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RESEARCH ARTICLE

Analysis of Indexed Scientific Productions Related to the Subject Area of Investor Sentiment in Web Of Science Database and Construction of A Scientific Map

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Abstract

This study provides an in-depth analysis of the development and intellectual structure of investor sentiment, a field that has emerged as a central topic in behavioral finance. Given its broad influence on financial and economic variables, identifying key research trends, intellectual contributions, and emerging themes is essential. A systematic search of the Web of Science (WoS) database was conducted in March 2025 using selected keywords, yielding 4,546 relevant publications. Due to the 500-record-per-batch export limit, the data were downloaded in multiple batches in Plain Text format and analyzed using the Bibliometrix package in R. The results indicate substantial growth in research on investor sentiment since the early 2000s. The keyword "investor sentiment" appeared 1,147 times across the dataset. The *International Review of Financial Analysis* leads the field with 158 related publications. Moreover, China and extensive international collaborations have played a significant role in shaping the intellectual landscape of this domain. Overall, investor sentiment is a dynamic, rapidly evolving area of behavioral finance that continues to attract growing global academic attention.

Keywords:
Behavioral Finance, Investor Sentiment, Scientometrics

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1. Introduction

Over the past few decades, financial theories have evolved along two distinct perspectives (Hosseini & Morshedi, 2019). The first perspective, rooted in the neoclassical approach, emerged from the Capital Asset Pricing Model (CAPM) and the Efficient Market Hypothesis (EMH) in the 1960s, followed by the Arbitrage Pricing Theory (APT) in the 1970s (Borji Dolatabad, 2008). This view assumes that investors are rational and that their demand for risky assets is determined solely by fundamental information. Consequently, the trades of irrational investors do not, on average, generate significant pricing errors (Kim & Ha, 2010; Liston & Huerta, 2012). However, over time, numerous studies have shown that the EMH cannot adequately explain specific market movements and anomalies. This led to a behavioral revolution in financial theory (Borji Dolatabad, 2008). The second perspective—behavioral finance—emphasizes the influence of emotions, personality traits, and cognitive judgments on investment decisions. It demonstrates that investors' emotional and psychological biases play a crucial role in price formation, suggesting that some price changes in securities are not driven by fundamental factors (Hosseini & Morshedi, 2019). Behavioral finance has attracted increasing scholarly attention in recent years. The nature of decision-making and the factors influencing investors' choices during the investment process are critical. Contemporary financial research emphasizes investors' psychological characteristics and overall market psychology. Consequently, the focus of financial studies has gradually shifted from purely econometric analyses of prices and returns toward understanding human behavior and cognition, thereby challenging traditional rational frameworks (Rahnamay Roodposhti & Yazdani, 2010; Hosseini & Morshedi, 2019). Behavioral finance investigates how psychological mechanisms influence financial decision-making (Ángeles López-Cabarcos et al., 2020; Taghavi et al., 2023). The impact of emotions on individuals' decisions, judgments, and assessments of future events is well established in psychology (Taghavi et al., 2023). Within this context, investor sentiment represents a key subfield of behavioral finance that examines how investors' emotions affect stock market dynamics (Ángeles López-Cabarcos et al., 2020). It is generally argued that individuals tend to make more optimistic decisions when experiencing positive emotions than when experiencing negative ones. Accordingly, investors' emotional biases reflect varying degrees of optimism and pessimism toward specific stocks (Taghavi et al., 2023). In recent years, investor sentiment has garnered growing academic attention, with researchers approaching the topic from diverse perspectives. Science and technology are recognized as the primary drivers of economic development and societal progress. Consequently, national and international institutions continuously evaluate scientific advancement using various analytical methodologies. Over time, these assessments have evolved into established disciplines such as bibliometrics, webometrics, informetrics, and scientometrics. Scientometrics serves as a fundamental approach for evaluating scientific activities and measuring the advancement of knowledge. Originating in the former USSR, it later gained prominence in Eastern European countries—particularly Hungary—as a means of assessing scientific progress at individual, institutional, national, and international levels. Dobrov and Karennoi were among the first scholars to introduce the term scientometrics, defining it as the quantitative study of the processes underlying scientific information (Sengupta, 1992). Scientometric studies provide valuable insights for researchers and policymakers by mapping the flow of scientific production, dissemination, and utilization, thereby supporting informed decision-making (Mansourian, 2010; Nobakht & Nobakht, 2023).

