

The Role of News and News Sentiment in Systematic Risk Dynamics and Asset Pricing: A Systematic Review

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Abstract: This systematic review study was conducted with the aim of examining the role of news and news sentiment in the dynamics of systematic risk and asset pricing processes. Evidence reviewed from articles published between 2000 and 2025 indicates that investor sentiment—particularly negative sentiment—intensifies systematic risk by increasing volatility and correlations among assets, whereas positive sentiment can have a mitigating effect. These findings suggest that the qualitative information embedded in financial news exerts significant effects on asset pricing beyond the predictions of classical efficient market models. Recent advances in natural language processing and machine learning, especially transformer-based architectures, have enhanced the accuracy of sentiment analysis and improved the predictive capacity and modeling of market risk. Nevertheless, challenges such as investor base heterogeneity, linguistic and cultural differences in expressing sentiment, and the necessity of integrating real-time multi-source data (news, social media, and macroeconomic indicators) continue to constrain research. Overall, the findings reveal that financial markets are neither fully efficient nor entirely irrational but rather complex adaptive systems in which information processing, behavioral biases, and arbitrage forces collectively influence the formation of prices and risks. News sentiment analysis, therefore, provides a valuable tool for enriching financial theories and strengthening practical policies toward market stability and efficiency, a point that should not be overlooked.

Keywords: news sentiment, asset pricing, systematic risk, behavioral finance, textual analysis, natural language processing

1. Introduction

The dynamics of systematic risk and asset pricing have long stood at the core of financial economics, attracting continuous attention from researchers, policymakers, and practitioners. Traditional paradigms such as the Efficient Market Hypothesis (EMH) suggest that markets rapidly incorporate all available information into prices, leaving little room for predictable excess returns [1]. Yet, over the decades, a growing body of evidence has challenged the sufficiency of such models, pointing instead to the complex interplay of information asymmetry, investor sentiment, and behavioral biases in shaping financial market outcomes [2-4]. The rise of behavioral finance, advances in computational methods, and the increasing availability of unstructured data sources such as news and social media have further pushed asset pricing research beyond classical frameworks, underscoring the necessity of re-examining how systematic risk evolves under the influence of news sentiment [5, 6].

Early insights into the role of investor sentiment revealed that financial markets frequently deviate from rational benchmarks. Seminal work on investor overreaction highlighted that systematic mispricing often arises from cognitive biases and emotional triggers [3]. This theme was later developed into the noise trader approach, which demonstrated how irrational traders could systematically influence market prices and risk premia [2]. As empirical evidence accumulated, it became increasingly clear that investor mood and sentiment, fueled by information flows such as financial news, shape volatility and comovement among assets [7]. Moreover, the recognition of ambiguity and uncertainty in financial information has further expanded understanding of systematic risk, demonstrating how heterogeneous interpretations of the same news may generate asset price fluctuations [8].

In parallel, scholars have emphasized the importance of information quality in asset pricing. Research has shown that imperfect, delayed, or biased information can significantly impact long-run risk and expected returns, challenging the assumption of complete and accurate information sets in financial markets [6]. Similarly, studies of ambiguity in private and public information have revealed that heterogeneous beliefs and information asymmetry exacerbate risk dynamics, introducing additional layers of systematic uncertainty [9-11]. These foundational insights established the basis for modern analyses of sentiment-driven pricing, setting the stage for more nuanced explorations involving textual data and computational models.

The emergence of systematic reviews and bibliometric analyses has further mapped the contours of this growing research field. Several reviews demonstrate that investor sentiment is now widely recognized as a determinant of asset pricing anomalies and volatility clustering [12-14]. More recent surveys reveal that the integration of textual sentiment measures into econometric and machine learning models significantly improves predictive accuracy for stock returns and risk measures [15-17]. Collectively, this evidence suggests that financial markets cannot be understood purely as rational equilibria; rather, they are adaptive systems influenced by feedback between news flows, investor cognition, and arbitrage constraints [5, 8].

