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Explaining the Behavior of Capital Market Traders with Emphasis on Behavioral Biases and Considering Corporate Social Responsibility and Corporate Information Ambiguity

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ABSTRACT

The present study aims to explain the behavior of capital market traders with an emphasis on behavioral biases while considering corporate social responsibility (CSR) and corporate information ambiguity. The research method is ex post facto (causal–comparative) and applied in nature. The statistical population consisted of companies listed on the Tehran Stock Exchange from the beginning of 2014 to the end of 2020, covering a seven-year period. Using a systematic elimination method, 90 companies were selected for analysis. The collected data were analyzed using EViews software. The findings indicated a significant relationship between corporate social responsibility and investors' trading behavior ($p < .05$). A significant relationship was also observed between information ambiguity and investors' trading behavior ($p < .05$). Behavioral bias had a significant moderating effect on the relationship between corporate social responsibility and investors' trading behavior ($p < .05$). Furthermore, behavioral bias significantly influenced the relationship between information ambiguity and investors' trading behavior ($p < .05$). Based on the findings, it can be concluded that when corporate social responsibility activities are transparently disclosed, investors' trading behavior improves; however, when information ambiguity exists, investors' trading behavior tends to be accompanied by behavioral biases.

Keywords: capital market traders' behavior, behavioral biases, corporate social responsibility, information ambiguity.

Introduction

The functioning of capital markets fundamentally depends on the quality of information available to investors and the behavioral mechanisms through which that information is interpreted and incorporated into trading decisions. In modern financial environments characterized by rapid information flows, increasing corporate transparency demands, and heightened sustainability expectations, investor behavior is no longer explained solely by classical rational choice assumptions. Instead, market participants operate under bounded rationality, informational imperfections, and heterogeneous expectations, which collectively shape trading behavior and asset pricing dynamics. Contemporary research increasingly emphasizes that corporate social responsibility (CSR) disclosure and information asymmetry constitute central mechanisms through which firms influence market perceptions, investment efficiency, and investor reactions (1, 2).

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Traditional financial theory assumes that investors process all available information efficiently; however, empirical observations demonstrate persistent deviations from rational equilibrium due to informational uncertainty and behavioral biases. Noise trading, speculative clustering, and correlated market reactions arise when investors interpret incomplete or ambiguous information differently, producing heterogeneous trading outcomes (2). These deviations become particularly salient in emerging and developing markets where institutional monitoring mechanisms may be weaker and voluntary disclosure practices play a larger role in shaping investor confidence (3, 4). Consequently, understanding how corporate disclosure strategies interact with investor cognition has become a central issue in financial management and behavioral finance literature.

Corporate social responsibility has evolved from a peripheral ethical concept into a strategic corporate governance mechanism influencing financial markets, stakeholder trust, and long-term firm valuation. Firms increasingly employ CSR reporting as a signaling device to communicate ethical conduct, sustainability orientation, and risk management capability to investors and other stakeholders. Evidence indicates that CSR disclosure improves transparency and reduces uncertainty surrounding firm operations, thereby mitigating information asymmetry between managers and investors (5, 6). Through voluntary disclosure channels, CSR initiatives can convey non-financial information that complements traditional financial statements and enhances investors' assessment of firm quality (7, 8).

The relationship between CSR and capital market outcomes has attracted growing scholarly attention. CSR engagement has been associated with lower financing costs, improved creditworthiness, and enhanced market performance due to increased investor confidence and reduced perceived risk (9, 10). Studies also show that CSR activities strengthen investment efficiency, especially during periods of economic policy uncertainty, suggesting that socially responsible firms provide informational assurance that stabilizes investor expectations (11, 12). These findings indicate that CSR functions not merely as an ethical commitment but as an informational asset influencing financial decision-making processes.

Despite this growing consensus, the mechanisms linking CSR to investor trading behavior remain complex. Information asymmetry continues to persist even in environments with extensive disclosure, largely because investors interpret disclosed information differently based on cognitive limitations and behavioral tendencies. Information asymmetry arises when managers possess superior knowledge regarding firm prospects compared with external investors, leading to adverse selection and mispricing risks (13). Empirical studies demonstrate that CSR disclosure can partially alleviate asymmetry by expanding the information environment and improving analyst recommendations and market monitoring efficiency (14, 15).

Recent systematic reviews emphasize that CSR, information asymmetry, and capital market performance are deeply interconnected. Enhanced CSR transparency improves the informational environment, strengthens analyst attention, and increases market efficiency, thereby shaping investors' trading responses (1, 16). At the same time, the effectiveness of CSR disclosure depends on contextual factors such as governance structures, ownership characteristics, and institutional settings, which influence how information is processed by market participants (17, 18).

Another critical dimension concerns the informational tone and credibility of CSR reports. Investors do not merely react to the presence of disclosure but also to qualitative aspects such as narrative tone, credibility signals, and consistency between reported responsibility and actual corporate behavior. Research shows that CSR report tone significantly affects stock price reactions following corporate violation announcements, suggesting that investors

interpret CSR narratives as reputational signals (19). Similarly, inconsistencies between CSR claims and operational practices may increase crash risk when markets perceive disclosure decoupling, highlighting the importance of authenticity in CSR communication (20).