Although the number of studies on investor sentiment has been steadily increasing, no scientometric research has yet been conducted in Iran to examine the knowledge structure, scientific growth trends, or research collaborations in this field. This absence highlights a significant gap in the existing body of literature. Moreover, a significant challenge is the lack of clear identification of the

most influential authors, countries, institutions, and journals in this domain. Such limitations can impede scientific synergy, international collaboration, and the strategic direction of future research. For instance, co-citation analysis is one of the most widely used techniques for evaluating scientific output and mapping the intellectual structure of a research field (Ebadollah Amoughin et al., 2019). Hart (2000) also emphasized that scientific collaboration contributes to higher-quality publications. Furthermore, without keyword network analysis and conceptual mapping, identifying emerging topics and research trends becomes challenging. Co-word analysis, by quantifying the frequency and co-occurrence of terms, reveals the most prominent themes within a given field (Ebadollah Amoughin et al., 2019). Given the growing importance of investor sentiment in financial and behavioral research, and its critical role in both emerging and developed markets, a scientometric investigation of this area can provide researchers, policymakers, and practitioners with a comprehensive understanding of knowledge development, historical trends, and future opportunities. This underscores the necessity and relevance of conducting the present study, which, to the best of our knowledge, is the first scientometric analysis in Iran to explore the intellectual structure of investor sentiment research.

Given these developments, investor sentiment has emerged as a vital and rapidly evolving field within behavioral finance, influencing research across a wide range of domains. Therefore, a deeper examination of its intellectual foundations and knowledge structure is essential. Accordingly, this study seeks to address the following key research questions: What is the growth trajectory of scientific publications on investor sentiment? Which articles, authors, countries, journals, and universities have been the most influential in shaping this field? What insights can be derived from the co-occurrence network of keywords? What are the emerging research themes and future directions in investor sentiment studies?

2. Theoretical background and literature review

The growing influence of scientometric research on science and technology policymaking is a key driver of this field's expansion (Nobakht, 2020). Scientometric studies play several critical roles in advancing science. The first role involves formulating scientific and research policies and strategies. These studies enable research managers at various levels to gain a comprehensive understanding of the flow of scientific production and, based on that understanding, to develop more effective research plans. The second role concerns the analysis of scientific communication and citation networks. Citation analysis is based on the concept of citation, in which each reference within a scientific publication serves as a link connecting the study to prior research, thereby reflecting its intellectual lineage. The third major role of scientometric research is the quantitative and qualitative evaluation of scientific resources and publications across various fields. This evaluation provides a reliable basis for assessing the accuracy, validity, and credibility of research findings. The fourth role pertains to the measurement and estimation of scientific output, efficiency, and impact. Scientific output is a quantitative measure of the research productivity of individuals, institutions, or countries, independent of other influencing factors (Mansourian, 2010). Collectively, these scientometric functions provide a foundation for strategic planning in large-scale research and policy development (Nobakht & Nobakht, 2022). Meanwhile, behavioral finance examines investors' decision-making from a psychological perspective (Ángeles López-Cabarcos et al., 2020; Taghavi et al., 2023), emphasizing that investors' emotions and mental states significantly influence their financial judgments and choices (Lucey & Dowling, 2005; Blajer-Gołębiewska et al., 2018). Emotions and rationality are fundamental factors influencing investors' decision-making, with individuals often tending toward either emotional or rational choices. The shift from rational to emotional (optimistic or pessimistic) decision-making—commonly referred to as emotional bias—drives emotion-based