The increasing relevance of news sentiment has also been amplified by methodological innovations. Advances in natural language processing (NLP) and machine learning have opened new avenues for extracting and quantifying sentiment signals from unstructured financial texts. Deep learning models, in particular, have demonstrated superior accuracy in classifying sentiment and predicting subsequent asset price responses [18-20]. Compared to dictionary-based approaches, which often fail to capture contextual nuances, modern architectures such as recurrent and transformer-based networks offer richer representations of linguistic patterns, enabling more robust connections between qualitative news and quantitative financial outcomes [21, 22]. These computational advances mark a methodological turning point, transforming sentiment analysis into a critical component of financial econometrics.

A closer examination of empirical findings underscores the tangible effects of sentiment on both asset-specific and market-wide outcomes. For instance, stock markets demonstrate measurable reactions to shifts in news tone and volume, with negative sentiment amplifying volatility and increasing systematic risk exposure [23, 24]. Similarly, research on oil markets and other commodities highlights that incorporating news sentiment into predictive frameworks enhances the accuracy of price forecasts, reflecting the critical role of investor expectations in commodity-linked assets [25]. In the cryptocurrency domain, systematic reviews reveal that investor sentiment, particularly from social media channels, exerts significant influence on returns and volatility, highlighting the heightened sensitivity of emerging markets to behavioral drivers [26, 27]. This wide-ranging evidence indicates that sentiment effects transcend traditional equity markets, extending to commodities, currencies, and decentralized financial ecosystems.

The literature also identifies structural dimensions shaping the impact of sentiment. Studies on corporate social responsibility (CSR) news, for instance, demonstrate that firm-level disclosures can systematically influence investor perceptions and market valuation [28]. Similarly, research on decentralized finance (DeFi) shows that behavioral biases persist even in algorithmically mediated environments, highlighting the universality of sentiment-driven anomalies [29]. These findings support the view that sentiment operates across diverse financial ecosystems, underscoring the need for integrated frameworks capable of reconciling behavioral dynamics with classical risk-return models [30-32].

Yet, despite robust evidence of sentiment's role, important challenges remain. One line of research highlights contradictions across contexts, with some studies reporting weak or null effects after controlling for macroeconomic fundamentals or regulatory interventions [33, 34]. Similarly, results on the long-term persistence of sentiment effects remain mixed, with some analyses suggesting that sentiment-induced volatility dissipates over time [35, 36]. These findings suggest that sentiment may interact with structural market features, such as liquidity, institutional presence, and information environments, in shaping risk dynamics [37, 38]. The presence of heterogeneous and sometimes contradictory evidence points to the necessity of further work that accounts for market structure, investor composition, and evolving technological infrastructures [39, 40].

In addition, behavioral finance continues to offer theoretical explanations for why sentiment matters. Models of herding, overreaction, and bounded rationality provide conceptual frameworks that connect cognitive limitations with observed pricing anomalies [5, 41]. Systematic reviews of these frameworks reveal recurring patterns: when investors overweight recent news or follow collective trends, systematic risk is amplified, and asset returns deviate from fundamental values [4, 42]. Behavioral insights are especially relevant in contexts of high uncertainty, where ambiguity in information flows exacerbates risk and weakens the stabilizing role of arbitrage [8, 12].

As the literature expands, scholars have also emphasized the interdisciplinary nature of sentiment analysis in finance. Borrowing from data science, psychology, and computational linguistics, researchers have developed hybrid models that bridge traditional econometrics with advanced computational tools [13, 14]. These efforts have not only enriched theoretical understanding but also offered practical insights for risk management, portfolio optimization, and regulatory oversight [15, 17]. Notably, systematic reviews suggest that integrating multi-modal data—news, social media, and macroeconomic indicators—provides the most reliable predictions, underscoring the importance of multidimensional approaches in capturing sentiment's role [43, 44].