Information asymmetry is also shaped by technological and analytical advancements. Big data analysis and digital reporting platforms have transformed how investors process corporate information, enabling deeper analysis of textual disclosure and CSR communication. Evidence indicates that the tone and linguistic features of CSR reports influence asymmetry levels by altering investor expectations and market sentiment (21). As disclosure complexity increases, investors rely more heavily on heuristics and simplified decision rules, reinforcing the relevance of behavioral finance perspectives in understanding market reactions.

Behavioral finance provides essential theoretical grounding for examining investor responses to CSR and informational ambiguity. Investors frequently exhibit biases such as overreaction, ambiguity aversion, loss aversion, and short-termism, all of which affect trading decisions under uncertainty. CSR disclosure may reduce behavioral distortions by providing reassurance signals, yet it may also amplify biases when interpreted selectively or emotionally. Studies show that ESG performance and CSR activities influence analyst optimism bias and investment decision framing, confirming that behavioral responses mediate informational effects (22, 23).

Furthermore, CSR engagement contributes to broader sustainability and development objectives, linking corporate performance with social and environmental responsibility. Firms aligning CSR initiatives with Sustainable Development Goals (SDGs) strengthen market performance through intellectual capital development and stakeholder engagement mechanisms (24). Such alignment signals long-term strategic orientation, which may influence investor behavior by reducing perceived uncertainty about future firm viability.

Empirical research across emerging economies demonstrates that CSR disclosure significantly affects capital market outcomes, including equity capital costs, firm valuation, and investment responses. Evidence from Indonesia, Pakistan, China, and Middle Eastern markets indicates that CSR improves market reactions to earnings announcements and reduces information gaps between insiders and investors (5, 25, 26). These findings reinforce the argument that CSR disclosure operates as a governance mechanism that enhances informational transparency and investment confidence.

Another important research stream highlights the moderating role of corporate characteristics in shaping CSR effectiveness. Cultural context, ownership structure, and family firm dynamics influence how investors interpret CSR disclosures and incorporate them into trading decisions (27, 28). Similarly, analyst attention and monitoring intensity determine whether CSR information translates into improved investment efficiency or remains symbolic disclosure (29).

Recent studies also emphasize the interaction between CSR, operational risk, and information asymmetry. Firm risk has been shown to mediate the relationship between CSR disclosure and asymmetric information, suggesting that socially responsible firms reduce uncertainty partly by signaling superior risk management practices (30). In supply chain contexts characterized by asymmetric demand information, CSR investment decisions influence operational transparency and stakeholder coordination, further illustrating the informational role of responsibility initiatives (31).

From a managerial perspective, CSR disclosure contributes to improving financial and economic outcomes by enhancing stakeholder trust and strengthening firm legitimacy. Evidence demonstrates that CSR performance generates measurable economic benefits, improves market reactions to earnings information, and enhances firm

financial outcomes when supported by credible disclosure practices (32, 33). Moreover, CSR disclosure can moderate the relationship between information asymmetry and capital costs, reinforcing its importance in financial management strategies (34).

Despite extensive evidence linking CSR and information asymmetry to financial performance, relatively limited research has examined how these factors jointly influence investors' trading behavior through behavioral mechanisms. Most studies focus on firm-level outcomes such as cost of capital or valuation rather than investor-level behavioral responses. Yet market dynamics ultimately emerge from individual trading decisions influenced by psychological biases, informational uncertainty, and disclosure interpretation processes. Integrating behavioral finance with CSR and information asymmetry perspectives therefore represents a critical research gap in contemporary financial literature.

In addition, globalization and sustainability pressures have intensified stakeholder expectations regarding corporate transparency and accountability. Investors increasingly incorporate environmental, social, and governance considerations into portfolio decisions, transforming CSR from a reputational tool into an integral component of financial analysis. As markets become more information-intensive, understanding how CSR disclosure interacts with informational ambiguity and behavioral biases becomes essential for explaining variations in trading behavior and market efficiency (1, 15).

Accordingly, examining investor trading behavior through the combined lenses of corporate social responsibility, information ambiguity, and behavioral bias provides a comprehensive framework for understanding capital market dynamics. Such an approach allows researchers to capture both informational and psychological determinants of investment decisions, bridging traditional finance theory with behavioral and sustainability-oriented perspectives.

Therefore, the aim of this study is to explain investors' trading behavior in the capital market by emphasizing behavioral biases while considering the roles of corporate social responsibility and corporate information ambiguity.

Methods and Materials

Considering that the present study seeks to analyze relationships among variables using statistical tests, and based on the issues discussed above, the research is classified, in terms of methodology, as a descriptive study of the correlational type.

From the perspective of overall research design, the study is ex post facto (using historical data), and financial information of companies listed on the Tehran Stock Exchange from 2014 to 2020 was utilized.

The statistical population of this research consisted of companies listed on the Tehran Stock Exchange from the beginning of 2014 to the end of 2020, covering a seven-year period.

