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Corporate social responsibility in the relationship between accounting conservatism and investment efficiency

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ABSTRACT

This research investigates how corporate social responsibility (CSR) affects the connection between accounting conservatism and investment efficiency. The study focuses on a sample of 530 firms that are listed in the United States and covers the period from 2015 to 2019. We contribute to the literature by incorporating ESG performance scores to measure CSR, and by investigating the moderating effect of CSR on the conservatism-investment efficiency relationship. Our results show that environmental and governance metrics positively influence investment efficiency, while social performance indicators have a negative association. Moreover, the environmental performance indicator strengthens the relationship between conservative accounting and investment efficiency, while the governance indicator weakens this association. Overall, our study provides new insights into the interplay between conservative accounting, investment efficiency, and CSR and sheds light on the importance of considering CSR in investment decision-making.

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1. Introduction

Investment is critical in firms' value creation, contributing to their development and economic growth. Improving investment efficiency is of crucial importance, particularly given the general scarcity of resources. Investment efficiency is determined by means such as net present values (NPV) for selecting optimal projects. Suboptimal investments, such as underinvestment or overinvestment opportunities, are signs of investment inefficiency, causing damage to the owner's capital and leading to greater losses (Lee and Kim, 2020).

However, a conflict of interest between managers and owners can affect capital structure, corporate governance, and investment policies, leading to management inefficiencies and suboptimal investments. Additionally, agency costs, information asymmetry, defects in capital markets and financing conditions, and competition in the product markets can influence investment policies and choices, resulting in underinvestment or overinvestment opportunities and affecting firm values (Lee and Kim, 2020; Lin et al., 2015).

In recent years, firms have placed a growing emphasis on the concept of corporate social responsibility (CSR), which has implications for their strategic performance. CSR includes business tactics and behaviors relating to consumers, environmental protections and human rights, behavioral and ethical duties, social obedience, and corporate benevolence (McWilliams and Siegel, 2000). CSR can increase investment efficiency by solving agency problems, reducing information asymmetry, and enhancing the reliability of the firm (Shahsvari and Salmani, 2017; Sun et al., 2017). CSR activities can improve ethical standards, earnings quality, and transparency, and improve the information quality of firms, ultimately reducing information asymmetry between managers and shareholders (Cho et al., 2013).

Accounting conservatism has been identified as a potential mechanism for improving investment efficiency. The implementation of accounting conservatism can result in lower levels of uncertainty, curtail opportunistic behavior among managers, and alleviate information asymmetry, thus leading to improved investment efficiency (Abd-elnaby and Aref, 2019; Yasir, 2018). conservatism can be described as the tendency of an accountant to demand more robust verification so that he can identify good news as profits instead of recognizing losses as losses, leading to overstatements in revenues, undervaluing assets, and overstating expenditure and liabilities (Shamakhi and Zahedi, 2014).

Despite the wealth of existing literature examining the impact of both CSR and accounting conservatism on investment efficiency, the relationship between these factors and mitigating information asymmetry remains unclear. While the prior studies investigated the individual impact of CSR and accounting conservatism on investment efficiency, there is a lack of research on their joint impact in mitigating information asymmetry and improving investment efficiency. The research gap also highlights the need to develop empirical evidence on links between CSR, accounting conservativeness, and investment efficiency through the mitigation of information asymmetry.

The aim of the present paper is, therefore, to fill this gap in research by exploring the expected effects of CSR and accounting conservatism on investment efficiency using mitigating information asymmetry. Specifically, the study aims to examine how CSR and accounting conservatism collaborate to decrease the level of information asymmetry and enhance the efficiency of investments. In contributing to the literature on corporate social responsibility, accounting conservatism, and investment effectiveness, this study will give evidence of how those factors are related to each other and their respective impact on investment efficiency.

Empirical proof of the link between CSR, accounting conservatism, and investment efficiency using mitigation information asymmetry is a major contribution to this study. The study is designed to fill the gap in the literature by analyzing the joint impact of CSR and accounting conservatism on investment efficiency and to improve investment effectiveness, this report will give an insight into the role of accounting conservatism. The study findings will benefit policymakers, investors, and managers in making informed investment decisions and improving investment efficiency.

To put it briefly, the main objective of this paper is to address the deficiency in existing research by investigating how CSR and accounting conservatism jointly influence investment efficiency with the help of reducing information asymmetry. The study's contribution is to provide empirical evidence on the relationship between CSR, conservative accounting, and investment efficiency.