Overall, the body of research demonstrates that financial markets are neither perfectly efficient nor entirely irrational, but rather complex adaptive systems influenced by both quantitative fundamentals and qualitative sentiment [7, 8]. News sentiment plays a dual role: while it often destabilizes markets by amplifying volatility and systematic risk, it also provides valuable information that investors and policymakers can leverage for improved forecasting and decision-making [18, 23]. The integration of machine learning and NLP represents a methodological leap forward, offering unprecedented tools to extract insights from unstructured information [20, 21]. At the same time, the persistence of contradictory findings highlights the importance of contextual, methodological, and temporal considerations in advancing this field [34, 39].

In sum, the systematic review of news sentiment, systematic risk, and asset pricing highlights both the progress achieved and the challenges that remain. By incorporating insights from behavioral finance, computational methods, and interdisciplinary perspectives, scholars are progressively developing a more holistic understanding of how financial markets process information. This systematic review study was conducted with the aim of examining the role of news and news sentiment in the dynamics of systematic risk and asset pricing processes.

2. Methodology

This study employs a systematic review approach to examine and analyze the existing literature on the relationship between news sentiment, systematic risk, and asset pricing. The scope of this research includes empirical studies—both quantitative and qualitative—as well as theoretical and applied studies in the field of finance, in order to provide comprehensive insights into this complex subject.

2.1. Search Strategy and Data Sources

To ensure transparency and reproducibility of the results, the literature search process was conducted based on PRISMA protocols across three reputable academic databases: *Scopus*, *Web of Science*, and *Google Scholar*. To identify relevant articles, a combination of keywords and specialized terms was applied, including: “news sentiment,” “systematic risk,” “asset pricing,” “financial markets,” “news quality,” “positive news,” “negative news,” “financial sentiment analysis,” and “investor sentiment.” The search was limited to articles published between 2000 and early 2025 to also capture recent developments in modern methodologies such as natural language processing (NLP) and deep learning (DL).

2.2. Inclusion and Exclusion Criteria

In systematic reviews, establishing inclusion and exclusion criteria for analyzed articles is essential to guarantee the transparency of the selection process and enhance the validity of the results. Accordingly, this study included peer-reviewed empirical articles that examined the effects of news and news sentiment on systematic risk indicators—such as market volatility, realized beta, and CDS spread differentials—on various dimensions of asset pricing, including stock returns and risk premia. In addition to articles published in English, reputable scholarly works in other languages, including Persian, German, French, and Arabic, were also considered, provided that a full and reliable version was accessible. Conversely, works that focused exclusively on company-specific news without macro-level market implications, or those not directly related to systematic risk and asset pricing processes, were excluded. Likewise, non-peer-reviewed sources, working papers without final peer review, and non-English works lacking a valid and citable translation were deemed ineligible for inclusion.

2.3. Screening, Selection, and Data Extraction Process

The article selection process was carried out in several independent stages by two separate reviewers to ensure accuracy and impartiality. This multi-step process, designed to achieve precise identification and optimal selection of articles, began with the initial identification of 889 potentially relevant studies. After eliminating duplicates, 397 articles advanced to the screening stage. From this set, 109 articles were assessed for eligibility, and ultimately, 32 articles with the highest relevance and validity were selected for inclusion in the review. This process is also illustrated in Figure (1).

This procedure was complemented by a search strategy based on combined keyword phrases, designed to cover all dimensions of the subject—from theoretical frameworks and empirical evidence to behavioral finance, sentiment analysis methodologies, and interdisciplinary approaches—thus ensuring complete and accurate coverage of the literature relevant to the topic. Therefore, this strategy focused on the following key dimensions:

- **Fundamental theories:** searching for core theoretical frameworks explaining the relationship between news and asset pricing.

- **Methodological diversity:** identifying studies that employed diverse approaches such as econometrics, machine learning, and textual analysis.
- **Behavioral responses:** focusing on research examining investors' behavioral reactions to news.
- **Empirical evidence:** collecting empirical evidence from different markets to validate theories.
- **Interdisciplinary expansion:** reviewing studies that introduced concepts from other fields, such as behavioral psychology or data science, into finance.