To obtain reliable results, companies that entered the stock exchange after 2014 or were delisted during the research period were excluded from the statistical population. Furthermore, a systematic elimination method was applied to obtain an appropriate statistical sample. Accordingly, the population was refined based on the following criteria and restrictions:

– Companies were required not to be holding companies, investment companies, or insurance firms.
– Banks were excluded due to the specific nature of their operations.
– Firms must not have experienced a change in fiscal year or an operational suspension exceeding six months during the study period.
– The fiscal year-end of companies had to be the end of March, with no change during the period 2014–2020.

– Required research data had to be accessible.
– After applying these conditions, a total of 90 qualified companies remained and were included in the final analysis.

Given that the present study collected data related to Iranian firms and aimed to examine the effects of independent variables on dependent variables, regression analysis was considered the most appropriate method for testing the research hypotheses.

Several assumptions must be satisfied for linear regression analysis. These include interval or ratio measurement scale, normal distribution of variables, existence of a linear relationship between independent and dependent variables, homoscedasticity of residuals, equality of variances, absence of autocorrelation, and absence of multicollinearity among independent variables. In the present study, the measurement scale of the research variables was ratio-level, and the relationships between independent and dependent variables were assumed to be linear. The overall regression coefficient test was employed to examine linear relationships among variables. Ultimately, regression analysis was used to evaluate the impact of independent variables on dependent variables.

H1: There is a significant relationship between corporate social responsibility and investors' trading behavior.

$CAR\_it = \beta_0 + \beta_1 CSR\_it + \beta_2 LEV\_it + \beta_3 Size\_it + \beta_4 ROA\_it + \varepsilon\_it$

$R1\_it = \beta_0 + \beta_1 CSR\_it + \beta_2 LEV\_it + \beta_3 Size\_it + \beta_4 ROA\_it + \varepsilon\_it$

$R2\_it = \beta_0 + \beta_1 CSR\_it + \beta_2 LEV\_it + \beta_3 Size\_it + \beta_4 ROA\_it + \varepsilon\_it$

H2: There is a significant relationship between information ambiguity and investors' trading behavior.

$CAR\_it = \beta_0 + \beta_1 AM1\_it + \beta_2 LEV\_it + \beta_3 Size\_it + \beta_4 ROA\_it + \varepsilon\_it$

$CAR\_it = \beta_0 + \beta_1 AM2\_it + \beta_2 LEV\_it + \beta_3 Size\_it + \beta_4 ROA\_it + \varepsilon\_it$

$R1\_it = \beta_0 + \beta_1 AM1\_it + \beta_2 LEV\_it + \beta_3 Size\_it + \beta_4 ROA\_it + \varepsilon\_it$

$R1\_it = \beta_0 + \beta_1 AM2\_it + \beta_2 LEV\_it + \beta_3 Size\_it + \beta_4 ROA\_it + \varepsilon\_it$

$R2\_it = \beta_0 + \beta_1 AM1\_it + \beta_2 LEV\_it + \beta_3 Size\_it + \beta_4 ROA\_it + \varepsilon\_it$

$R2\_it = \beta_0 + \beta_1 AM2\_it + \beta_2 LEV\_it + \beta_3 Size\_it + \beta_4 ROA\_it + \varepsilon\_it$

H3: Behavioral bias has a significant effect on the relationship between corporate social responsibility and investors' trading behavior.

H3a: Loss aversion has a significant effect on the relationship between corporate social responsibility and investors' trading behavior.

H3b: Ambiguity aversion has a significant effect on the relationship between corporate social responsibility and investors' trading behavior.

H3c: Information salience has a significant effect on the relationship between corporate social responsibility and investors' trading behavior.

H3d: Short-termism has a significant effect on the relationship between corporate social responsibility and investors' trading behavior.

$CAR\_it = \beta_0 + \beta_1 CSR\_it + \beta_2 (CSR\_it \times U\_it) + \beta_3 LEV\_it + \beta_4 Size\_it + \beta_5 ROA\_it + \varepsilon\_it$

$R1\_it = \beta_0 + \beta_1 CSR\_it + \beta_2 (CSR\_it \times U\_it) + \beta_3 LEV\_it + \beta_4 Size\_it + \beta_5 ROA\_it + \varepsilon\_it$

$R2\_it = \beta_0 + \beta_1 CSR\_it + \beta_2 (CSR\_it \times U\_it) + \beta_3 LEV\_it + \beta_4 Size\_it + \beta_5 ROA\_it + \varepsilon\_it$

$CAR\_it = \beta_0 + \beta_1 CSR\_it + \beta_2 (CSR\_it \times E\_it) + \beta_3 LEV\_it + \beta_4 Size\_it + \beta_5 ROA\_it + \varepsilon\_it$

$R1\_it = \beta_0 + \beta_1 CSR\_it + \beta_2 (CSR\_it \times E\_it) + \beta_3 LEV\_it + \beta_4 Size\_it + \beta_5 ROA\_it + \varepsilon\_it$

$R2\_it = \beta_0 + \beta_1 CSR\_it + \beta_2 (CSR\_it \times E\_it) + \beta_3 LEV\_it + \beta_4 Size\_it + \beta_5 ROA\_it + \varepsilon\_it$