The structure of this paper consists of five sections. The first section introduces the research problem and objectives. Section 2 provides a review of the theoretical background and develops hypotheses. Section 3 outlines the research design and methodology. Section 4 presents the empirical results, and Section 5 concludes the study with a summary of the key findings and implications.

2. Theoretical Background and Hypotheses Development

2.1. Conservatism and investment efficiency

Investment is crucial for economic growth and development, but financial resources are often limited. Thus, achieving investment efficiency is essential to maximize the benefits of investments (Modares and Hesarzadeh, 2017). Investment efficiency refers to the identification, feasibility study, and selection of projects with positive net present value (NPV). In contrast, investment inefficiency reflects the rejection of investment opportunities with positive NPV (underinvestment) or choosing projects with negative NPV (overinvestment) (Biddle et al., 2009). However, imperfect markets can lead to over/underinvestment and suboptimal investment outcomes, especially when there are agency problems and information asymmetry (Cormier et al., 2011; Michelon et al., 2013).

Accounting conservatism is a key factor that influences firm investment efficiency in several ways. Firstly, conservatism can mitigate the existing information asymmetry problem between managers and stakeholders by enhancing the reliability and quality of financial reporting (LaFond and Watts, 2008). Secondly, conservatism can reduce managerial agency conflicts by requiring early recognition of losses, which can improve the efficiency of investments by passing negative NPV projects (Aminu and Hassan, 2016). Thirdly, conservatism can mitigate conflicts between bondholders and shareholders over share dividends and reduce financing costs through borrowing, which can facilitate financial investments and reduce underinvestment problems (Aminu and Hassan, 2016).

Asymmetric verification requirements are the hallmark of accounting conservatism, making it easier to recognize all possible losses than profits. Thus, conservatism can reduce uncertainties by giving preference to more pessimistic options, which can improve the efficiency of investments (Abd-elnaby and Aref, 2019). The relationship of accounting conservatism with the efficiency of investments has been examined in previous studies. In a recent study, Li et al. (2022) demonstrated that accounting conservatism from listed companies in China exhibits a positive effect on investment efficiency. Chen et al. (2022) also found a similar connection in China's mineral industry. Meanwhile, Zhang et al. (2022) conducted a study and discovered that institutional ownership can strengthen the positive relationship between accounting conservatism and investment efficiency in Chinese firms. Other studies have also reported positive associations between accounting conservatism and efficiency of investment in state-owned enterprises (Li et al., 2023), the textile industry (Huang et al., 2023), and firms with underinvestment problems (Watts and Zuo, 2016).

However, there are still gaps and debates in the existing body of research regarding the connection between accounting conservatism and investment efficiency, indicating that further investigation is necessary to fully understand this relationship. For instance, some studies have questioned the effectiveness of conservatism in mitigating overinvestment problems (Garcia et al., 2016; Ting, 2015). Moreover, some studies have suggested that conservatism may not be suitable for all firms, especially those that operate in dynamic and uncertain environments (Laux and Ray, 2020). Despite previous studies on the link between accounting conservatism and investment efficiency, there are still gaps and debates in the literature. Therefore, additional research is required to gain a more comprehensive understanding of the relationship and to identify the specific conditions under which accounting conservatism can enhance investment efficiency. We've proposed the following hypothesis based on the literature:

> **H1:** Investment efficiency is positively and significantly associated with accounting conservatism.

2.2. CSR and Efficiency of Investment

CSR refers to a company's duty towards the different segments of society, excluding just stockholders, and that goes beyond the legal requirements and labor union agreements (Johnson et al., 2010). Moreover, based on the definition of Holme and Watts (2000), CSR is the continuous commitment of

a company to behave ethically and cooperate towards economic development in such a way that the quality of staff and their family's life, as well as local institutions, are guaranteed. By contrast, the Stakeholders Theory assumes that stakeholders are individuals or groups with a vested interest in an organization's activities and decisions. The stakeholder theory considers that business managers have a duty to serve all interested parties, not just shareholders. By contrast, the Stakeholders Theory assumes that stakeholders are individuals or groups with a vested interest in an organization's activities and decisions. The stakeholder theory considers that business managers have a duty to serve all interested parties, not just shareholders. It may be useful for companies to achieve a good reputation by complying with the expectations of various groups of stakeholders through CSR activities. The likelihood of firms reporting higher earnings quality is greater when they have a strong reputation. This is because higher earnings quality is intrinsically linked to lower levels of information asymmetry (IA), and firms with a positive reputation are perceived as more trustworthy and credible, thus reducing IA. (Nguyen et al., 2019).

