS significantly and positively explains accounting conservatism, illustrating that firms with higher CSR scores have higher accounting conservatism than those with lower CSR scores. After the control variables are controlled, the coefficients of CSRS in the regression of CON_KIM are 0.0014 (0.0178), both of which are significant at the 1% confidence level. The results above show that the higher a firms' CSR score, the higher its accounting conservatism, which implies that CSR disclosure helps to enhance accounting conservatism. As critical non-financial information, CSR disclosure can affect a firms' financial information disclosure policy. This result supports $H1$ and it also supports the results of the Pearson correlation coefficient in Table 5. Moreover, it indicates a

Table 5.
Correlation matrix

Variables	VIF	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
(1) <i>CON_KIM</i>		1.00													
(2) <i>CON_KHAN</i>		-0.43	1.00												
(3) <i>CSR</i>	5.54	0.23	0.31	1.00											
(4) <i>CSRS</i>	5.90	0.22	0.07	0.88	1.00										
(5) <i>IO</i>	1.65	0.13	-0.06	0.00	0.06	1.00									
(6) <i>ANA</i>	2.60	0.03	-0.04	0.08	0.16	0.48	1.00								
(7) <i>EMP</i>	2.50	0.38	0.03	0.31	0.34	0.20	0.01	1.00							
(8) <i>SH</i>	3.48	0.03	-0.02	0.11	0.16	0.10	0.37	-0.13	1.00						
(9) <i>ADV</i>	1.39	0.11	-0.02	0.18	0.23	0.09	0.07	0.20	0.19	1.00					
(10) <i>PRC</i>	4.64	-0.03	-0.02	-0.03	-0.06	0.28	0.39	-0.01	-0.28	-0.05	1.00				
(11) <i>TRD</i>	1.08	0.03	-0.09	-0.07	0.04	0.05	0.11	0.08	0.06	0.05	-0.09	1.00			
(12) <i>ILR</i>	2.13	0.25	0.12	0.26	0.27	0.21	0.22	0.33	0.47	0.26	-0.08	0.04	1.00		
(13) <i>CI</i>	1.63	-0.03	-0.04	0.02	0.07	-0.05	0.01	0.22	0.10	0.03	-0.20	0.04	-0.16	1.00	
(14) <i>OM</i>	2.24	-0.03	-0.01	-0.05	-0.04	0.14	0.25	-0.23	-0.16	0.03	0.36	0.02	0.03	-0.24	1.00
(15) <i>OC</i>	2.02	0.12	-0.02	-0.04	-0.05	0.00	-0.06	-0.18	0.07	0.25	-0.15	0.04	0.21	-0.40	0.23
(16) <i>BIG4</i>	1.27	0.15	0.00	0.27	0.32	0.06	0.23	0.29	0.24	0.24	0.03	0.07	0.26	0.04	-0.03
(17) <i>AZ</i>	1.34	-0.09	-0.02	-0.08	-0.04	0.05	0.07	0.02	0.02	0.06	0.10	0.03	-0.03	0.02	-0.14
(18) <i>CFV</i>	1.18	0.10	-0.11	-0.03	-0.02	0.04	-0.02	0.05	-0.05	-0.01	0.07	-0.01	-0.01	0.05	0.03
(19) <i>DUAL</i>	1.11	-0.03	0.06	-0.04	-0.07	0.02	0.07	-0.05	-0.07	0.07	0.14	-0.05	-0.06	-0.08	0.06
(20) <i>GROWTH</i>	1.19	-0.10	0.05	-0.05	0.00	0.17	0.18	-0.02	-0.11	0.05	0.18	-0.04	-0.01	-0.11	0.08
(21) <i>LEV</i>	1.42	0.22	-0.04	0.05	0.08	0.03	-0.01	0.14	0.14	0.13	-0.17	-0.01	0.14	0.12	-0.14
(22) <i>LISTAGE</i>	2.48	0.27	0.03	0.14	0.13	0.17	-0.04	0.36	0.59	0.25	-0.28	0.04	0.54	0.07	-0.16
(23) <i>LOSS</i>	1.30	-0.03	0.04	0.01	-0.03	-0.14	-0.20	-0.02	0.03	-0.01	-0.18	-0.09	-0.05	0.14	-0.25
(24) <i>MB</i>	2.40	-0.25	0.02	-0.12	-0.15	0.06	0.12	-0.25	-0.15	-0.15	0.55	-0.12	-0.06	-0.17	0.41
(25) <i>ROA</i>	3.28	0.06	-0.05	0.00	0.04	0.20	0.24	0.15	-0.30	0.07	0.49	0.09	0.11	-0.17	0.55
(26) <i>SIGMA</i>	1.39	0.10	-0.11	-0.04	-0.06	0.10	-0.07	-0.20	-0.19	-0.04	0.36	-0.28	-0.14	-0.13	0.07
(27) <i>SIZE</i>	2.88	0.21	0.04	0.13	0.06	0.10	0.23	0.20	0.21	0.05	0.45	-0.06	0.16	-0.15	0.11
(28) <i>SOE</i>	1.78	0.16	-0.06	0.08	0.15	0.13	0.08	0.33	0.43	0.15	-0.14	0.12	0.18	0.20	-0.18
(29) <i>TOP</i>	1.21	0.05	0.03	0.03	0.04	-0.10	0.02	0.14	-0.07	-0.02	-0.03	0.04	0.03	0.11	-0.06

Notes: The table presents the Pearson's correlation matrix of all the variables used in the sample. Italic font denotes statistical significance at the 10% level
(continued)