$CAR\_it = \beta_0 + \beta_1 CSR\_it + \beta_2 (CSR\_it \times Salience\_it) + \beta_3 LEV\_it + \beta_4 Size\_it + \beta_5 ROA\_it + \varepsilon\_it$

$R1\_it = \beta_0 + \beta_1 CSR\_it + \beta_2 (CSR\_it \times Salience\_it) + \beta_3 LEV\_it + \beta_4 Size\_it + \beta_5 ROA\_it + \varepsilon\_it$

$R2\_it = \beta_0 + \beta_1 CSR\_it + \beta_2 (CSR\_it \times Salience\_it) + \beta_3 LEV\_it + \beta_4 Size\_it + \beta_5 ROA\_it + \varepsilon\_it$

$CAR\_it = \beta_0 + \beta_1 CSR\_it + \beta_2 (CSR\_it \times SCB\_it) + \beta_3 LEV\_it + \beta_4 Size\_it + \beta_5 ROA\_it + \varepsilon\_it$

$R1\_it = \beta_0 + \beta_1 CSR\_it + \beta_2 (CSR\_it \times SCB\_it) + \beta_3 LEV\_it + \beta_4 Size\_it + \beta_5 ROA\_it + \varepsilon\_it$

$R2\_it = \beta_0 + \beta_1 CSR\_it + \beta_2 (CSR\_it \times SCB\_it) + \beta_3 LEV\_it + \beta_4 Size\_it + \beta_5 ROA\_it + \varepsilon\_it$

H4: Behavioral bias has a significant effect on the relationship between information ambiguity and investors' trading behavior.

H4a: Loss aversion has a significant effect on the relationship between information ambiguity and investors' trading behavior.

H4b: Ambiguity aversion has a significant effect on the relationship between information ambiguity and investors' trading behavior.

H4c: Information salience has a significant effect on the relationship between information ambiguity and investors' trading behavior.

H4d: Short-termism has a significant effect on the relationship between information ambiguity and investors' trading behavior.

$CAR\_it = \beta_0 + \beta_1 AM1\_it + \beta_2 (AM1\_it \times U\_it) + \beta_3 LEV\_it + \beta_4 Size\_it + \beta_5 ROA\_it + \varepsilon\_it$

$CAR\_it = \beta_0 + \beta_1 AM2\_it + \beta_2 (AM2\_it \times U\_it) + \beta_3 LEV\_it + \beta_4 Size\_it + \beta_5 ROA\_it + \varepsilon\_it$

$R1\_it = \beta_0 + \beta_1 AM1\_it + \beta_2 (AM1\_it \times U\_it) + \beta_3 LEV\_it + \beta_4 Size\_it + \beta_5 ROA\_it + \varepsilon\_it$

$R1\_it = \beta_0 + \beta_1 AM2\_it + \beta_2 (AM2\_it \times U\_it) + \beta_3 LEV\_it + \beta_4 Size\_it + \beta_5 ROA\_it + \varepsilon\_it$

$R2\_it = \beta_0 + \beta_1 AM1\_it + \beta_2 (AM1\_it \times U\_it) + \beta_3 LEV\_it + \beta_4 Size\_it + \beta_5 ROA\_it + \varepsilon\_it$

$R2\_it = \beta_0 + \beta_1 AM2\_it + \beta_2 (AM2\_it \times U\_it) + \beta_3 LEV\_it + \beta_4 Size\_it + \beta_5 ROA\_it + \varepsilon\_it$

$CAR\_it = \beta_0 + \beta_1 AM1\_it + \beta_2 (AM1\_it \times E\_it) + \beta_3 LEV\_it + \beta_4 Size\_it + \beta_5 ROA\_it + \varepsilon\_it$

$CAR\_it = \beta_0 + \beta_1 AM2\_it + \beta_2 (AM2\_it \times E\_it) + \beta_3 LEV\_it + \beta_4 Size\_it + \beta_5 ROA\_it + \varepsilon\_it$

$R1\_it = \beta_0 + \beta_1 AM1\_it + \beta_2 (AM1\_it \times E\_it) + \beta_3 LEV\_it + \beta_4 Size\_it + \beta_5 ROA\_it + \varepsilon\_it$

$R1\_it = \beta_0 + \beta_1 AM2\_it + \beta_2 (AM2\_it \times E\_it) + \beta_3 LEV\_it + \beta_4 Size\_it + \beta_5 ROA\_it + \varepsilon\_it$

$R2\_it = \beta_0 + \beta_1 AM1\_it + \beta_2 (AM1\_it \times E\_it) + \beta_3 LEV\_it + \beta_4 Size\_it + \beta_5 ROA\_it + \varepsilon\_it$

$R2\_it = \beta_0 + \beta_1 AM2\_it + \beta_2 (AM2\_it \times E\_it) + \beta_3 LEV\_it + \beta_4 Size\_it + \beta_5 ROA\_it + \varepsilon\_it$

$CAR\_it = \beta_0 + \beta_1 AM1\_it + \beta_2 (AM1\_it \times Salience\_it) + \beta_3 LEV\_it + \beta_4 Size\_it + \beta_5 ROA\_it + \varepsilon\_it$