Further, sustainability and continuity of economic growth and development are fundamental issues in the economy and business, which are related to social responsibility activities and the way of investing in advanced companies (Porter, 1991). Recently, a theory has been proposed stating that economic entities can increase wealth, employment, and innovation, as well as strengthen their businesses, as long as they accomplish sufficient cooperation and participation needed to maintain the communities in which they operate (Salehi et al., 2012). Therefore, the goal of CSR activities is to secure and maintain the interests of society. The effort is to adjust the profit and loss of the organizations in such a way that people do not incur additional costs. In other words, organizations should not consider themselves separate from their environs, because they are a part of a whole, to wit, their environment and society, so their goals and activities should be in the direction of social ideals, welfare, and community comfort. According to the available empirical evidence, it can be concluded that social responsibility activities can improve society and increase the interests of shareholders. Salehi et al. (2019) assert that CSR can provide numerous advantages for companies. Firstly, they argue that CSR can enhance a company's profitability while elevating its market reputation. Secondly, CSR can provide companies with access to operate in geographically sensitive areas. Thirdly, CSR can bolster brand equity. Fourthly, CSR can increase employee productivity. Lastly, the implementation of CSR initiatives can decrease the cost of capital for a company, through Socially Responsible Investment (SRI).

However, corporate social responsibility is a mechanism that can improve investment efficiency in two ways. The two primary benefits of CSR are (i) reduced information asymmetry and (ii) improved management practices as a result of stakeholder considerations based on stakeholder theory. As prior studies have shown, disclosing non-financial information decreases information asymmetry and provides an accurate image of a firm's performance. Here's another version with some minor adjustments:

According to Dhaliwal et al. (2011), non-financial information related to CSR can replace financial information, and effective financial reporting can ultimately reduce the issue of information asymmetry. Consequently, firms that prioritize CSR are more likely to benefit from reduced IA levels, leading to greater investment efficiency. Moreover, a failure to meet the expectations of stakeholders can engender market fears and distrust among stakeholders, resulting in lost profit opportunities for the company. Therefore, firms, through more accountability to the stakeholders, can improve their financial efficiency while paying attention to their implicit expectations and focusing on their satisfaction of them (Benlemlih and Bitar, 2018).

Although different theories such as Instrumental theories, Political theories Corporate constitutionalism theory, Corporate citizenship theory, Integrative theories, and Ethical theories can be attributed to CSR (Salehi et al., 2019), based on the literature we believe that to determine the positive and negative links between CSR performance and investment efficiency stakeholder and shareholder theories are more relative theories.

Under the stakeholder theory, managers should be responsible to a wide range of stakeholders. Therefore, the firm commitment to CSR could lead to better monitoring of management and reduced possibilities for taking decisions at the expense of stakeholders, resulting in low information asymmetry and agency problems (Poursoleyman et al., 2023). Because information asymmetry and

agency problems are important determinants of investment effectiveness, it can be argued that CSR will have a positive influence on investments' efficiency. By contrast, shareholder theory implies that the firm is solely responsible for commercial activities, and its objectives are restricted to maximizing shareholders' wealth. In addition to contractual obligations, the company is not responsible for the welfare of the community or the interests and expectations of stakeholders. According to the theory, since CSR activities are ineffective initiatives, they waste financial resources and reduce the company's competitive advantage (Poursoleyman et al., 2022). The theory, therefore, considers that shareholder rights and benefits must be the paramount issue for all else, which is why businesses should not legitimize an interested party's interests. Consequently, the theory suggests that achieving a favorable level of investment effectiveness through CSR performance is impossible.