investment behavior (Taghavi et al., 2023). Investor emotions have been defined in various ways: as speculative bias or excessive optimism/pessimism (Brown & Cliff, 2004); as general optimism or pessimism toward the stock market (Baker & Wurgler, 2006); as the degree of optimism or pessimism among shareholders regarding a specific stock (Kim & Ha, 2010); and as investors' expectations concerning future cash flows and related risks (Taghavi et al., 2023; Shahab Lavasani et al., 2023). Investor emotions may also stem from trading behavior and irrational beliefs, leading to market overreactions, heightened volatility, and mispricing (Kamath et al., 2022). According to the market personality view within the behavioral finance framework, investors are not perfectly rational but rather "normal," exhibiting systematic biases in their beliefs that cause them to trade based on non-fundamental information—essentially, emotions (Zouaoui et al., 2011). Numerous theoretical and empirical studies have sought to measure investor emotions, with several proposing models that describe the relationship between investor sentiment and asset prices (Black, 1986; De Long et al., 1990). These models categorize investors into two main groups: informed (rational) traders and uninformed (irrational) traders. Informed investors rationally assess asset values based on available information, whereas waves of irrational optimism or pessimism influence noise traders. While rational investors, unaffected by emotional biases, evaluate securities based on their intrinsic value, excessive sentiment among noise traders often leads to persistent mispricing. Within these frameworks, informed and noise traders compete in the marketplace. Informed investors—who aim to align prices with the rational present value of expected future cash flows—face abnormal trading costs and random emotional shocks originating from noise traders. These frictions prevent them from fully arbitrage away the mispricing generated by sentiment-driven traders. Consequently, as long as emotions continue to affect valuation, opposing prevailing market sentiment remains both costly and risky. Mispricing, therefore, can be attributed to the interaction between fluctuations in noise traders' emotions and constraints on arbitrage (Zouaoui et al., 2011). Empirical studies have also sought to quantify investor sentiment (Lee et al., 1991; Brown & Cliff, 2004). These studies classify sentiment indicators into two categories: direct and indirect measures. Direct measures rely on survey-based data to capture investors' attitudes and expectations, whereas indirect measures use observable market variables correlated with investor sentiment. The findings reveal that emotional biases significantly influence individual investors, and that sentiment indicators enhance the explanatory power of traditional asset-pricing models—particularly for stocks that are more difficult to value or arbitrage (Zouaoui et al., 2011). Based on prior empirical studies, sentiment measurement approaches can be broadly classified into three categories. The first category includes survey-based measures that directly capture market sentiment and behavioral tendencies. One of the most widely recognized indices in this group is the Michigan Consumer Sentiment Index (MCSI). The second category comprises indirect measures that utilize financial market data to infer investor sentiment and behavioral patterns. Examples include the buy–sell imbalance and Barron's Confidence Index. The third category integrates multiple approaches, with the composite sentiment index developed by Baker and Wurgler (2006) among the most prominent measures in this class (Asghari et al., 2020; Taghavi et al., 2023). In recent years, a new sentiment measure—microblogging sentiment—has gained considerable attention. This approach leverages data from online communication platforms (Ángeles López-Cabarcos et al., 2020). Several studies have analyzed investor sentiment extracted from social media platforms such as Twitter (Sprenger et al., 2014; Zhang et al., 2016), StockTwits (Piñeiro- Chousa et al., 2017; Renault, 2017), Facebook (Siganos et al., 2017), Yahoo Finance message boards (Kim & Kim, 2014), and even Google search trends (Da et al., 2011). As previously discussed, investor emotions arise from psychological biases that cause individuals to deviate from rational decision-making. However, such irrational behavior is not permanent in financial markets and tends to become more evident when emotions intensify. Investor sentiment and emotional trends

influence numerous aspects of financial behavior, including stock prices (Shekarkhah & Hazrati, 2018), trading dynamics (Hosseini & Morshedi, 2019), stock price crash risk (Assadi & Morshedi, 2019), market liquidity (Asghari et al., 2020), the value relevance of accounting information (Hasanzadeh Diva & Blue, 2021), audit quality (NikKar et al., 2022), financial decisions, stock returns, and economic volatility (Mohamadi et al., 2022). Investor sentiment also interacts with contextual factors such as corporate governance (Hashemi & Moshashaei, 2018), historical events (Mohammadzadeh et al., 2020), religious periods (Mohammadzadeh et al., 2022), and macroeconomic variables (Khedri Gharibvand & Sinaei, 2023). Collectively, these empirical findings demonstrate that investor sentiment represents a dynamic and expanding domain within behavioral finance—one that influences multiple facets of financial decision-making and market behavior. Therefore, conducting a deeper analysis of its theoretical foundations and intellectual structure remains essential.

For the literature review of this study, a systematic search was conducted in the Web of Science (WoS) database using the following keywords: Investor Sentiment, Investors Sentiment, Investor Sentiments, Investors' Emotional Behavior, Investors' Emotional Tendencies, Investor Sentiment Index, Investor Sentiment Measure, Measuring Investor Sentiment, Market Sentiment, and Market Sentiment Index. The retrieved records were reviewed to identify relevant studies and research patterns within the field. Based on this review, no prior scientometric or bibliometric research has been conducted in Iran that focuses explicitly on investor sentiment. This indicates a notable gap in the existing literature. The following section presents a selection of studies that, while not directly examining investor sentiment in the Iranian context, are conceptually or methodologically related to the present research.

Shayan Majd (2013), in a study titled "*Study of Research Trends in Scientometrics in Iran and Examination of the Scientific Behavior Patterns of Researchers in this Field*," analyzed the citation patterns of Persian-language articles in scientometrics to identify the scientific behavior of Iranian researchers in utilizing scholarly resources. The study examined articles published between 2009 and 2013 in the field of scientometrics, retrieved from the Normags, Magiran, Civilica, Ensani, and SID databases. The results indicated that, out of 156 analyzed articles, 3,045 citations were extracted, averaging 19.5 citations per article. The language distribution showed that 68% of the citations were from Latin sources, while 37% were from 2010, reflecting the growing attention of Iranian organizations and researchers to this research domain.