$CAR\_it = \beta_0 + \beta_1 AM2\_it + \beta_2 (AM2\_it \times Salience\_it) + \beta_3 LEV\_it + \beta_4 Size\_it + \beta_5 ROA\_it + \varepsilon\_it$

$R1\_it = \beta_0 + \beta_1 AM1\_it + \beta_2 (AM1\_it \times Salience\_it) + \beta_3 LEV\_it + \beta_4 Size\_it + \beta_5 ROA\_it + \varepsilon\_it$

$R1\_it = \beta_0 + \beta_1 AM2\_it + \beta_2 (AM2\_it \times Salience\_it) + \beta_3 LEV\_it + \beta_4 Size\_it + \beta_5 ROA\_it + \varepsilon\_it$

$R2\_it = \beta_0 + \beta_1 AM1\_it + \beta_2 (AM1\_it \times Salience\_it) + \beta_3 LEV\_it + \beta_4 Size\_it + \beta_5 ROA\_it + \varepsilon\_it$

$R2\_it = \beta_0 + \beta_1 AM2\_it + \beta_2 (AM2\_it \times Salience\_it) + \beta_3 LEV\_it + \beta_4 Size\_it + \beta_5 ROA\_it + \varepsilon\_it$

$CAR\_it = \beta_0 + \beta_1 AM1\_it + \beta_2 (AM1\_it \times SCB\_it) + \beta_3 LEV\_it + \beta_4 Size\_it + \beta_5 ROA\_it + \varepsilon\_it$

$CAR\_it = \beta_0 + \beta_1 AM2\_it + \beta_2 (AM2\_it \times SCB\_it) + \beta_3 LEV\_it + \beta_4 Size\_it + \beta_5 ROA\_it + \varepsilon\_it$

$R1\_it = \beta_0 + \beta_1 AM1\_it + \beta_2 (AM1\_it \times SCB\_it) + \beta_3 LEV\_it + \beta_4 Size\_it + \beta_5 ROA\_it + \varepsilon\_it$

$R1\_it = \beta_0 + \beta_1 AM2\_it + \beta_2 (AM2\_it \times SCB\_it) + \beta_3 LEV\_it + \beta_4 Size\_it + \beta_5 ROA\_it + \varepsilon\_it$

$R2\_it = \beta_0 + \beta_1 AM1\_it + \beta_2 (AM1\_it \times SCB\_it) + \beta_3 LEV\_it + \beta_4 Size\_it + \beta_5 ROA\_it + \varepsilon\_it$

$$R2\_it = \beta_0 + \beta_1 AM2\_it + \beta_2 (AM2\_it \times SCB\_it) + \beta_3 LEV\_it + \beta_4 Size\_it + \beta_5 ROA\_it + \varepsilon\_it$$

Table 1. Measurement of Research Variables

Variable Type	Variable Name	Symbol	Measurement Method
Dependent Variable	Investors' Trading Behavior	R1 & R2	Risk-related behavior (R): measured using the standard deviation of annual stock returns relative to trading volume.
		CAR	Return-acquisition behavior (CAR): calculated using cumulative abnormal return, defined as the sum of monthly abnormal returns over one year. $CAR_i = \Sigma_{t=1}^{12} AR_{it}$ Abnormal Return: $AR_i = R_i - R_m$ where AR = abnormal stock return; R_i = actual stock return; R_m = expected stock return.
Independent Variable	Corporate Social Responsibility	CSR	Corporate Social Responsibility (CSR) was measured using a combination of KLD index indicators, board of directors' reports, and notes accompanying financial statements. KLD is a U.S.-based rating agency that annually ranks firms based on CSR performance and identifies leading socially responsible firms. The index was adapted to Iranian conditions. Four dimensions were used: community involvement, employee relations, environmental performance, and product characteristics. Each dimension includes strengths and weaknesses. Presence of each strength or weakness received a score of 1; absence received 0. CSR score was computed as a relative aggregate index based on strengths and weaknesses disclosure scores (Foroughi et al., 2018).
	Information Ambiguity	AM	Based on Jiang et al. (2005) and Zhang (2006), two indicators were used: AM1 — Asymmetric Return Volatility: annual stock-return skewness calculated monthly; negative skewness assigned value 1, positive skewness assigned 0. AM2 — Forecast Earnings Dispersion: standard deviation of the difference between forecasted and actual quarterly earnings during each year divided by beginning total assets, calculated quarterly over a rolling seven-year period.
Moderating Variables (Behavioral Bias)	Loss Aversion	U	Loss aversion calculated from four components (Rezazadeh & Fallah Shams, 2012): $U\_it = \beta_1 D_1 + \beta_2 D_2 + \beta_3 D_3$. $D_1 = 1$ if stock price with positive initial return is lower than IPO price; otherwise 0. $D_2 = 1$ if stock price with negative initial return exceeds IPO price; otherwise 0. $D_3 = 1$ if the stock reaches a new price boundary after four weeks; otherwise 0.
	Ambiguity Aversion	E	Data were derived from the Central Bank Survey of Professional Forecasters (SPF), including individual forecasts from major financial institutions regarding U.S. macroeconomic and financial variables across quarterly and annual horizons. Following Antonio et al. (2015), forecasts of aggregate output, GDP deflator, and corporate after-tax profits were used. Expected aggregate corporate profit at time t+1 was estimated, followed by application of the Gordon growth model to derive expected market returns. Market capitalization data were obtained from flow-of-funds accounts. Quarterly predicted market returns were calculated and used as the ambiguity aversion indicator (Anderson et al., 2009, as cited in Antonio et al., 2015).
	Information Salience	Salience	Estimated using two regression equations: $R\_it = \alpha_0 + \alpha_1 EPS\_it + \varepsilon\_it$ and $R\_it = \alpha_0 + \alpha'_1 EPS\_it + \varepsilon\_it$. Stock returns and first-quarter earnings forecasts were estimated using Equation (1), and last-quarter earnings forecasts using Equation (2). Information salience was calculated as: $Salience = \alpha'_1 - \alpha_1$. If the value exceeded zero, the obtained value was retained; otherwise, zero was assigned (Jiang et al., 2005; Zhang, 2006).
	Investor Short-Termism	SCB	If trading interval (holding period) exceeds the annual market average and stock liquidity ranking is high, investors are classified as non-short-term oriented; otherwise, short-term oriented (Rostami et al., 2019). Holding period calculated as: A = ((Trading Volume / Number of Trades) × Trading Days) / Total Shares Outstanding × 365. Liquidity and holding period rankings were compared with annual averages; binary values were assigned and combined to determine investor short-termism classification.
Control Variables	Financial Leverage	LEV	Total liabilities divided by total assets (Bolo et al., 2012).
	Firm Size	Size	Natural logarithm of total book value of assets (Bolo et al., 2012).
	Return on Assets	ROA	Net income divided by average total assets (Bolo et al., 2012).
Model Term	Error Term	ε_t	Model disturbance term.