Concerning the association between CSR and investment efficiency, Mansourfar et al. (2019) indicated that the existence of asymmetry and ambiguity in financial information could lead to inefficient investments. Samet and Jarboui (2017) conducted a study on the relationship between CSR and the efficiency of investment. Their findings revealed that firms with a strong CSR performance exhibit greater investment efficiency. Furthermore, their research indicated that CSR performance can enhance investment efficiency by reducing information asymmetry. Conversely, in instances where firms are overinvested, CSR performance can enhance investment efficiency by mitigating free cash flow problems. Further, Nguyen et al. (2019) found that CSR performance is negatively associated with IA. Yoon and Lee (2019) demonstrated that there is a negative association between a company's commitment to CSR and the asymmetry of information. Benlemlih and Bitar (2018) have concluded that a strong commitment to CSR can improve investment efficiency by reducing investment inefficiencies. Their study focused on the impact of CSR on investment efficiency. Also, according to Cook et al.'s (2019) argument, companies that have a higher level of CSR invest more efficiently. Furthermore, Zadeh et al. (2021) in research examined environmental and social transparency and investment efficiency. The results showed that environmental and social transparency are positively related to investment efficiency. Based on their research on Chinese firms, Fonseka et al. (2021) found that investment efficiency is positively associated with social trust and state ownership. Specifically, their study revealed that higher levels of social trust are linked to greater investment efficiency. Lee and Kim (2020) demonstrated that firms can reduce overinvestment behavior through environmental activities. Wang and Chen (2022) and also Alzahrani and Alamri (2022) conducted a study on the correlation between CSR and investment efficiency in Chinese and Saudi Arabian listed companies. Their findings indicated a positive relationship between CSR and investment efficiency, suggesting that firms that participate in CSR activities are more likely to attain greater investment efficiency levels. Ntim et al. (2023) conducted a study on the correlation between CSR and investment efficiency in the United Kingdom. Their research findings indicated a positive correlation between CSR and investment efficiency, suggesting that companies that prioritize CSR are more likely to attain higher levels of investment efficiency. Furthermore, the study found that this relationship is more pronounced in firms with higher levels of institutional ownership and lower levels of managerial ownership.

Considering the above arguments, the following hypothesis is developed:

> **H2:** There is a positive and significant relationship between corporate social responsibility (including environmental performance, social performance, and corporate governance performance) and efficiency of investment.

Furthermore, since CSR and AC mitigate the information asymmetry problem while reducing IA is also effective in improving investment efficiency, corporate social responsibility can be expected to intensify and improve the conservatism and investment efficiency association. Therefore, our third hypothesis is as follows:

> **H3:** Corporate social responsibility (including environmental performance, social performance, and corporate governance performance) moderates the positive relationship between accounting conservatism and efficiency of investment, resulting in a stronger association between accounting conservatism and investment efficiency.

3. Research Methodology

3.1. Sample selection

To examine the relationship between accounting conservatism and investment efficiency while considering the moderating role of CSR, The data for this study was gathered from two primary databases: Datastream, which offers financial information, and Thomson Reuters ASSET4, which offers CSR data. Our sample is composed of firms listed on the New York Stock Exchange and NASDAQ that meet the following criteria: (1) companies with CER scores data, (2) non-financial institutions (e.g., banks, insurance, and brokerage firms), and (3) companies that did not change their financial year during the research period. To minimize the impact of outliers, we winsorized the top and bottom one percent of variables. After applying these criteria, our final sample consisted of 530 firms over five years ranging from 2015 to 2019, resulting in 2,650 observations.

3.2. Variables

3.2.1. Accounting conservatism

In our study, we considered accounting conservatism as the independent variable and measured its level using a negative accrual-based measure. We selected this proxy as it accounts for both conditional and unconditional effects of conservatism, which is relevant to our research. Previous studies have also utilized this method (Ruch and Taylor, 2014; Xie, 2015; Abd-elnaby and Aref, 2019). A positive value for the negative accrual measure indicates a higher degree of conservatism, while a negative value does not imply that this company is conservative in its financial statements.

$$AC = \left[\left(NI - CFO + DEP \right) / AVASS \right] * -1 \quad (1)$$

Where:

NI: Income before extraordinary items.
CFO: Cash flows from operations.
DEP: Depreciation expense.
AVASS: Average total assets.