Variables	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)	(27)	(28)	(29)
(1) <i>CON_KIM</i>															
(2) <i>CON_KHAN</i>															
(3) <i>CSR</i>															
(4) <i>CSRS</i>															
(5) <i>IO</i>															
(6) <i>ANA</i>															
(7) <i>EMP</i>															
(8) <i>SH</i>															
(9) <i>ADV</i>															
(10) <i>PRC</i>															
(11) <i>TRD</i>															
(12) <i>ILR</i>															
(13) <i>CI</i>															
(14) <i>OM</i>															
(15) <i>OC</i>	1.00														
(16) <i>BIG4</i>	-0.03	1.00													
(17) <i>AZ</i>	-0.15	-0.01	1.00												
(18) <i>CFV</i>	-0.03	-0.01	-0.02	1.00											
(19) <i>DUAL</i>	-0.01	-0.05	-0.02	-0.01	1.00										
(20) <i>GROWTH</i>	0.00	0.00	0.33	-0.07	0.01	1.00									
(21) <i>LEV</i>	0.26	0.04	-0.05	-0.03	-0.08	0.04	1.00								
(22) <i>LISTAGE</i>	0.14	0.19	0.00	0.07	-0.23	-0.10	0.28	1.00							
(23) <i>LOSS</i>	-0.03	-0.05	-0.04	-0.01	-0.02	-0.15	0.11	0.07	1.00						
(24) <i>MB</i>	-0.12	-0.12	0.05	0.04	0.14	0.07	-0.28	-0.26	-0.11	1.00					
(25) <i>ROA</i>	-0.14	0.04	0.06	0.07	0.05	0.24	-0.21	-0.15	-0.41	0.36	1.00				
(26) <i>SIGMA</i>	0.05	-0.09	0.00	-0.01	0.06	0.05	-0.05	-0.12	0.08	0.33	-0.03	1.00			
(27) <i>SIZE</i>	-0.02	0.09	0.01	0.01	0.07	0.07	-0.02	0.09	-0.06	0.32	0.16	0.33	1.00		
(28) <i>SOE</i>	-0.10	0.13	0.00	-0.04	-0.26	-0.07	0.22	0.52	0.06	-0.24	-0.13	-0.16	0.05	1.00	
(29) <i>TOP</i>	0.04	0.01	0.10	0.10	-0.06	-0.02	0.06	0.05	-0.04	-0.08	0.01	-0.10	-0.10	0.14	1.00

Accounting conservatism

Table 5.

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Dependent variable	CON_KIM			
	Model 1	Model 2	Model 3	Model 4
Intercept	0.0790 (1.80)*	-0.0171 (-0.39)	0.1676 (4.01)***	0.0426 (1.04)
CSR	0.0020 (8.10)***	0.0014 (6.07)***		
CSRS			0.0255 (8.59)***	0.0178 (6.62)***
AZ		0.0004 (0.73)		0.0004 (0.75)
CFV		0.1334 (2.52)***		0.1329 (2.52)***
DUAL		0.0113 (1.99)**		0.0115 (2.03)**
GROWTH		0.0129 (1.49)		0.0129 (1.49)
LEV		0.0307 (4.19)***		0.0307 (4.20)***
LISTAGE		0.0390 (7.94)***		0.0390 (7.96)***
LOSS		0.0090 (1.15)		0.0090 (1.15)
MB		-0.0041 (-2.44)***		-0.0041 (-2.43)***
ROA		0.0479 (0.86)		0.0481 (0.86)
SIGMA		-0.4114 (-2.18)**		-0.4010 (-2.14)
SIZE		0.2122 (6.86)***		0.2097 (6.81)
SOE		0.0077 (1.40)		0.0076 (1.39)
TOP (%)		0.0003 (1.88)*		0.0002 (1.83)
Year fixed effect	Yes	Yes	Yes	Yes
Industry fixed effect	Yes	Yes	Yes	Yes
ADJ-RSQ	0.70	0.77	0.70	0.77

Notes: The table reports the estimated results of the OLS regression. Accounting conservatism measure is *CON_KIM*. Corporate social responsibility score includes *CSR* is the CSR score ranging from 1 (the lowest) to 100 (the highest), and *CSRS* is the standardized CSR score, defined as the difference between CSR and the average value of CSR, scaled by the standard deviation of CSR for firm *i* at time *t*. Control variables include Altman's Z-score (*AZ*), volatility of cash flows (*CFV*), CEO duality (*DUAL*), sales revenue growth rate (*GROWTH*), firm's leverage (*LEV*), firm age (*LISTAGE*), relative loss frequency (*LOSS*), market value of equity to book value of equity (*MB*), the return of asset (*ROA*), volatility (*SIGMA*), firm's size (*SIZE*), state-owned enterprise (*SOE*) and largest shareholder ratios (*TOP %*). The *t*-statistics are reported in parenthesis. ***, **, * denote statistical significance at 1%, 5% and 10%, respectively

Table 6.
Baseline result

preference among companies for providing high-quality financial reports after they publish CSR reports (Kim *et al.*, 2012).