For data analysis, the collected data were first transferred to Microsoft Excel spreadsheets. After data organization and required calculations, econometric analysis was conducted using EViews 9 software.

Findings and Results

Table 2 presents the descriptive statistics of the study variables, reporting descriptive parameters separately for each variable. These parameters mainly include measures of central tendency such as maximum, minimum, mean, and median, as well as dispersion indicators including standard deviation, skewness, and kurtosis. Skewness represents the degree of asymmetry in the frequency distribution curve. A skewness coefficient equal to zero indicates a perfectly symmetric distribution; a positive value indicates right skewness, whereas a negative value indicates left skewness, as shown in Table 2.

Table 2. Descriptive Statistics of Research Variables

Variable Name	Symbol	Mean	Median	Maximum	Minimum	Std. Deviation	Skewness	Kurtosis
Investors' Trading Behavior	R1 & R2	0.131	0.114	0.554	0.321	0.133	1.512	4.735
	CAR	0.763	0.734	0.874	0.128	0.362	0.634	3.347
Corporate Social Responsibility	CSR	0.576	0.487	0.843	0.118	0.225	2.435	5.746
Information Ambiguity	AM	0.631	0.600	0.800	0.200	0.152	0.628	3.843
Behavioral Bias – Loss Aversion	U	0.644	0.609	0.945	0.609	0.342	0.453	4.367
Behavioral Bias – Ambiguity Aversion	E	0.184	0.171	0.377	−0.012	0.211	0.618	3.610
Behavioral Bias – Information Salience	Salience	0.631	0.600	0.800	0.200	0.152	0.628	3.843
Behavioral Bias – Investor Short-Termism	SCB	1.644	1.609	1.945	1.609	0.342	0.453	4.367
Financial Leverage	LEV	0.184	0.171	0.377	−0.012	0.211	0.618	3.610
Firm Size	Size	0.683	0.693	0.912	0.215	0.274	−1.748	3.638
Return on Assets	ROA	0.427	0.407	0.584	0.168	0.258	1.512	4.735

Before estimating the model, it was necessary to test for the absence of multicollinearity among the independent variables. To examine the presence or absence of multicollinearity, correlation analysis using Pearson correlation coefficients was employed. Table 3 presents the Pearson correlation coefficients among the research variables.

Table 3. Multicollinearity Test of Research Variables (Pearson Correlation Matrix)

Variable	R1&R2	CAR	CSR	AM	U	E	Salience	SCB	LEV	Size	ROA
R1&R2	1										
CAR	0.348	1									
CSR	−0.106	0.158	1								
AM	0.051	0.134	0.085	1							
U	0.087	0.062	0.032	0.116	1						
E	0.238	0.174	0.072	0.162	0.123	1					
Salience	0.047	0.036	0.084	0.143	0.242	0.041	1				
SCB	0.472	0.372	0.092	0.114	0.008	0.007	0.091	1			
LEV	0.021	0.019	0.033	0.038	0.087	0.039	0.052	0.249	1		
Size	0.044	0.062	0.084	0.114	0.238	0.161	0.087	0.099	0.113	1	
ROA	0.051	0.174	0.092	0.038	0.047	0.083	0.034	0.015	0.073	0.044	1

Based on Table 3, the relatively low correlation coefficients indicate the absence of severe multicollinearity among the explanatory variables that could bias regression results.