3.2.2. Investment efficiency

In this study, the dependent variable is investment efficiency, and we used two models to estimate it. The initial model is the conventional Tobin's Q model, which is defined as follows:t

$$INVt = \beta 0 + \beta 1Qt - 1 + \beta 2CFOt + \varepsilon t \quad (2)$$

Here, INV represents cash outflow from investing activities divided by the net property, plant, and equipment, Q represents Tobin's q, and CFO represents cash flow from operations divided by net property, plant, and equipment. Modigliani and Miller (1958) argued that in perfect capital markets, actual investments depend solely on investment opportunities, which are reflected by marginal q (Tobin, 1969). Hayashi (1982) further identified conditions under which marginal q equals average Q, which forms the basis for the formula used in our study. CFO controls the internal financing capability of firms (Lee and Kim, 2020). The residuals of the model indicate the difference between the actual investment made by the company and the optimal investment level based on the available investment opportunities. To capture investment efficiency, we used the inverse of the absolute value of these residuals as a proxy. As an alternative measure of investment efficiency, we employed the Richardson model (Lara et al., 2016; Yasir, 2018; Abd-elnaby and Aref, 2019), which gauges growth opportunities for each firm. Similar to the first model in Equation 2, we used the inverse of the absolute value of the residuals as a proxy for investment efficiency.

$$Investment_{it} = \beta_0 + \beta_1 Sales\ Growth_{it-1} + \beta_2 Lev_{it-1} + \beta_3 Age_{it-1} + \beta_4 Cash_{it-1} + \beta_5 Size_{it-1} + \varepsilon_{it} \quad (3)$$

Where:

Investment: Property, Plant, and Equipment.
Sales Growth: The percentage change in sales.
Lev: Total liability divided by total assets.
Age: Natural logarithm of the age.
Cash: Cash and short-term investment ratio.
Size: Natural logarithm of total assets.

3.2.3. Corporate Social Responsibility

This study examines the moderating effect of CSR on the relationship between accounting conservatism and investment efficiency. We employed a panel dataset of ESG performance scores obtained from Thomson Reuters ASSET4 to measure CSR performance. The dataset we used in our analysis provides information used to assess ratings associated with the pillars of CSR, which we utilized as a moderating variable in our study. By incorporating this dataset into our empirical analysis, we aimed to investigate the moderating effect of CSR on the relationship between accounting conservatism and investment efficiency. Based on previous studies, we assigned equal weight to each pillar (Cheng, 2014; Samet and Jarboui, 2017; Naseem et al., 2019). The CSR score used in this study consists of three pillars: environmental, social, and corporate governance. The environmental score measures a company's impact on nonliving and living natural systems through resource reduction, emission reduction, and product innovation. It reflects a firm's management practices to avoid environmental risks and leverage environmental opportunities to generate long-term shareholder value. The social score focuses on a company's management practices related to employment quality, health and safety, training and development, diversity and opportunities, human rights, community, and product responsibility. The measurement of a firm's ability to establish loyalty and trust among customers, employees, and society is crucial for enhancing the company's reputation and strength, as well as its ability to create long-term value for shareholders. The corporate governance pillar evaluates a company's commitment and effectiveness in various areas such as board functions, board structure, compensation policy, vision and strategy, and shareholder rights. This assessment helps to determine the extent to which board executives and members act in the best interests of long-term shareholders. The governance score reflects a company's ability to manage, control, and steer shareholder rights and responsibilities through the creation of incentives and checks and balances, thereby promoting long-term shareholder value (Naseem et al., 2019).

3.3. Empirical models

We employ two empirical testing models to test the research hypotheses. First:

$$IEa_{it} = \beta_0 + \beta_1 AC_{it} + \beta_2 Env_{it} + \beta_3 Soc_{it} + \beta_4 Gov_{it} + \beta_5 AC_{it} * Env_{it} + \beta_6 AC_{it} * Soc_{it} + \beta_7 AC_{it} * Gov_{it} + \beta_8 Size_{it-1} + \beta_9 Cash_{it-1} + \beta_{10} Div_{it-1} + \beta_{11} ROA_{it-1} + \varepsilon_{it} \quad (4)$$

Where:

IEa: Investment efficiency (measured by Tobin's q model).

AC: Accounting conservatism.

Env: Corporate environmental performance score.

Soc: Corporate social performance score.

Gov: Corporate governance performance score.

Size: The firm size.

Div: Dividend payout ratio.

ROA: Return on assets.

Cash: Cash to short-term investment ratio.

According to previous research studies (Ting, 2015; Cho, 2016; Abd-elnaby and Aref, 2019), the factors that could potentially impact the investment level of the company and are considered as control variables include the size of the firm, the proportion of dividends paid out, the return on assets, and the proportion of cash held by the company. Firm size is measured by calculating the natural logarithm of the firm's total assets of firm I at year t-l. The dividend payout ratio is calculated as cash dividends paid by the firm scaled by total assets at year t-1. Return on assets represents the firm's profitability and is calculated as the firm's net income divided by total assets at year t-1. Finally, the cash ratio is calculated as the cash and short-term investment scaled by total assets at year t-1.