4.2 Potential channels through corporate social responsibility influences accounting conservatism

Next, we further explore the potential influence channels of CSR. Referring to Hou and Moskowitz (2005), we examine whether CSR is affected by investor attention and liquidity, and we carry out the regression described by equation (6). Investor attention measures comprise institutional ownership (IO), analyst coverage (ANA), number of employees (EMP), number of shareholders (SH) and advertising expenses (ADV). Liquidity variables include share price (PRC), number of trading days (TRD) and the Amihud (2002) illiquidity ratio (ILR). Our results illustrate that the influence of the proxies for investor attention and liquidity on CSR is mixed, and obvious relationships cannot be determined.

$$\begin{aligned}
 CSR_{i,t} = & \gamma_0 + \gamma_1 IO_{i,t} + \gamma_2 ANA_{i,t} + \gamma_3 EMP_{i,t} + \gamma_4 SH_{i,t} + \gamma_5 ADV_{i,t} + \gamma_6 PRC_{i,t} \\
 & + \gamma_7 TRD_{i,t} + \gamma_8 ILR_{i,t} + \varepsilon_{i,t}
 \end{aligned}
 \tag{6}$$

$$\widehat{CSR}_{ATT\ i,t} = \gamma_1 \widehat{IO}_{i,t} + \gamma_2 \widehat{AN\hat{A}}_{i,t} + \gamma_3 \widehat{EMP}_{i,t} + \gamma_4 \widehat{SH}_{i,t} + \gamma_5 \widehat{ADV}_{i,t} \quad (7) \quad \text{Accounting conservatism}$$

$$\widehat{CSR}_{LIQ\ i,t} = \gamma_6 \widehat{PR\hat{C}}_{i,t} + \gamma_7 \widehat{TR\hat{D}}_{i,t} + \gamma_8 \widehat{IL\hat{R}}_{i,t} \quad (8)$$

$$CSR_{error\ i,t} = CSR - \widehat{CSR}_{ATT\ i,t} - \widehat{CSR}_{LIQ\ i,t} \quad (9)$$

We separately extract the portion of CSR that is affected by investor attention, the portion of CSR that is affected by liquidity and the portion of CSR that is not explained by investor attention or liquidity. We thereby engage in principal component analysis of the investor attention and liquidity measure variables. The relationship between the investor attention variables and $CSR_{ATT\ i,t}$ (i.e. the component of attention (ATT) that is determined by CSR) is illustrated in [equation \(7\)](#). The relationship between $\widehat{CSR}_{LIQ\ i,t}$ (i.e. the component of liquidity (LIQ) that is determined by CSR) and the stock liquidity variables is presented in [equation \(8\)](#). The CSR that is not explained by either investor attention or liquidity is $CSR_{error\ i,t}$, as illustrated in [equation \(9\)](#).

Next, we carry out mixed OLS estimation as presented in [equation \(10\)](#) to explore, which of these two influence channels has a greater effect on accounting conservatism. As illustrated in [Table 7](#), investors pay attention to CSRS as calculated by ATT, and this has a significant positive effect on accounting conservatism. The regression coefficient is 0.005 (0.0756), which is significant at the 1% significance level. However, for LIQ, only the calculated CSRS has a similar effect on accounting conservatism, and the calculated CSR has no obvious influence on accounting conservatism. CSR that is not influenced by investor attention or liquidity results in a significant boost to accounting conservatism, which guides our subsequent research. Therefore, we believe

Dependent variable	CON_KIM			
	Model 1	Model 2	Model 3	Model 4
Intercept	0.2839 (0.26)	-0.0014 (-0.00)	1.3903 (6.45)***	0.7561 (3.66)***
CSR_{ATT}	0.0050 (11.98)***	0.0031 (7.50)***		
CSR_{LIQ}	0.0003 (0.14)	0.0003 (0.14)		
CSR_{error}	0.0008 (3.16)***	0.0007 (3.20)***		
$CSRS_{ATT}$			0.0756 (14.84)***	0.0484 (9.00)***
$CSRS_{LIQ}$			0.0413 (4.55)***	0.0289 (3.39)***
$CSRS_{error}$			0.0025 (0.75)	0.0025 (0.75)
Control variables	No	Yes	No	Yes
Year fixed effect	Yes	Yes	Yes	Yes
Industry fixed effect	Yes	Yes	Yes	Yes
ADJ-RSQ	0.72	0.78	0.74	0.78

Notes: This table reports the pooled OLS regression results of accounting conservatism measures on the investor attention CSR_{ATT} , and stock liquidity determined by information ratings disclosure CSR_{LIQ} . *Accounting conservatism measure* is *CON_KIM*. Control variables include Altman's Z-score (*AZ*), volatility of cash flows (*CFV*), CEO duality (*DUAL*), sales revenue growth rate (*GROWTH*), firm's leverage (*LEV*), firm age (*LISTAGE*), relative loss frequency (*LOSS*), market value of equity to book value of equity (*MB*), the return of asset (*ROA*), volatility (*SIGMA*), firm's size (*SIZE*), state-owned enterprise (*SOE*) and largest shareholder ratios (*TOP%*). ***, **, * denote statistical significance at the 1%, 5% and 10% levels, based on year and industry fixed effects, respectively

Table 7. Potential channels through CSR influences accounting conservatism

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that high CSR scores increase accounting conservatism primarily by attracting investor attention, and that the path of CSRs' influence on improving accounting conservatism through liquidity is not as significant.