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Nobakht (2018), in a study titled "Scientometric Study of Behavioral Accounting Research in Iran," conducted a scientometric analysis of behavioral accounting publications in Iran from the inception of academic accounting journals up to early 2018 using content analysis. Data were collected using a checklist and analyzed in Excel. The findings revealed that 225 articles in this field were published during the study period, involving 531 contributing authors. Among these authors, 33.9% were assistant professors and 30.5% were senior experts. Approximately 7% of the articles were single-authored, while 93% were collaborative. Among universities and research institutions,

the Islamic Azad University (Science and Research Branch) ranked first with 39 publications, followed by Allameh Tabataba'i University with 19. In terms of subject orientation, more than 30% of the published works focused on financial accounting, followed by auditing (27.1%) and management accounting (13.8%). Of the 6,156 cited sources, about 70% were in English and 30% in Persian.

Nobakht (2020), in a study titled "Scientometric Study of Scientific Production of the Journal of Accounting and Auditing Review" conducted a scientometric analysis of the scientific productions in the Accounting and Auditing Review Quarterly of the University of Tehran, the oldest scientific journal in the field of accounting knowledge in Iran, from its inception (1992) to the end of 2019. The results indicate that 563 articles were published during these years, involving 1222 authors, of whom 1039 were men and 183 were women. 8% of the articles were single-authored, and 92% were group work. In terms of educational level and academic rank, assistant professors (41%) and associate professors (16%) were the leading authors. Among universities and educational institutions, the University of Tehran ranked first with 114 articles, followed by Shiraz University with 34. In terms of subject orientation, 72% of the published works were in financial accounting, followed by auditing (13%). Out of 12698 sources cited in the articles, 74% were in English and 26% in Persian.

Ángeles López-Cabarcos et al. (2020), in a study titled "*Investor Sentiment in the Theoretical Field of Behavioural Finance*," analyzed 709 studies on investor sentiment published between 1987 and 2017, using data retrieved from the Web of Science database. The authors employed co-citation, bibliographic coupling, and keyword co-occurrence analyses to map the intellectual structure of the investor sentiment field. The results revealed that investor sentiment is closely associated with the Efficient Market Hypothesis and behavioral finance theories. Moreover, the findings indicated that investor sentiment has evolved into a significant research area within behavioral finance, particularly since 2014. The authors further suggested that advancements in computer science and the application of theories derived from physics and mathematics could enhance the understanding of investor sentiment's impact on stock markets.

Kamath et al. (2022), in a study titled "*An Overview of Investor Sentiment: Identifying Themes, Trends, and Future Directions through Bibliometric Analysis*," conducted a comprehensive bibliometric review of all publications in the field of investor sentiment. A total of 1,919 articles published in the Scopus database between 1979 and 2022 were analyzed. The review identified key themes, influential authors, seminal studies, frequently explored topics, and the top contributing countries and institutions. The findings revealed that research on investor sentiment has grown exponentially, with an average annual growth rate of 15.88%. In 2020, the year with the highest scientific output, 252 publications were published, representing 13.68% of the total. The United States and China were found to be the leading contributors in terms of research volume and author productivity. Moreover, the analysis showed that the dominant research themes include market efficiency, asset pricing, stock returns, sentiment analysis, IPO underpricing, overreaction, and volatility. At the same time, COVID-19 and Bitcoin have recently emerged as new areas of focus.

Dianati Deilami et al. (2023) conducted a scientometric analysis of the scientific output of Iranian accounting faculty members, indexed in Scopus, between 2006 and 2021. Using tools such as Excel, VOSviewer, and the R programming language, they examined collaboration networks among authors, universities, countries, and key terms. The results showed that collaboration among Iranian authors was relatively weak, whereas universities exhibited stronger inter-institutional collaboration. However, international collaboration remained limited. Despite the relatively small number of accounting publications from Iran indexed in Scopus, the overall publication trend has been increasing. Additionally, "corporate governance" was identified as the most frequently studied topic in this field.