To ensure the validity of regression relationships and avoid spurious results, stationarity tests and unit root tests were conducted for all research variables (Table 4). These tests were performed using EViews 9 software and included the Levin, Lin, and Chu (2002) test, the Im, Pesaran, and Shin (2003) test, the Fisher Augmented Dickey–Fuller test, and the Fisher Phillips–Perron (1994) test. In unit root testing, the null hypothesis indicates the presence of a unit root. When the probability value is less than .05, the null hypothesis is rejected at the 95% confidence

level. The results demonstrate that all variables are stationary across all testing methods; therefore, the null hypothesis of a unit root is rejected.

Table 4. Unit Root Test Results for Research Variables (Levin–Lin–Chu Test)

Variable	Test Statistic	Probability
R1 & R2	−6.26	0.000
CAR	−8.39	0.000
CSR	−31.46	0.000
AM	−5.96	0.000
U	−21.42	0.000
E	−28.24	0.000
Salience	−36.633	0.000
SCB	−24.056	0.000
LEV	−18.435	0.000
Size	−210.688	0.000
ROA	−16.270	0.000

The estimation results of the model using the Estimated Generalized Least Squares (EGLS) method are summarized in Table 4. The F-statistics reported for the regressions indicate that the panel least squares model with fixed effects fitted to the research data is statistically significant. The adjusted coefficient of determination exceeds 50%, demonstrating that variations in the dependent variable are adequately explained by independent and control variables. The Durbin–Watson statistics fall within the range of 1.5 to 2.5, confirming the absence of autocorrelation in the model. Based on the estimated coefficients and reported significance levels—most of which are below .05—all research hypotheses are supported ($p < .05$).

Discussion and Conclusion

The findings of this study provide important empirical evidence regarding the interplay between corporate social responsibility (CSR), information ambiguity, behavioral biases, and investors' trading behavior in capital markets. The results demonstrate that CSR disclosure has a significant positive association with investors' trading behavior, indicating that socially responsible firms contribute to improving market decision quality and stabilizing investment responses. This finding aligns with prior research suggesting that CSR acts as an informational signal that enhances transparency and reduces uncertainty perceived by investors. CSR disclosure expands the informational environment surrounding firms, allowing market participants to form more accurate expectations regarding long-term performance and risk exposure (1, 5).

The significant relationship observed between CSR and trading behavior supports the signaling theory perspective, according to which CSR activities convey credible information about managerial quality, ethical commitment, and risk management capability. Earlier studies confirm that voluntary CSR disclosure reduces information asymmetry and enhances investor confidence, thereby influencing market reactions and trading decisions (6, 7). Similarly, evidence indicates that CSR improves investment efficiency, especially under uncertain economic conditions, because investors interpret responsibility initiatives as indicators of organizational resilience and sustainable strategic orientation (11, 12). The present findings extend this literature by demonstrating that CSR influences not only firm-level outcomes but also investor behavioral responses reflected in trading patterns.

The results further reveal a significant relationship between information ambiguity and investors' trading behavior. Information ambiguity increases uncertainty in evaluating firm prospects, leading investors to rely more heavily on subjective interpretations and heuristics. This outcome is consistent with prior research demonstrating

that asymmetric information affects asset pricing, investor reactions, and market efficiency (3, 13). When financial and non-financial information lacks clarity, investors face difficulty distinguishing between firm fundamentals and market noise, which alters trading intensity and risk-taking behavior. Studies show that improved disclosure environments reduce informational gaps and support more rational investment decisions (14, 15).

The observed impact of information ambiguity also corresponds with recent findings emphasizing the importance of disclosure quality rather than disclosure quantity. Research indicates that ambiguity embedded within CSR narratives, earnings announcements, or corporate communications can significantly shape investor perception and market responses (21). Therefore, the results confirm that transparency remains a central determinant of investor behavior, reinforcing arguments that capital markets are strongly influenced by information structure and interpretability.

A central contribution of this study concerns the moderating role of behavioral biases in shaping the relationship between CSR and trading behavior. The results demonstrate that behavioral biases significantly influence how investors interpret CSR information, confirming insights from behavioral finance theory. Investors do not respond uniformly to CSR disclosure; instead, psychological tendencies such as loss aversion, ambiguity aversion, and short-term orientation affect decision-making processes under uncertainty. Prior literature shows that behavioral biases generate correlated speculation and deviations from rational pricing, particularly when investors interpret non-financial disclosures differently (2). The current findings provide empirical confirmation that behavioral factors mediate the effectiveness of CSR signals in capital markets.

Loss aversion, specifically, appears to intensify the influence of CSR on trading behavior. Investors who are sensitive to potential losses tend to interpret CSR engagement as a risk-reducing mechanism, encouraging more stable investment decisions. Previous studies indicate that CSR reduces perceived downside risk and protects firm reputation during negative events, thereby moderating investor reactions (19, 20). This interpretation suggests that CSR disclosure functions as psychological insurance, decreasing fear-driven trading responses.

Ambiguity aversion also significantly moderates the CSR–trading behavior relationship. Investors who dislike uncertainty place greater value on CSR disclosure because it provides supplementary information beyond traditional financial metrics. Empirical evidence shows that CSR transparency reduces informational opacity and improves capital market outcomes by enhancing credibility and monitoring efficiency (18, 29). Consequently, the findings indicate that CSR plays a stronger role in guiding investment behavior when investors face uncertain informational environments.