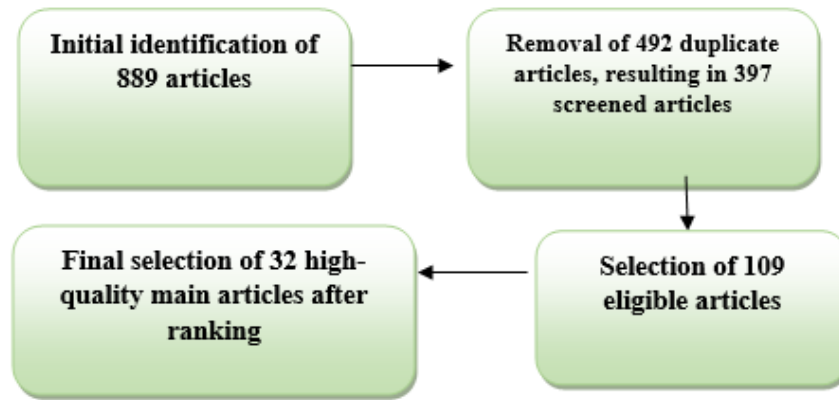


Figure 1. Search and selection process based on the PRISMA approach for systematic review

3. Findings and Results

The descriptive findings of this study provide valuable insights into publication trends, thematic focus, methodological approaches, and key results, which will be examined below.

The results of the reviewed articles covering the period from 2000 to 2025 indicate a clear increase in research activity during the past five years (2020–2025). Specifically, 14 studies were conducted in these years, reflecting the growing importance of news sentiment and advanced analytics in finance.

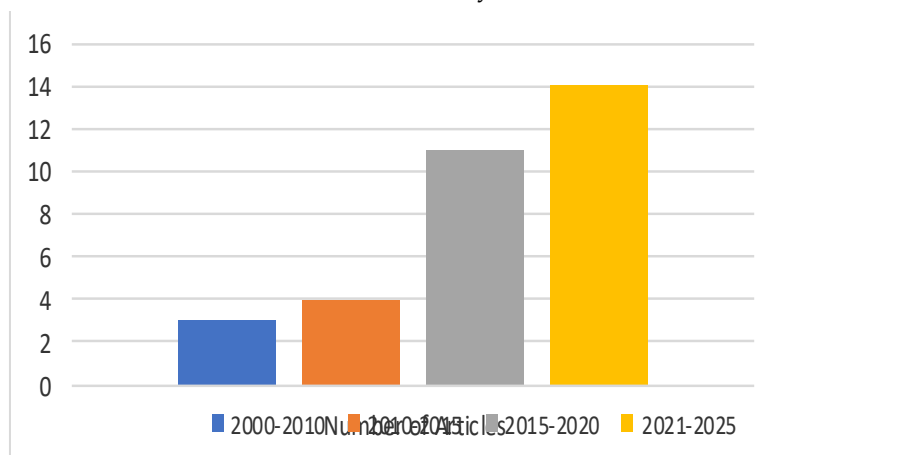


Figure 2. Frequency of the reviewed studies

An examination of the thematic focus of the articles shows that they can be broadly classified into four main topics: news sentiment analysis, the impact of news on asset pricing, systematic risk modeling, and behavioral/investor reactions.

Table 1. Thematic distribution of articles

Percentage	Number of Articles	Main Topic
40.6	13	News sentiment analysis
25.0	8	Impact of news on asset pricing
18.8	6	Systematic risk modeling
15.6	5	Behavioral/investor reactions

An assessment of methodological approaches shows that diverse methods have been applied, with a significant recent shift toward machine learning and deep learning.