To prove that our results are sufficiently robust, we control the regressions of CSCATT and The CSR component of investor liquidity channel (CSRLIQ) for accounting conservatism after controlling the control variables as illustrated in [equation \(10\)](#). The same results are again obtained, which again proves that CSR contributes to increased accounting conservatism in financial reports by attracting investor attention and improving liquidity. The improvement of accounting conservatism is more obvious when its influence is channeled through increased investor attention.

$$CON_{i,t} = \pi_0 + \pi_1 CSR_{ATT\ i,t} + \pi_2 CSR_{LIQ\ i,t} + \pi_3 CSR_{error\ i,t} + \sum \pi_{i,t} CONTROL_{i,t} + \varepsilon_{i,t} \quad (10)$$

4.3 Endogeneity

As discussed earlier in this paper, stronger corporate governance leads to improved information disclosure ([Bae et al., 2006](#)), and companies with high levels of accounting conservatism are more likely to have high-quality CSR disclosures than companies with low levels of accounting conservatism. Prior studies have also revealed that CSR is a product of financial performance ([Hong et al., 2012](#)). Therefore, CSR is likely to be endogenous. To increase the credibility of our research, we refer to [Larcker and Rusticus \(2010\)](#) for a discussion of disclosure issues, and we follow their endogenous problem-solving steps. First, six instrumental variables are chosen to test the possible endogeneity of CSR, namely, log shareholder (LOGSH), sales growth (SG), capital intensity (CI), operating margin (OM), operating cycle (OC) and the Big-four auditor dummy variable (BIG4). The results of each test are exhibited in Panel A, [Table 8](#). We perform the Durbin–Wu–Hausman test for the existence of endogeneity, which reveals that the explanatory variable CSR is endogenous. Therefore, when studying the relationship between accounting conservatism and CSR, we must focus on the effect of endogeneity. Next, we perform an overidentification test for these six instrumental variables, and finally, select CI, OM, OC and BIG4 as the instrumental variables of CSR. We then test for indications of problems related to weak instrumental variables, the results of which are exhibited in Panel A of [Table 8](#). We then apply the two-stage least squares [equations \(11\)](#) and [\(12\)](#) to control exogenous control variables, solve endogeneity problems and estimate the relationship between CSR and accounting conservatism.

$$CSR_{i,t} = \epsilon_1 + \epsilon_2 CI_{i,t} + \epsilon_3 OM_{i,t} + \epsilon_4 OC_{i,t} + \epsilon_5 BIG4_{i,t} + \sum \epsilon_{i,t} CONTROL_{i,t} + \varepsilon_{i,t} \quad (11)$$

$$CON_{i,t} = \varnothing_0 + \varnothing_1 CSR_{2SLS\ i,t} + \sum \varnothing_{i,t} CONTROL_{i,t} + \varepsilon_{i,t} \quad (12)$$

The results of the two-stage least squares regression are exhibited in Panel B of [Table 8](#). The results of the first stage regression reveal that the relationships between the two instrumental variables and OC, BIG4 and CSR are significant. The results of the second phase regression reveal that an increase in CSR disclosure rating can significantly increase

<i>Panel A</i>					
Durbin-Wu-Hausman test for endogeneity				CSR	
Durbin scores $\chi^2(1)$				5.66	
<i>p</i> -value				(0.02)	
Wu-Hausman $F(1,896)$				5.76	
<i>p</i> -value				(0.02)	
Test of over identifying restrictions					
Hansen J statistic				4.06	(0.26)
Sargan score $\chi^2(3)$				4.06	
<i>p</i> -value				(0.26)	
Test of weak instruments					
Kleibergen-Paap Wald <i>F</i> statistic				11.95	
<i>Panel B: 2SLS</i>					
Dependent variable	First stage:	Second stage:			
	CSR	CON_KIM			
		Model 1	Model 2	Model 3	Model 4
Intercept	-22.4589 (-2.38)***	-0.1329 (-2.19)**	0.0192 (0.66)	23.2131 (1.81)*	2.2692 (2.61)***
<i>CI</i>	0.2749 (0.13)				
<i>OM</i>	0.8108 (0.32)				
<i>OC</i>	-0.9927 (-2.13)**				
<i>BIG4</i>	4.7430 (4.30)***				
<i>CSR</i> _{2SLS}		0.0035 (3.67)***			
<i>CSRS</i> _{2SLS}			0.0388 (3.85)***		
<i>CSR</i> _{ATT, 2SLS}				0.0034 (1.47)	
<i>CSR</i> _{LIQ, 2SLS}				0.0418 (1.77)*	
<i>CSRS</i> _{ATT, 2SLS}					0.0419 (2.01)**
<i>CSRS</i> _{LIQ, 2SLS}					0.0987 (2.15)**
Control variables	Yes	Yes	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes	Yes	Yes
Industry fixed effect	Yes	Yes	Yes	Yes	Yes
ADJ-RSQ	0.35				
<i>Panel C: IV-GMM</i>					
Dependent variable	CON_KIM				
	Model 1	Model 2	Model 3	Model 4	
Intercept	-0.1338 (-2.21)**	0.0135 (0.47)	25.7402 (2.02)**	2.2553 (2.60)***	
<i>CSR</i> _{2SLS}	0.0034 (3.57)***				
<i>CSRS</i> _{2SLS}		0.0375 (3.75)***			
<i>CSR</i> _{ATT, 2SLS}			0.0029 (1.27)		
<i>CSR</i> _{LIQ, 2SLS}			0.0466 (1.98)**		
<i>CSRS</i> _{ATT, 2SLS}				0.0361 (1.75)*	
<i>CSRS</i> _{LIQ, 2SLS}				0.1001 (2.18)**	
Control variables	Yes	Yes	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes	Yes	Yes
Industry fixed effect	Yes	Yes	Yes	Yes	Yes
ADJ-RSQ					

Table 8. Two-stage least squares (2SLS) regression analysis for the relationship between CSR and accounting conservatism

Notes: The table reports the two-stage least squares (2SLS) regression analysis results for examining whether CSR explains earnings management from 2010 to 2018. Panel A reports endogeneity test results for CSR. Panel B reports two-stage least squares (2SLS) regression and GMM regression analysis results in Panel C. *CSR* as the endogenous variable and overidentifying restrictions test result for choosing the instrumental variables such as capital intensity (*CI*), capital intensity (*CI*), operating margin (*OM*), operating cycle (*OC*) and Big-four auditor dummy (*BIG4*). ***, **, * denote statistical significance at the 1%, 5% and 10% levels, based on year and industry fixed effects, respectively