Ghannad (2023), in a study titled "Analysis of Scientific Collaboration Networks and Visualization of Audit Fee Research in Iran," analyzed collaboration networks and mapped the scientific landscape of articles on independent audit fees published in journals accredited by Iran's Ministry of Science, Research, and Technology. The findings revealed a sharp rise in audit fee research between 2019 and 2021, during which 108 articles—representing 44% of the total—were published. The Professional Auditing Research journal had the highest concentration of publications in this area, accounting for 23% of related studies. The study also identified inconsistencies in terminology and Persian usage, reporting 49 different lexical and semantic equivalents for the term "audit fee," underscoring the need for standardization across academic journals and research outputs. Co-word analysis revealed a total of 998 distinct keywords, with "audit fee" appearing most frequently (193 occurrences), followed by "audit quality" (34), "audit risk" (21), and "abnormal audit fee" (21). Moreover, "audit quality" and "audit risk" exhibited the strongest co-occurrence with "audit fee," appearing together 24 and 20 times, respectively. The co-authorship analysis identified 643 co-authorship instances in audit-fee-related articles. Among the most prolific contributors were Seyed Ali Vaezz and Vali Khodadadi, with 11 and 10 articles, respectively. Shahid Chamran University of Ahvaz and Ferdowsi University of Mashhad recorded the highest institutional participation, with 68 and 44 affiliations, respectively, positioning them as key research centers in this field. The most frequent co-authorship was between Mostafa Abdi and Mehdi Kazemi-Oloom, who collaborated on five publications.

Zhang et al. (2023), in a study titled "*A Comparative Scientometric Analysis of Investor Sentiment and Trading Behavior Research*," conducted a comparative scientometric assessment of two related domains: investor sentiment and trading behavior. The study analyzed 1,955 articles on investor sentiment, 719 on trading behavior, and 64 that addressed both topics, all indexed in the Science Citation Index Expanded (SCIE) and Social Sciences Citation Index (SSCI) of the Web of Science Core Collection from 1900 to 2022. The analysis revealed that publications on investor sentiment have grown exponentially, whereas research activity in trading behavior has declined in recent years. Despite its relatively late emergence, investor sentiment research has attracted greater scholarly attention and produced a higher volume of publications. The United States and China were identified as the leading contributors in both research areas. Furthermore, the two fields exhibit a convergence trend, with several emerging research hotspots in common, including COVID-19, Bitcoin, and machine learning.

Arabmazar Yazdi and Joudaki Chegeni (2024), in a bibliometric analysis aimed at mapping the intellectual structure and bibliographic relationships within the field of social responsibility accounting, found that this area had received limited attention before 2013. However, since then, research activity has exhibited a steady upward trend, reflecting the growing importance of the topic. The study identified nine thematic clusters, with "social responsibility accounting" positioned at the core. Closely related clusters included sustainable development, sustainability reporting, decision-making, environmental, social, and governance (ESG) accounting, ESG measurement, green accounting, and the measurement of social responsibility. The United States led the field in publication volume with 271 documents, while the Bucharest University of Economic Studies in Romania ranked first among institutions with 16 publications. The field of Business, Management, and Accounting accounted for 31.8% of all studies, and among individual researchers, Cho was the most prolific, with nine publications.

Eskorouchi et al. (2024), in a study titled "Exploring the Evolution of Robust Portfolio Optimization: A Scientometric Analysis," conducted a systematic scientometric review of research developments in the field of robust portfolio optimization (RPO). Using scientometric techniques and visual mapping tools, the authors analyzed 1,085 articles published between 2000 and 2023 to identify

significant trends, conceptual advancements, and scientific linkages among articles, authors, countries, sources, and keywords. The findings revealed that RPO has attracted growing academic attention in recent years, in response to uncertainties in asset returns and covariances within financial markets. The study provides valuable insights to guide future research and assist investors in making informed decisions under conditions of risk and uncertainty.

Luong et al. (2024), in a study titled "*The Development of Research on Investor Sentiment in Emerging and Frontier Markets with the Bibliometric Method*," examined the evolution of investor sentiment research in emerging and frontier markets. Using bibliometric techniques, they analyzed 508 studies published between 1999 and 2020 and indexed in the Scopus database. The findings indicate that publications on investor sentiment in these markets have shown steady growth throughout the 21st century. Herding behavior emerged as the most prominent research theme in this field. In subsequent years, topics such as return predictability, fundamental component analysis, investor attention, and asymmetric effects of economic policy uncertainty have become dominant themes shaping the development of investor sentiment research in emerging and frontier markets.

The review of prior research indicates that recent studies in this area have predominantly employed a common analytical framework. Within this framework, publications are typically classified according to several bibliometric indicators, including the contributions of each academic rank and institution, the most-cited articles, influential authors, keyword co-occurrence networks, research collaboration patterns, thematic trends, citation languages, leading journals, contributing countries, and gender participation ratios. This study adopts a similar approach in analyzing the content of relevant articles. Based on the preceding discussion, the research seeks to address the following questions:

1. What is the growth trajectory of scientific publications on investor sentiment?
2. Which articles, authors, countries, journals, and universities have been most influential in this field?
3. What insights can be drawn from the keyword co-occurrence network?
4. What are the emerging themes in investor sentiment research?