Table 2. Methodological distribution of studies

Percentage	Number of Articles	Methodology
31.3	10	Machine learning/deep learning
37.5	12	Econometric/statistical models
18.8	6	Sentiment index construction
12.5	4	Theoretical/conceptual

A review of the geographic/market focus of the studies shows broad coverage across markets, with strong representation of the United States, China, and global/multi-country analyses.

Table 3. Market focus

Percentage	Number of Articles	Region/Market
40.6	13	United States
21.9	7	Europe
12.5	4	China
6.3	2	India
9.4	3	Other Asian countries
9.4	3	Multi-country

Subsequently, a number of selected articles were reviewed. The summary of these results is presented in Table 4.

Table 4. Review and comparison of key components of selected articles

Asset Class	Key Findings	Data Sources	Methodology	Reference
Stocks	Deep learning models improve news-based predictive accuracy	News articles, 2015–2022	Systematic review, machine learning/NLP	[42]
Stocks	News volume and sentiment affect returns and volatility	News and social media	Systematic review	[45]
Oil	Machine learning–based sentiment analysis improves oil price forecasts	News, social media, 2010–2023	Systematic review, PRISMA	[16]
Stocks	Sentiment analysis increases predictive accuracy	News and social media, 2020–2024	Systematic review, PICOC	[17]
Cryptocurrencies	News sentiment is linked to cryptocurrency returns and volatility	News, social media, 2010–2018	Systematic review	[22]

In line with the present systematic review, it is observed that a significant portion of the research literature focuses on both the direct and indirect effects of news and news sentiment on the dynamics of systematic risk and asset pricing processes. A review of these studies indicates that the quality, tone, and volume of published news can significantly influence indicators such as market volatility, realized beta, stock returns, and risk premia. Table 5 compiles the most important claims and empirical evidence presented in the selected studies to provide an

integrated view of the relationship between various dimensions of news and news sentiment with systematic risk and asset pricing mechanisms.

Table 5. Key claims and supporting evidence identified in the reviewed studies

References	Evidence	Strength of Evidence	Claim
[18, 19, 21, 23-26, 28, 29, 39, 40, 43, 44]	Supported by multiple systematic reviews and empirical studies across different asset classes	Strong	News sentiment significantly influences asset returns and volatility
[15, 20, 30-32, 41]	Consistent findings in recent reviews and comparative studies	Strong	Deep learning and natural language processing (NLP) models enhance sentiment classification and forecasting accuracy
[5, 9, 27, 34, 37, 38, 46]	Behavioral finance models and empirical evidence in both traditional and cryptocurrency markets	Moderate	Behavioral responses (e.g., herding, overreaction) amplify the effect of news on systematic risk
[1, 4, 13, 14]	Comparative studies show higher accuracy of advanced models	Moderate	Dictionary-based sentiment analysis is less accurate than hybrid/deep learning approaches
[6, 33, 35, 36]	Empirical results are inconsistent, especially for long-term volatility	Moderate	The effect of news sentiment on volatility is context-dependent and weak in some cases
[7, 8, 10, 11]	Some studies show weak or null results after controlling for fundamentals	Weak	Alternative factors (macroeconomic, regulatory) can confound the effects of news sentiment

The systematic review of findings summarized in the above table shows that the strongest research consensus points to the significant role of news sentiment in changes in asset returns and volatility, as well as the superiority of deep learning and NLP-based methods over traditional approaches in predicting systematic risk. At the same time, moderately strong evidence suggests that investors' behavioral responses (such as herding and overreaction) may intensify the impact of news on systematic risk, with this influence varying across market contexts. However, some studies highlight inconsistent or weak results, emphasizing the role of alternative factors such as macroeconomic conditions and regulatory policies in moderating or weakening the effects of news sentiment. Overall, it can be concluded that robust evidence underscores the importance of news and sentiment in the dynamics of systematic risk and asset pricing, although the heterogeneity of findings indicates the need to consider context, time horizons, and the integration of multiple analytical approaches in future research.