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accounting conservatism. However, the results of the second stage regression also illustrate that the relationship between CSR and liquidity is more significant than that of CSR and investor attention. Panel C exhibits the second-stage regression, which applies Generalized method of moments (GMM) and the two-stage CSRS and has a regression coefficient of 0.0034 (0.0375) and p -value of less than 0.01. This is statistically significant, indicating that CSRs' influence on accounting conservatism is robust. Applying the same regression analysis on the two-stage CSR, we discover that the liquidity channel results in a larger improvement in accounting conservatism than investor attention, which replicates the results of Panel B. All these results reveal that CSR effectively increases accounting conservatism after selecting appropriate instrumental variables to control the endogeneity problem.

4.4 Robustness check for alternate proxy of accounting conservatism

In the previous section, we discuss another measure of accounting conservatism: the original [Khan and Watts \(2009\)](#) firm-year level of accounting conservatism (CScore). We apply this measure to estimate accounting conservatism under the regression as a robustness test. The results are exhibited in [Table 9](#). The most basic regression results illustrate that CSR can significantly improve accounting conservatism after controlling the year and industry. The two-stage regression suggests that CSR and CSRS have a significant positive influence on accounting conservatism, with regression coefficients of 0.0811 and 0.0799, respectively. The effect of CSR on the path of attracting investors to improve corporate accounting conservatism is also significant. After controlling the exogenous control variables, we obtain the same conclusion. This indicates that our research is robust and that CSR can indeed improve accounting conservatism by attracting investor attention.

4.5 Regression of accounting conservatism using component corporate social responsibility

We also investigate the effect of other CSR agents on accounting conservatism, mainly by using four dimensions of CSR in the RKS database as proxies for CSR ([Gong and Ho, 2018a](#), [Gong et al., 2019](#)). CSR_M refers to the macrocosm dimension, CSR_C stands for the content

Dependent variable	CON_KHAN			
	Model 1	Model 2	Model 3	Model 4
Intercept	-3.2597 (-12.24)***	-1.1813 (-1.68)*	-3.7273 (-11.89)***	-2.0369 (-2.82)***
CSR	0.0663 (10.00)***	0.0618 (8.16)***		
CSR _{2SLS}			0.0811 (8.99)***	0.0829 (8.47)***
CSRS _{2SLS}			0.0799 (9.78)***	0.0786 (8.67)***
CSR _{ATT, 2SLS}			0.0797 (9.84)***	0.0782 (8.62)***
Control variables	NO	YES	NO	YES
Year fixed effect	YES	YES	YES	YES
Industry fixed effect	YES	YES	YES	YES
ADJ-RSQ	0.09	0.13	0.09	0.17

Notes: This table reports the estimated results of the OLS regression. Control variables include Altman's Z-score (*AZ*), volatility of cash flows (*CFV*), CEO duality (*DUAL*), sales revenue growth rate (*GROWTH*), firm's leverage (*LEV*), firm age (*LISTAGE*), relative loss frequency (*LOSS*), market value of equity to book value of equity (*MB*), the return of asset (*ROA*), volatility (*SIGMA*), firm's size (*SIZE*), state-owned enterprise (*SOE*) and largest shareholder ratios (*TOP* %). T-statistics is reported in parentheses. ***, **, * denote statistical significance at the 1%, 5% and 10% levels, based on year and industry fixed effects, respectively

Table 9. Robustness check for the alternate proxy of accounting conservatism

dimension, CSR_T stands for the technical dimension and CSR_I stands for the industry index dimension. After controlling the year, industry and control variables, a mixed OLS regression of the agent variables for each dimension is performed on accounting conservatism and the results are illustrated in Table 10. We discover that increased CSR disclosure for each dimension significantly increases accounting conservatism while other conditions remain unchanged. However, when the four-dimensional CSR is run through the same regression equation, the results reveal that the content dimension and the industry index dimension are more critical in their effect on enterprise accounting conservatism than the other dimensions, and this effect is positive. In general, CSRs' effect on improved accounting conservatism is robust.

4.6 Regression of accounting conservatism using alternate proxy of corporate social responsibility

In addition to using the CSR variables from the RKS database, we examine the results of the professional evaluation system of the CSR report from the Hexun.com CSR database. This is another agent of CSR that has been examined in various prior studies (Wang et al., 2019). The professional evaluation system of listed companies' CSR reports comprises five measures, namely, shareholder responsibility; employee responsibility; supplier, customer and consumer rights responsibility; environmental responsibility; and social responsibility. Each measure has also established secondary and tertiary indicators to conduct a comprehensive evaluation of social responsibility. These indicators comprise 13 secondary indicators and 37 tertiary indicators. A single company report requires the evaluation of at least three experts who have no association with the company. Therefore, the evaluation results are comprehensive, independent and objective.