3. Research methodology

This study is applied in nature and aims to support researchers interested in the field of investor sentiment by identifying research gaps and highlighting emerging and trending topics. These insights can help scholars design future studies that build upon current developments in the field. In addition, this research can serve as a valuable reference for students of accounting and finance conducting studies on investor sentiment. By familiarizing themselves with the most highly cited and influential articles, they can strengthen the literature review sections of their work. Furthermore, a clearer understanding of the key concepts and keywords associated with investor sentiment will enable them to identify new and relevant publications that can enrich the theoretical foundations of their research.

Figure 1 presents the two main stages of this research: Identification and Analysis, each comprising several subcomponents. These stages were conducted sequentially to address the research questions.

In the first stage, keywords related to investor sentiment were identified from reputable academic sources. These keywords were then searched in the Web of Science (WoS) database for the period 1987–2025, yielding 4,546 relevant publications. Due to the database limitation allowing only 500 records per export, the results were retrieved in multiple batches in Plain Text (Full Record and Cited References) format and subsequently merged. The combined dataset was imported into the

Bibliometrix package in R. In RStudio, the package was run, and the merged file was uploaded for analysis. The research questions were addressed sequentially through functions and tools provided by the Bibliometrix package. The detailed search strategy is presented in Table 1.

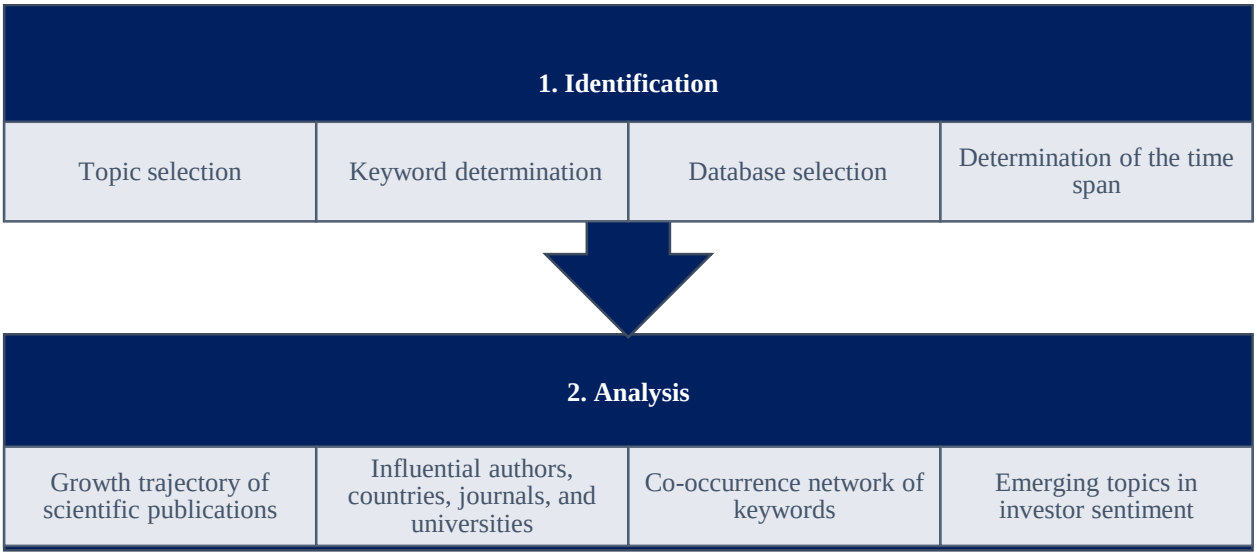

Figure 1. The two main steps of research

Table 1. Search method

Database	The searching method in the Web of Science database	Time span	Export format	Number of results
Web of Science	TS= (“Investor Sentiment” OR “Investors Sentiment” OR “Investor Sentiments” OR “Investors Sentiments” OR “Investors Emotional Behavior” OR “Investors Emotional Tendencies” OR “Investor Sentiment Index” OR “Investor Sentiment Measure” OR “Measuring Investor Sentiment” OR “Market sentiment” OR “Market Sentiment Index”)	1987-2025	Plain Text	4546 Articles

4. Findings

4.1. What is the growth trajectory of scientific publications on investor sentiment?

Figure 1 shows the trend in scientific publications on investor sentiment.