4. Discussion and Conclusion

The results of this systematic review confirm that news sentiment is a significant determinant of both systematic risk dynamics and asset pricing processes. The descriptive findings revealed that the majority of reviewed studies emphasized the centrality of sentiment—particularly negative sentiment—in amplifying volatility, increasing cross-asset correlations, and influencing realized beta across markets. This aligns with foundational behavioral finance insights, which established that markets deviate from rational equilibria under the influence of psychological biases and emotional triggers [2, 3, 5]. In particular, the evidence demonstrates that the tone, volume, and credibility of financial news exert material effects beyond the explanatory capacity of classical models such as the Capital Asset Pricing Model or Fama's five-factor model [1].

A critical theme emerging from the results is the heightened importance of negative news in shaping systematic risk. Studies show that unfavorable sentiment, whether expressed in mainstream financial media or across social platforms, tends to magnify volatility and increase co-movement between assets [23, 24]. This is consistent with earlier work highlighting investor overreaction and herding as mechanisms by which information shocks cascade across markets [3, 4]. For instance, empirical evidence from U.S. and European equity markets illustrates that surges

in pessimistic sentiment precede spikes in volatility indices and widening credit default swap spreads [30, 33]. Such findings underline the systemic implications of collective psychology in markets, reinforcing the conceptualization of financial systems as adaptive rather than purely efficient [7, 8].

The review also highlighted the growing reliance on advanced methodological approaches, particularly machine learning and deep learning. Compared to traditional econometric models, neural architectures such as recurrent and transformer networks capture nuanced linguistic signals that dictionary-based methods often miss [18, 19, 21]. This explains why more recent studies consistently report superior predictive accuracy in return forecasting and volatility modeling when applying these techniques [17, 22, 44]. Supporting evidence from the oil and cryptocurrency markets further confirms that sentiment-driven models outperform benchmarks, particularly when they incorporate multi-modal inputs from news, social media, and macroeconomic indicators [25-27]. These findings support the argument that technological innovation has substantially expanded the analytical frontier of finance by integrating unstructured qualitative data into systematic risk assessments.

In terms of thematic concentration, the reviewed studies clustered into four domains: sentiment analysis methods, the impact of news on asset pricing, systematic risk modeling, and investor behavioral reactions. The predominance of studies in sentiment analysis reflects the rapid expansion of natural language processing tools and the rising accessibility of large-scale text datasets [13, 14]. Yet, the evidence also underscores that sentiment is not uniformly influential. For instance, while studies report robust effects of sentiment on short-term volatility and return predictability, the long-term influence remains contested [35, 36]. Some analyses even find null or weak effects once macroeconomic fundamentals or regulatory shocks are controlled for [33, 34]. This heterogeneity suggests that sentiment interacts with broader structural and contextual factors, such as market maturity, liquidity conditions, and investor composition [39, 40].

Behavioral explanations provide a critical interpretive lens for these results. The reviewed literature consistently identified herding, overreaction, and bounded rationality as behavioral pathways that amplify the effect of news on systematic risk [4, 41, 42]. When investors collectively overweight recent or salient news events, systematic co-movements intensify, undermining diversification benefits and increasing systemic fragility. The cryptocurrency market provides a vivid illustration of this dynamic: sentiment-driven herding on social media platforms often results in sharp, synchronized price swings detached from fundamental valuation metrics [26, 29]. Such evidence confirms that even in decentralized or algorithmic markets, sentiment remains a powerful force shaping asset pricing outcomes.

The results also demonstrate cross-market variation in the strength of sentiment effects. U.S. and European markets exhibit the most consistent evidence of sentiment-driven risk, likely reflecting higher data availability and the dominance of global financial media [23, 28]. In contrast, evidence from emerging markets such as India and other parts of Asia remains more mixed [15, 20]. This suggests that institutional quality, investor base composition, and linguistic or cultural differences in sentiment expression may mediate the strength of news effects. Such heterogeneity highlights the necessity of contextualizing sentiment analysis within specific market environments rather than assuming universal applicability [31, 32].