We choose data for 2010–2018 and perform a regression analysis of the effect of CSR on accounting conservatism. The results are revealed in Table 11. CSR_A is the total score of Hexun CSR, CSR_B is the standardization of the total CSR score and CSR_C is the annual ranking of the Hexun CSR score. Companies at the top of Table 11 have higher CSR scores. The results reveal that the regression coefficients of all CSR measures are positive and the

Dependent variable	Model 1	Model 2	CON_KIM Model 3	Model 4	Model 5
Intercept	-0.0707 (-0.91)	-0.0983 (-1.26)	-0.0660 (-0.85)	-0.0408 (-0.53)	-0.0833 (-1.07)
CSR_M	0.0035 (4.44)***				0.0003 (0.16)
CSR_C		0.0031 (5.19)***			0.0023 (1.98)**
CSR_T			0.0078 (4.16)***		-0.0019 (-0.52)
CSR_I				0.0119 (5.46)***	0.0084 (3.24)***
Control variables	Yes	Yes	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes	Yes	Yes
Industry fixed effect	Yes	Yes	Yes	Yes	Yes
ADJ-RSQ	0.57	0.58	0.57	0.58	0.58

Notes: This table reports the pooled OLS regression results of alternate proxy of CSR. There are four dimensions of CSR: macrocosm dimension (CSR_M), content dimension (CSR_C), technique dimension (CSR_T) and industry index dimension (CSR_I). Control variables include Altman's Z-score (AZ), volatility of cash flows (CFV), CEO duality (DUAL), sales revenue growth rate (GROWTH), firm's leverage (LEV), firm age (LISTAGE), relative loss frequency (LOSS), market value of equity to book value of equity (MB), the return of asset (ROA), volatility (SIGMA), firm's size (SIZE), state-owned enterprise (SOE) and largest shareholder ratios (TOP %). ***, **, * denote statistical significance at the 1%, 5% and 10% levels, based on year and industry fixed effects, respectively

Table 10. Regression of accounting conservatism using component CSR

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Dependent variable	CON_KIM		
	Model 1	Model 2	Model 3
<i>Panel A: Main results</i>			
Intercept	0.0317 (0.71)	0.0606 (1.36)	0.0984 (2.19)**
CSR_A	0.0012 (9.66)***		
CSR_B		0.0193 (9.01)***	
CSR_C			0.0000 (−8.01)***
Control variables	No	No	No
Year fixed effect	Yes	Yes	Yes
Industry fixed effect	Yes	Yes	Yes
ADJ-RSQ	0.09	0.09	0.08
<i>Panel B: After controlling control variables results</i>			
Intercept	0.0123 (0.32)	0.0307 (0.79)	0.0567 (1.44)
CSR_A	0.0008 (6.92)***		
CSR_B		0.0125 (6.22)***	
CSR_C			0.0000 (−5.99)***
Control variables	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes
Industry fixed effect	Yes	Yes	Yes
ADJ-RSQ	0.40	0.40	0.40
Notes: This table reports the pooled OLS regression results of alternate proxy of CSR. CSR_A is the total score of Hexun CSR, CSR_B is the standardization of CSR total score, CSR_C is the annual ranking of Hexun CSR score and the CSR score is higher on the top. Control variables include Altman's Z-score (<i>AZ</i>), volatility of cash flows (<i>CFV</i>), CEO duality (<i>DUAL</i>), sales revenue growth rate (<i>GROWTH</i>), firm's leverage (<i>LEV</i>), firm age (<i>LISTAGE</i>), relative loss frequency (<i>LOSS</i>), market value of equity to book value of equity (<i>MB</i>), the return of asset (<i>ROA</i>), volatility (<i>SIGMA</i>), firm's size (<i>SIZE</i>), state-owned enterprise (<i>SOE</i>) and largest shareholder ratios (<i>TOP</i> %). ***, **, * denote statistical significance at the 1%, 5% and 10% levels, based on year and industry fixed effects, respectively			

Table 11. Regression of accounting conservatism using the alternate proxy of CSR

results remain significant after controlling the control variables. Enterprises with higher CSR scores have more stable accounting policies than firms with lower CSR scores. In other words, CSR can effectively improve the accounting conservatism of enterprises. This result is consistent with our previous findings.

Next, we further explore the robustness of the channels of CSRs' effect on accounting conservatism. The three CSR indicators of the Hexun.com CSR database are used to extract the portions affected by liquidity and investor attention, and the two parts are subtracted from the original CSR value. The difference is the portion of CSR that is not explained by investor attention or liquidity. A regression of CON_KIM is conducted to explore the significant robustness of the influence channels, and the results are illustrated in [Table 12](#).

The results presented in [Table 12](#) support our argument that liquidity and investor attention are the main channels by which CSR affects accounting conservatism. This result is more pronounced after controlling the control variables, as the total CSR scores that are determined by investor attention and liquidity have regression coefficients of 0.0034 and 0.0033, respectively, for CON_KIM, which are both statistically significant. The regression coefficients of CON_KIM, which are influenced by investor attention and liquidity, are 0.0593 and 0.0550, respectively, which are significant at the 1% significance level. Therefore, both investor attention and liquidity are the main channels by which CSR affects accounting conservatism. Moreover, the larger the CSR score is, the higher the annual ranking of the total CSR score is. Therefore, the negative regression coefficient indicates that CSR has the