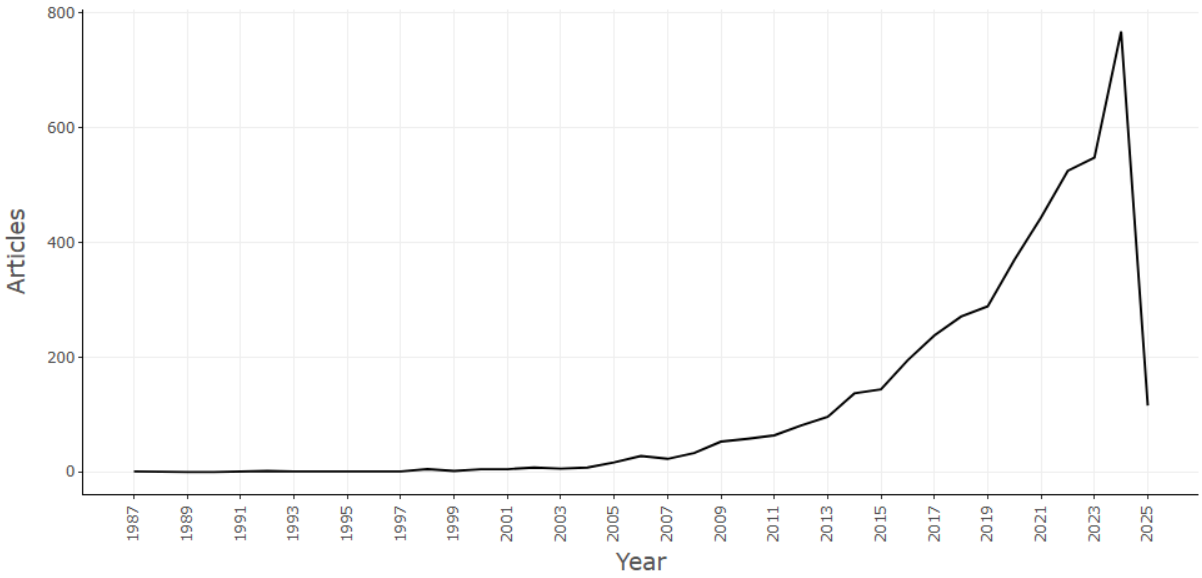

Figure 2. The trend of scientific productions in the field of investor sentiment

Figure 2 illustrates the annual publication trend in investor sentiment from 1987 to 2025. Overall, the number of studies in this area has shown a consistent upward trajectory, with a calculated annual growth rate of 13.3%.

Slow Start and Gradual Growth: During the 1980s and 1990s, the volume of research was minimal and remained nearly constant, with some years showing no publications at all—reflecting a slow start and limited scholarly attention to the topic.

Moderate Increase in the 2000s: A moderate increase began in the early 2000s, accelerating between 2005 and 2008 as interest in behavioral finance and sentiment-based analysis expanded.

Explosive Growth from 2010 Onward: From 2010 onward, publication activity grew exponentially. This surge reflects broader recognition of investor sentiment as a key determinant of financial market dynamics.

Record-Breaking in Recent Years: Since 2020, the number of publications has exceeded 500 per year, peaking at a record 768 articles in 2024.

These results clearly indicate that investor sentiment has become an increasingly important and rapidly expanding research area within behavioral finance, attracting growing scholarly attention in recent years.

4.2. Which articles, authors, countries, journals, and universities have been most influential in this field?

Table 2 lists the 10 most-cited articles in the field of investor sentiment.

Table 2. The most cited articles in the field of investor sentiment

Number of citations	Author and year	Title
3032	Baker and Wurgler (2006)	Investor sentiment and the cross-section of stock returns
2190	Barberis (1998)	A model of investor sentiment
2160	Tetlock (2007)	Giving content to investor sentiment: The role of media in the stock market
1854	Baker and Wurgler (2006)	Investor sentiment in the stock market
1615	Da et al. (۲۰۱۱)	In Search of Attention
1003	Fang & Peress (2009)	Media Coverage and the Cross-section of Stock Returns
969	Stambaugh et al. (2012)	The short of it: Investor sentiment and anomalies

801	Lee et al. (1991)	INVESTOR SENTIMENT AND THE CLOSED-END FUND PUZZLE
768	DA et al. (2015)	The Sum of All FEARS Investor Sentiment and Asset Prices
713	Kumar & Lee (2006)	Retail investor sentiment and return comovements

One of the most influential studies in this field is "Investor Sentiment and the Cross-Section of Stock Returns" by Baker and Wurgler (2006), which has received 3,032 citations and examines the relationship between investor sentiment and stock returns. Other seminal works include "A Model of Investor Sentiment" by Barberis (1998), with 2,190 citations, and "Giving Content to Investor Sentiment: The Role of Media in the Stock Market" by Tetlock (2007), with 2,160 citations, which emphasizes the media's role in shaping investor sentiment. Additional influential contributions, such as "Investor Sentiment in the Stock Market" by Baker and Wurgler (2006) and "In Search of Attention" by Da et al. (2011), further investigate the mechanisms through which investor sentiment affects market behavior. Collectively, these studies form the theoretical and empirical foundation of investor behavior and sentiment analysis in modern financial research.