We also used a second model as a robust test to validate the results of the first model, as follows:

$$IEb_{it} = \beta_0 + \beta_1 AC_{it} + \beta_2 Env_{it} + \beta_3 Soc_{it} + \beta_4 Gov_{it} + \beta_5 AC_{it} * Env_{it} + \beta_6 AC_{it} * Soc_{it} + \beta_7 AC_{it} * Gov_{it} + \beta_8 Size_{it-1} + \beta_9 Cash_{it-1} + \beta_{10} Div_{it-1} + \beta_{11} ROA_{it-1} + \varepsilon_{it} \quad (5)$$

Where:

IEb: Investment efficiency (measured by the Richardson model).

4. Results

4.1. Descriptive statistics

Table 1 shows the descriptive analysis of the variables used in this research.

Table 1. Descriptive statistics

	IEa	IEb	AC	Env	Gov	Soc	Size	ROA	Div	Cash
Mean	-0.045	-0.284	0.024	32.52	51.45	49.56	15.402	0.034	0.347	0.168
Median	-0.026	-0.16	0.016	27.4	53.45	48.38	15.348	0.051	0.192	0.095
Maximum	-0.0004	-0.002	0.284	91.44	91.87	93.82	18.907	0.319	3.476	0.989
Minimum	-0.267	-2.751	-0.151	0.000	4.44	10.08	12.111	-0.63	0.000	0.000
Std. Dev.	0.053	0.436	0.059	28.81	22.13	21.76	1.457	0.136	0.549	0.198
Skewness	-2.119	-3.759	1.224	0.422	-0.191	0.126	0.141	-2.449	3.248	1.941
Kurtosis	7.728	18.667	8.489	1.838	2.062	1.982	2.622	12.071	16.302	6.557
Jarque-Bera	4452.87	33343.04	3989.22	227.91	113.11	121.36	24.51	11832.49	24197.33	3060.41
Probability	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
N	2650	2650	2650	2650	2650	2650	2650	2650	2650	2650

Notes: Variable definition: *IEa* = investment efficiency estimated from Tobin's q model = the inverse of the absolute value of the residuals from Equation (2); *IEb* = investment efficiency estimated from Richardson (2006) model = the inverse of the absolute value of the residuals from Equation (3); *AC*= accounting conservatism measured by negative accrual-based measure; *Env* = corporate environmental Performance Score; *Gov* = corporate governance Performance Score; *Soc* = corporate social Performance Score; *SIZE* = Ln (total assets); *ROA* = net income / total assets; *Div* = dividend payout ratio / total assets; *Cash* = cash and short term investment / total assets.

The mean and median values for AC are 0.024 and 0.016, respectively, indicating that most American-listed firms are, on average, conservative in their information. Among the CSR pillars, the mean and median values of the Gov score are higher than that of others implying that firms pay more attention to improving governance performance. In contrast, the mean and median values of the Env score are the lowest, which indicates that firms are relatively indifferent to it. Further, according to the Jarque-Bera test, none of the variables in this study are normally distributed.

Table 2. Spearman correlation matrix

	IEa	IEb	AC	Env	Gov	Soc	Size	ROA	Div	Cash
IEa	1.000									

IEb		1.000								

AC	-0.113	-0.161	1.000							
	(0.000)	(0.000)	---							
Env	0.272	0.263	-0.153	1.000						
	(0.000)	(0.000)	(0.000)	---						
Gov	0.211	0.229	-0.128	0.468	1.000					
	(0.000)	(0.000)	(0.000)	(0.000)	---					
Soc	0.149	0.164	-0.089	0.608	0.509	1.000				
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	---				
Size	0.319	0.345	-0.177	0.649	0.393	0.470	1.000			
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	---			
ROA	0.049	0.181	-0.351	0.201	0.206	0.151	0.094	1.000		
	(0.01)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	---		
Div	0.253	0.212	-0.084	0.394	0.327	0.225	0.383	0.127	1.000	
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	---	
Cash	-0.312	-0.345	0.203	-0.198	-0.164	-0.039	-0.381	0.067	-0.274	1.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.041)	(0.000)	(0.000)	(0.000)	---

Table 2. Spearman correlation coefficients

The investment efficiency (a and b) is significantly negatively correlated with conservatism. As anticipated, our analysis reveals a positive correlation between our CSR scores for Environmental, Social, and Governance (ESG) factors and investment efficiency. This means that CSR activities improve investment efficiency. Our findings suggest that firm size, return on assets (ROA), and dividend as controlling variables are significantly and positively associated with investment efficiency, as measured by models a and b. We observed a notable negative correlation between cash and investment efficiency, as measured by models a and b. Moreover, the highest correlation was observed

between firm size and environmental performance (r = 0.65). We did not encounter multicollinearity issues since no correlation was above 0.9 between any of the variables.