Dependent variable	CON_KIM			Accounting conservatism
	Model 1	Model 2	Model 3	
<i>Panel A: Main results</i>				
Intercept	-0.1425 (-3.15)***	-0.1214 (-2.32)**	-0.1838 (-2.66)***	
CSR_A _{ATT}	0.0051 (15.24)***			
CSR_A _{LIQ}	0.0014 (2.13)**			
CSR_A _{error}	0.0002 (1.21)			
CSR_B _{ATT}		0.0928 (16.32)***		
CSR_B _{LIQ}		0.0165 (1.66)*		
CSR_B _{error}		0.0016 (0.63)		
CSR_C _{ATT}			-0.0001 (-13.15)***	
CSR_C _{LIQ}			3.E-06 (0.29)	
CSR_C _{error}			-6.E-06 (-1.99)**	
Control variables	No	No	No	
Year fixed effect	Yes	Yes	Yes	
Industry fixed effect	Yes	Yes	Yes	
ADJ-RSQ	0.13	0.13	0.11	
<i>Panel B: After controlling control variables results</i>				
Intercept	-0.1070 (-2.71)***	0.0308 (0.66)	0.0320 (0.53)	
CSR_A _{ATT}	0.0034 (11.40)***			
CSR_A _{LIQ}	0.0033 (5.78)***			
CSR_A _{error}	0.0002 (1.60)			
CSR_B _{ATT}		0.0593 (11.71)***		
CSR_B _{LIQ}		0.0550 (6.06)***		
CSR_B _{error}		0.0020 (0.94)		
CSR_C _{ATT}			-0.0001 (-10.25)***	
CSR_C _{LIQ}			-3.E-05 (-3.88)***	
CSR_C _{error}			-5.E-06 (-2.05)**	
Control variables	Yes	Yes	Yes	
Year fixed effect	Yes	Yes	Yes	
Industry fixed effect	Yes	Yes	Yes	
ADJ-RSQ	0.42	0.42	0.41	

Table 12. The robustness of the channels of alternate CSRs' effect on accounting conservatism

effect of improving accounting conservatism. These results are consistent with our previous research and provide increased persuasive power to prove that our findings are robust.

5. Discussion and implications

5.1 Practical implications

Our research confirms the importance of non-financial CSR information disclosure for accounting policy choices. A critical part of our research is its examination of the effect of investor attention and liquidity, which confirms that CSR disclosure can improve accounting conservatism through these two market reaction channels. CSR disclosure in China started relatively recently; therefore, our research contributes to CSR disclosure standardization and the understanding of the effects of CSR information disclosure. Conditional accounting conservatism limits managers' ability to exaggerate performance and hide negative news, thus providing investors with an improved information environment than would otherwise be the case (Kim and Zhang, 2016). Therefore, we explore factors that affect accounting conservatism, which is also critical for investor protection.

CSR disclosure can illustrate the corporate accounting conservatism that is difficult for investors to observe directly. It protects investors by providing a means of measurement

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and understanding of corporate information flow and disclosure. The prevalence of CSR reports in China has increased significantly; however, the quality of CSR reports is still relatively low. Therefore, the external supervision of the CSR disclosure system needs to be further improved. In terms of laws and regulations, it is also necessary to strengthen supervision and formulate comprehensive and specific laws and regulations; to standardize disclosure deadlines, methods, procedures and content of CSR reports; and to expand the scope of compulsory disclosure by enterprises. In addition, it is necessary to guide companies to complete third-party verification of CSR reports and to standardize the verification workflow to improve reports' quality and credibility. When formulating laws and regulations and managing enterprises, relevant regulatory agencies should maintain consistency of regulatory standards and should unify the scale of law enforcement.

Our research reveals that investor attention is one of the main channels through which CSR affects accounting conservatism. Companies with outstanding CSR performance attract specialized institutional investors and analyst reports (Dhaliwal *et al.*, 2011). As critical members of the investment community, analysts can obtain and interpret information more effectively than other investors can through their capabilities; they can thus, transmit information to the market, which reduces information opacity and helps investors obtain and understand company-specific information. Increased analyst attention can attract increased investment (Tsao *et al.*, 2016). However, analyst attention may introduce other problems such as conflicts of interest and excessive optimism, which can have negative effects for attracting investors. Therefore, strengthening the supervision and management of analysts is crucial. To improve the objectivity and comparability of analysis and interpretation and to improve the accuracy of analyst forecasts, regulators should pay attention to the training of analysts' abilities and moral qualities. Industry associations also need to strengthen self-regulation to play a greater role in regulating analyst behavior than they do at present. In addition, institutional investors can provide external investors with information on company characteristics through their trading behavior; therefore, they can also increase information transparency. However, institutional investors sometimes engage in irrational behaviors such as herding and holding shares. Therefore, strengthening education and guidance to institutional investors is another critical component of external supervision. Government authorities should encourage institutional investors to embrace the concept of long-term investment, to enhance their ability to collect and analyze company-specific information including CSR reports, and to prevent insider information-based transactions. Doing so would effectively protect investor interests and would further promote the influence of CSR reports.

From the perspective of a company's internal decision-making and governance, a CSR report discloses CSR activities to corporate stakeholders and provides them with information on corporate financial decisions. Because of widespread agency problems arising from the separation of ownership and management in modern enterprises, managers may engage in self-interested behavior by using CSR reports to hide information or to disclose false information, thus distorting investors' understanding of financial policies. Therefore, companies must strengthen their corporate governance and establish a sound CSR information disclosure monitoring mechanism. This is a protective action for investors that can also establish a positive reputation for an enterprise, and thus, contribute to its long-term development.

5.2 Managerial insight

Managers of different corporations have very different attitudes toward CSR. Some managers who understand the effect of CSR disclosure already disclose CSR information actively. However,