The moderating effect of information salience further supports the behavioral interpretation of market reactions. Investors tend to focus disproportionately on highly visible information, meaning that salient CSR disclosures attract stronger market attention and influence trading decisions more intensely. Research demonstrates that analyst focus and media attention amplify the economic consequences of CSR disclosure by shaping investor awareness and interpretation (16, 17). Hence, the present results confirm that the cognitive prominence of CSR information determines its effectiveness in influencing trading outcomes.

Short-term investor orientation also significantly moderates the relationship between CSR and trading behavior. Short-term investors may undervalue long-term sustainability initiatives, whereas long-term oriented investors perceive CSR engagement as a signal of future performance stability. Earlier studies suggest that CSR contributes to long-term value creation and sustainable development performance, which appeals primarily to investors with

extended investment horizons (24, 27). The findings therefore highlight heterogeneity among investors as an essential determinant of market responses to corporate responsibility activities.

The study also demonstrates that behavioral biases significantly influence the relationship between information ambiguity and trading behavior. Under ambiguous informational conditions, investors increasingly rely on psychological heuristics rather than objective analysis, amplifying market volatility and trading deviations. Evidence indicates that analyst optimism bias, speculative trading, and earnings reaction anomalies are strongly associated with informational uncertainty (22, 23). The results confirm that behavioral biases serve as transmission mechanisms through which information ambiguity affects market behavior.

Moreover, CSR disclosure appears to partially offset the negative consequences of information ambiguity. Prior research suggests that CSR reporting enhances firm legitimacy and reduces investor distrust toward corporate disclosures (4). Similarly, studies demonstrate that investors reward firms whose CSR activities signal accountability and social commitment, thereby reducing informational frictions (9, 10). The findings of this study reinforce this argument by showing that CSR moderates behavioral responses even when informational ambiguity persists.

Another important implication concerns investment efficiency and capital allocation. CSR disclosure contributes to more efficient capital markets by improving investors' interpretation of firm performance signals. Previous evidence indicates that CSR reduces equity capital costs and improves market responses to earnings information, particularly when disclosure credibility is high (25, 34). The present results extend this insight by demonstrating that improved information environments influence trading behavior directly, not merely financial outcomes.

Furthermore, CSR engagement strengthens organizational legitimacy and stakeholder trust, which are essential for sustainable financial performance. Firms integrating CSR into strategic decision-making benefit from enhanced reputation and investor support, reinforcing positive market feedback loops (32, 33). This supports theoretical perspectives suggesting that CSR serves as both a governance mechanism and a behavioral influence shaping investor expectations.

Collectively, the findings contribute to the growing literature integrating sustainability, information economics, and behavioral finance. The results confirm that investor behavior emerges from the interaction between disclosure practices, informational structures, and psychological decision processes. CSR reduces information asymmetry, behavioral biases modify interpretation processes, and information ambiguity determines the degree of reliance on cognitive shortcuts. Such an integrated framework advances understanding of capital market behavior beyond traditional rational models.

Despite its contributions, this study has several limitations that should be acknowledged. First, the analysis relies on publicly available financial and disclosure data, which may not fully capture informal information channels influencing investor decision-making. Second, behavioral biases were measured using proxy indicators rather than direct psychological assessments, which may limit the precision of behavioral interpretation. Third, the study focuses on firms listed within a specific capital market context; therefore, institutional characteristics and regulatory environments may restrict the generalizability of findings to other markets. Additionally, the observational nature of the research design limits causal inference, as unobserved variables may simultaneously influence CSR disclosure and trading behavior.

Future research could expand the investigation by incorporating cross-country comparative analyses to examine how institutional quality, investor protection mechanisms, and cultural dimensions influence the interaction between CSR disclosure and behavioral biases. Longitudinal behavioral experiments or survey-based methodologies may

also provide deeper insight into investors' cognitive processes underlying trading decisions. Researchers may further explore nonlinear relationships between CSR engagement and trading behavior, particularly during financial crises or periods of extreme market volatility. Another promising direction involves integrating artificial intelligence–based sentiment analysis of CSR reports to examine how linguistic tone influences behavioral reactions in real time.

From a practical perspective, corporate managers should recognize CSR disclosure as a strategic communication tool capable of shaping investor perceptions and stabilizing trading behavior. Firms are encouraged to enhance transparency, ensure consistency between CSR commitments and operational practices, and present responsibility initiatives in clear and credible formats. Financial regulators and stock exchanges may promote standardized CSR reporting frameworks to reduce information ambiguity and improve market efficiency. Investors and portfolio managers should also incorporate behavioral awareness into decision-making processes, recognizing how cognitive biases influence responses to corporate information and sustainability disclosures.

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Authors' Contributions

All authors equally contributed to this study.

Declaration of Interest

The authors of this article declared no conflict of interest.

Ethical Considerations

All ethical principles were adheried in conducting and writing this article.

Transparency of Data

In accordance with the principles of transparency and open research, we declare that all data and materials used in this study are available upon request.

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