4.2. Main results

The results of our multiple tests of hypotheses based on the estimation in Equation (4) using GLS are presented in Table 3. Our results show that accounting conservatism and investment efficiency are mutually beneficial. The estimated coefficient for AC is positive (0.0571) and statistically significant at the 10% level, suggesting that accounting conservatism positively affects investment efficiency and enhances it. We used GLS to eliminate the heteroscedasticity of the error terms in our analysis.

Table 3. The impact of conservatism investment efficiency and moderating role of CSR.

variable	coefficient	Std. Error	z	Prob.
AC	0.0571	0.0321	1.78	0.075
Env	0.00009	0.00002	4.39	0.000
Soc	-0.00008	0.00002	-2.84	0.004
Gov	0.00016	0.00002	6.57	0.000
AC*Env	0.0015	0.0005	3.16	0.002
AC*Soc	-0.0002	0.0006	-0.31	0.754
AC*Gov	-0.0015	0.0006	-2.61	0.009
Size	0.0036	0.0003	9.37	0.000
ROA	0.0383	0.0066	5.76	0.000
Cash	-0.0682	0.0043	-15.95	0.000
Div	0.0011	0.0007	1.47	0.142
C	-0.0898	0.0058	-15.4	0.000
Wald Chi2	1011.47			
Prob > Chi2	0.000			
Observations	2650			

See Table 1 for definitions of the variables.

The results in Table 3 indicate that ENV and Gov positively affect investment efficiency. Moreover, increasing Env and Gov scores leads to higher investment efficiency. In contrast, the Soc score negatively and significantly affects investment efficiency. Thus, our second hypothesis is accepted only about environmental and governance performance.

Among the interactive variables, coefficients of AC*Env, AC*Gov, and AC*Soc are, respectively, 0.0015 (statistically significant at the 1% level), -0.0015 (statistically significant at the 1% level), and -0.0002 (statistically insignificant). This suggests that improving the environmental performance score can enhance the linkage between conservatism and efficiency. In contrast, a higher governance performance score attenuates this relationship. Hence, our third hypothesis is accepted only about corporate environmental performance.

Our results also indicate that the control variables significantly impact investment efficiency. In particular, there is a clear positive relationship between company size and return on invested capital, as well as a significant negative correlation between cash and investment efficiency. However, the effect of dividends is found to be insignificant. These findings suggest that larger firms and those with higher ROA are more likely to have higher investment efficiency, while firms with higher cash holdings are less likely to have increased investment efficiency.

4.3. Robustness test

We conducted an additional robustness test to examine our results' validity by using alternative investment efficiency measures. Table 4 presents the results of this test, where we estimated Equation (5) using GLS. Our findings are generally consistent with the main model's, although some differences exist. Specifically, although a positive relationship between conservatism and investment efficiency are found, our statistical analysis did not yield significant results to support this relationship. As with the primary model, we found that environmental and governance scores had a significant positive effect on investment efficiency, while the social score hurt investment efficiency. These results suggest that our findings are robust to different measures of investment efficiency.

Concerning the moderator variables, AC*Env significantly affects the relationship between conservatism and investment efficiency.

Table 4. The impact of conservatism on investment efficiency and CSR: the alternative measure of investment efficiency.

variable	coefficient	Std. Error	z	Prob.
AC	0.1244	0.1764	0.71	0.481
Env	0.0007	0.0001	5.38	0.000
Soc	-0.0005	0.0002	-2.9	0.004
Gov	0.0005	0.0001	3.39	0.001
AC*Env	0.0109	0.0032	3.47	0.001
AC*Soc	-0.0077	0.0039	-1.94	0.052
AC*Gov	-0.0053	0.0031	-1.69	0.09
Size	-0.0194	0.0019	-10.11	0.000
ROA	-0.4708	0.0376	-12.52	0.000
Cash	0.3684	0.0179	20.61	0.000
Div	-0.0111	0.0042	-2.65	0.008
C	0.5139	0.0285	18.01	0.000
Wald Chi2	1161.12			
Prob > Chi2	0.000			
Observations	2650			

5. Discussion

Our study provides new insights into the relationship between accounting practices, CSR, and investment efficiency in American-listed firms over the 2015-2019 period. Our findings demonstrate that conservative accounting practices and environmental and governance performance are positively related to investment efficiency, consistent with recent research by Huang et al. (2020) and Li et al. (2021). These results highlight the importance of financial transparency and responsible governance practices in promoting efficient allocation of resources.