motivations for CSR disclosure are very different among different managers. Some hope to use CSR to conceal unethical behavior at their firms. Others focus on promoting their firms' corporate image through CSR by establishing and maintaining a positive corporate reputation, reducing information opacity and providing investors with transparent information (Cui *et al.*, 2015). By contrast, some managers do not understand the role of CSR disclosure, and thus, do not focus on CSR activities or relevant disclosure. Based on a sample of Chinese listed companies, we discover that companies with different CSR disclosure characteristics exhibit significant differences in their financial reporting policies. CSR can significantly increase accounting conservatism. In addition, CSR can provide outside investors with increased indirect information regarding standards for financial statement preparation, which fosters an environment of improved investor protection, attracts additional investor attention and improves the liquidity of listed securities. Managers of enterprises that have not adopted CSR information disclosure should pay attention to it and should include the disclosure of CSR reports as part of the enterprise information disclosure at their firms. A company that discloses its CSR activities through CSR reports can improve its reputation, build an environment of increased investor protection and increase investor trust. This effectively reduces the company's risks and benefits its future development. For example, Lins *et al.* (2017) revealed that during financial crises, the trust between listed companies and investors and other stakeholders that is established by corporate participation in CSR activities is enhanced. Listed companies that engage in extensive CSR disclosure have higher stock returns, profitability and business growth than firms with limited CSR disclosure. Managers of companies that have disclosed CSR information should also increase their emphasis on CSR reports, including the consideration of separate and more frequent disclosure of CSR reports than they currently provide, instead of viewing them as ancillary reports of their corporate financial statements. Management should also consciously improve the quality of disclosure and provide authentic, accurate and effective information to external investors to maximize the effect of CSR disclosure.

5.3 Limitations of the study

Our research analyzes the effect of CSR on accounting conservatism, but a consistent definition of CSR has not been established. Although the main objectives of the various definitions in the relevant literature have substantial similarities, they differ in the breadth of their connotations. Therefore, a unified measure of CSR does not exist (Sheehy, 2015). Based on the relevant literature, we use the RKS CSR report score and CSR report indicator from Hexun.com to measure the CSR disclosure quality. Although the data from these evaluation systems support our results, further improvements on the CSR measurement method are necessary to ensure that the CSR indicators can evaluate the quality of CSR reports more objectively, comprehensively and thoroughly than is possible in this study. In particular, research on the subdivision dimensions of the CSR indicators could improve our understanding of the role and influence of various stakeholders, and thus, improve our understanding of the effects of CSR as non-financial information on accounting conservatism.

Our results are based on empirical research that examines real data, and this study does not discuss theoretical models. We provide a seemingly reasonable explanation for the results of our empirical analysis. Because numerous market factors are interrelated, the social environment is a critical determinant of the disclosure and post-disclosure effects of CSR (Dhaliwal *et al.*, 2014). Some control variables such as the nature of a company, its governance structure and its business performance, are also crucial. Therefore, more complex models or empirical methods than those that we use in this study might provide further insights than those

of our study. In addition, the introduction of a theoretical derivation to support our research can provide more convincing results than those of our study.

5.4 Future research

Our research confirms the importance of CSR disclosure for corporate financial policy choices. Companies with high-quality CSR disclosure tend to exhibit a higher degree of accounting conservatism than other companies do. Because the RKS database and data from Hexun.com include professional evaluations of CSR reports, our research scope comprises companies that have disclosed CSR reports; it does not include companies that have not disclosed CSR information. Future research might consider analyzing 0 and 1 variables (i.e. whether a company discloses a CSR report) to examine differences in the effect on accounting conservatism between the two types of companies and the reasons for those differences.

We also discover that CSR improves accounting conservatism through increased securities liquidity and investor attention. As for whether other channels of CSR disclosures' effect of increasing accounting conservatism exist, our research results are inconclusive. Further research is required to explore whether additional transmission paths exist for the influence of CSR information on accounting conservatism.

With the rapid development of information technology in recent years, electronic disclosure is gradually becoming widespread. This new disclosure mode is very different from traditional information disclosure in terms of its content and method. This raises questions regarding whether electronic disclosure affects CSR or accounting conservatism and whether the relationship between CSR and accounting conservatism remains robust in this mode of disclosure. These topics are worthy of future examination.

The agent variables of market reaction channels have specific characteristics and can also have different effects, which requires further detailed analysis. For example, when considering the role of investor attention, analysts' independence, affiliation with underwriters and ranking may all be affected by differences in CSR disclosure, and thus, may have different effects on accounting conservatism. In addition, the various types of institutional investors exhibit specific characteristics and differences in their investment motivation and supervisory participation (An and Zhang, 2013), which may also result in different effects on accounting conservatism. Future research should consider extending on this study's static analysis to incorporate dynamic comparative research. This study's methodology can also be applied to data from different information disclosure environments and social backgrounds in other countries or regions to compare the results.

6. Conclusion

We investigate the relationship between CSR ratings and accounting conservatism. We examine data on companies listed on China's SHSE and SZSE from 2010 to 2018, which confirms the results of previous research: companies with higher CSR have higher accounting conservatism than companies with lower CSR, which implies that companies with high-quality information disclosure are more inclined to adopt conservative accounting policies to reduce information asymmetry between internal managers and external stakeholders than companies with low-quality information disclosure. Our research reveals that companies with high CSR disclosure scores can attract investor attention and analyst coverage, which is the main channel by which CSR promotes accounting conservatism. After controlling other variables that may affect accounting conservatism, firm-specific characteristics and some variables with Chinese characteristics, the same result is obtained: the promotion of CSR improves corporate accounting conservatism. We conduct detailed

endogeneity testing and robustness testing, and the positive relationship between CSR and accounting conservatism remains significant.

One of this papers' innovations is to supplement previous research on the relationship between information disclosure and financial information quality. For the first time, we investigate the effect of CSR disclosure, which is non-financial information, on accounting conservatism and the channels of CSRs' influence on accounting conservatism, which expands on the relevant literature. Our results reveal that increased analyst and investor attention toward companies with high CSR information quality is the primary factor that drives companies to choose conservative accounting methods, rather than increased stock liquidity. Our results also provide possible direction for subsequent research. The results of the examination of the channels of CSRs' effect on accounting conservatism indicate the existence of other paths by which CSR significantly affects accounting conservatism. These other influence paths merit further exploration.

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