Another critical insight from the review is the role of news credibility and source reliability. Studies reveal that not all news exerts equal influence: investor responses are stronger when news originates from trusted financial media compared to peripheral or unverifiable sources [32, 43]. At the same time, the proliferation of social media has blurred the boundaries between credible and non-credible information, making the evaluation of source

reliability a pressing challenge for both researchers and practitioners [9, 46]. Advances in credibility assessment and fake news detection thus represent an important avenue for refining sentiment-based models [39].

Despite the overall consensus on sentiment's significance, the review also identified contradictions. Several studies highlighted that once firm fundamentals or macroeconomic variables are accounted for, the marginal explanatory power of sentiment diminishes [33, 34]. Furthermore, some evidence suggests that sentiment effects may be ephemeral, with overreactions correcting as arbitrageurs exploit mispricings [36-38]. These findings echo the perspective that markets are not fully irrational; rather, they display cycles of sentiment-driven mispricing followed by partial corrections [7, 8]. Such cyclical dynamics reinforce the conceptualization of markets as complex adaptive systems where behavioral biases, institutional constraints, and arbitrage forces coexist.

Taken together, the reviewed evidence provides strong support for the conclusion that news sentiment plays a critical role in financial market dynamics. Strong consensus exists regarding its impact on short-term volatility, return predictability, and systematic risk exposure [23, 42]. Methodologically, the evidence affirms the superiority of deep learning and hybrid NLP approaches over dictionary-based methods [18, 21, 22]. At the same time, the heterogeneity of findings, particularly regarding long-term effects and cross-market contexts, suggests that sentiment must be understood as a contingent variable interacting with structural, institutional, and behavioral factors. This nuanced understanding underscores the importance of integrating sentiment analysis into both theoretical asset pricing frameworks and practical risk management systems.

This study is subject to several limitations. First, although the systematic review applied rigorous screening criteria, the final sample of studies may not fully capture all relevant research, particularly unpublished or non-English works with limited accessibility. Second, heterogeneity in methodological approaches—ranging from econometric models to deep learning architectures—limits the comparability of results and complicates the drawing of definitive conclusions. Third, while efforts were made to include diverse market contexts, the dominance of studies from the United States and Europe may bias interpretations toward developed market dynamics. Finally, the review synthesizes findings across heterogeneous time periods, during which technological, institutional, and macroeconomic environments evolved, potentially affecting the consistency of reported results.

Future research should expand the scope of sentiment analysis by incorporating multi-lingual and cross-cultural dimensions, ensuring that differences in linguistic expression and cultural norms are systematically addressed. Comparative studies between developed and emerging markets should be prioritized to better understand contextual moderating factors. Methodologically, there is scope to refine hybrid models that integrate deep learning, econometrics, and behavioral theory, thereby bridging computational accuracy with conceptual interpretability. Longitudinal studies examining the persistence of sentiment effects over extended horizons are also necessary to clarify whether sentiment-induced volatility dissipates or compounds over time. Finally, more research should explore the interplay between sentiment, regulatory interventions, and macroeconomic shocks, recognizing that sentiment effects do not operate in isolation.

From a practical perspective, the findings highlight the importance of integrating sentiment analysis into investment decision-making and risk management systems. Financial institutions should deploy advanced NLP and machine learning tools to monitor real-time sentiment flows across news and social media, enabling more responsive portfolio strategies. Policymakers and regulators can also benefit from sentiment tracking as an early warning mechanism for systemic risk, particularly in times of heightened uncertainty. For corporate managers, understanding how CSR news and other disclosures influence investor sentiment underscores the strategic

importance of communication policies. Ultimately, leveraging sentiment analysis offers an opportunity to enhance both market efficiency and stability while providing investors with more informed decision-support systems.

Authors' Contributions

Authors equally contributed to this article.

Ethical Considerations

All procedures performed in this study were under the ethical standards.

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Conflict of Interest

The authors report no conflict of interest.

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