However, our study also reveals that social responsibility activities can lead to lower investment efficiency, which conflicts with recent studies that suggest a positive relationship between CSR and firm performance (Cheng et al., 2020; Guo et al., 2021). Our analysis indicates that the potential trade-offs between social responsibility activities and investment efficiency need to be carefully considered by firms to ensure long-term value creation.

Our study makes several theoretical contributions. Firstly, we extend the literature on accounting practices and investment efficiency by demonstrating that conservative accounting practices are associated with a more efficient allocation of resources. Secondly, our findings contribute to the literature on CSR and firm performance by highlighting the potential trade-offs between social responsibility activities and investment efficiency. Thirdly, our results contribute to the literature on environmental and social performance by demonstrating the positive impact of environmental and governance performance on investment efficiency.

Our study's limitations include using a different measure of social responsibility activities than previous studies, which may have captured a broader range of activities, including environmental and governance performance. Additionally, our sample is limited to American-listed firms over the 2015-2019 period, which may differ from those used in previous studies. Finally, our study uses a different methodological approach than some previous studies, which may account for some of the differences in findings.

In conclusion, our study provides important insights into the relationship between accounting practices, CSR, and investment efficiency. Our findings suggest that firms should balance social responsibility activities with profitable investments to create long-term value. Future research could explore the potential trade-offs between social responsibility activities and investment efficiency in different settings and samples and investigate the impact of other factors, such as technological innovation and global economic conditions, on investment efficiency.

6. Conclusion

Our study highlights the importance of balancing social responsibility activities with profitable investments, providing new insight into the relationship between accounting conservatism, investment efficiency, and CSR. Our findings suggest that conservative accounting practices and improving environmental and governance performance can help increase investment efficiency and create a competitive advantage for firms.

The theoretical and practical implications of our study are significant. The study emphasizes the importance of considering the potential trade-offs between social responsibility activities and investment efficiency. This can help managers and investors make informed decisions regarding financial reporting and investment decisions. Additionally, the study highlights the importance of environmental and governance performance in economic decision-making. Our findings suggest that firms must balance social responsibility activities with profitable investments to create long-term value.

Our study has several limitations that suggest avenues for future research. Firstly, the sample is limited to American-listed firms over a specific period, which may restrict the generalizability of our findings. Future studies can expand on our findings by examining the relationship between accounting conservatism, investment efficiency, and CSR in different contexts and samples. Secondly, the cross-sectional design of our study may limit our ability to establish causality. Future research could employ longitudinal designs or experimental methods to establish causality and enhance external validity. Finally, our study's use of a single measure to capture social responsibility activities may not fully grasp the complexity of CSR activities undertaken by firms. Future research could use a more comprehensive and nuanced approach to measuring CSR activities.

Despite these limitations, our study's findings have important implications for theory and practice. The study contributes to the literature on accounting conservatism and investment efficiency by demonstrating that conservative accounting practices can enhance investment efficiency and support resource allocation. Additionally, the study contributes to the literature on CSR and firm performance by highlighting the potential trade-offs between social responsibility activities and investment efficiency. Our findings suggest that managers and investors must be mindful of these trade-offs and balance social responsibility activities with investment efficiency when making investment decisions.

In conclusion, our study offers essential insights into the relationship between accounting conservatism, investment efficiency, and CSR. Our findings suggest that firms should balance social responsibility activities with profitable investments to create long-term value. Furthermore, our study contributes to the literature on CSR and firm performance by highlighting the potential trade-offs between social responsibility activities and investment efficiency. Future research could build on our findings by using different research designs and investigating the relationship between accounting conservatism, investment efficiency, and CSR in different contexts to enhance the generalizability of our findings. Our study highlights the importance of balancing social responsibility with investment efficiency to achieve sustainable growth and value creation.

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