Figure 3 shows the authors with the most publications in the field of investor sentiment.

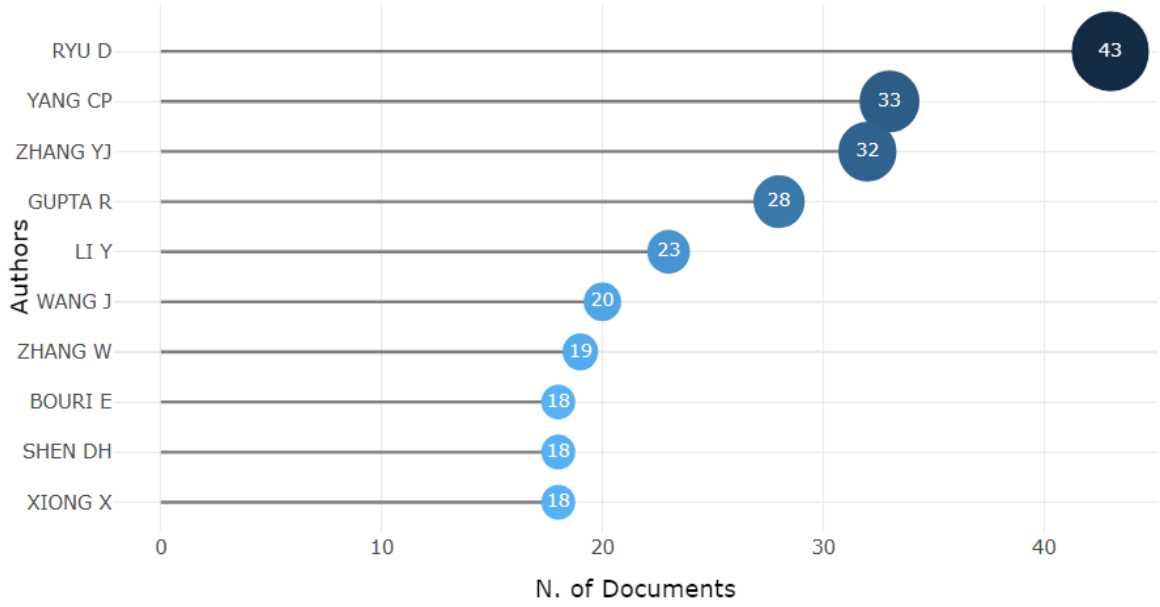

Figure 3. Prolific authors in the field of investor sentiment

It is observed that the top three authors on this list are:

1. ***RYU D*** with 43 articles.
2. ***YANG CP*** with 33 articles.
3. ***ZHANG YJ*** with 32 articles.

These authors are the most active contributors and are recognized as leading scholars in investor sentiment research.

Figure 4 illustrates the distribution of published papers on investor sentiment across different countries. The chart distinguishes between two types of research collaboration—domestic and international—using different colors to visualize their respective contributions.

1. ***MCP*** (Multinational Collaboration Papers) refers to papers co-authored by researchers from multiple countries, represented in red.
2. ***SCP*** (Single-Country Papers) refers to papers authored solely within a single country,

represented in blue.

The countries with the highest number of publications on investor sentiment are China, the United States, the United Kingdom, India, and Australia. In contrast, countries such as Pakistan, Israel, and South Africa have produced comparatively fewer studies.

A notable observation is that China leads this field by a considerable margin, particularly in publications co-authored with researchers from other countries, reflecting strong international collaboration.

Figure 5 presents the distribution of publications across major journals focusing on investor sentiment research.

Here, the journals are ranked by the number of articles published in them:

1. ***International Review of Financial Analysis***: With the highest number of articles (158 articles).
2. ***Finance Research Letters***: With 151 articles.
3. ***North American Journal of Economics and Finance***: With 97 articles.
4. ***Journal of Banking & Finance***: With 96 articles.
5. ***International Review of Economics & Finance:*** With 93 articles.

In addition, the other journals shown in this figure publish fewer papers but remain important and influential sources in investor sentiment research.

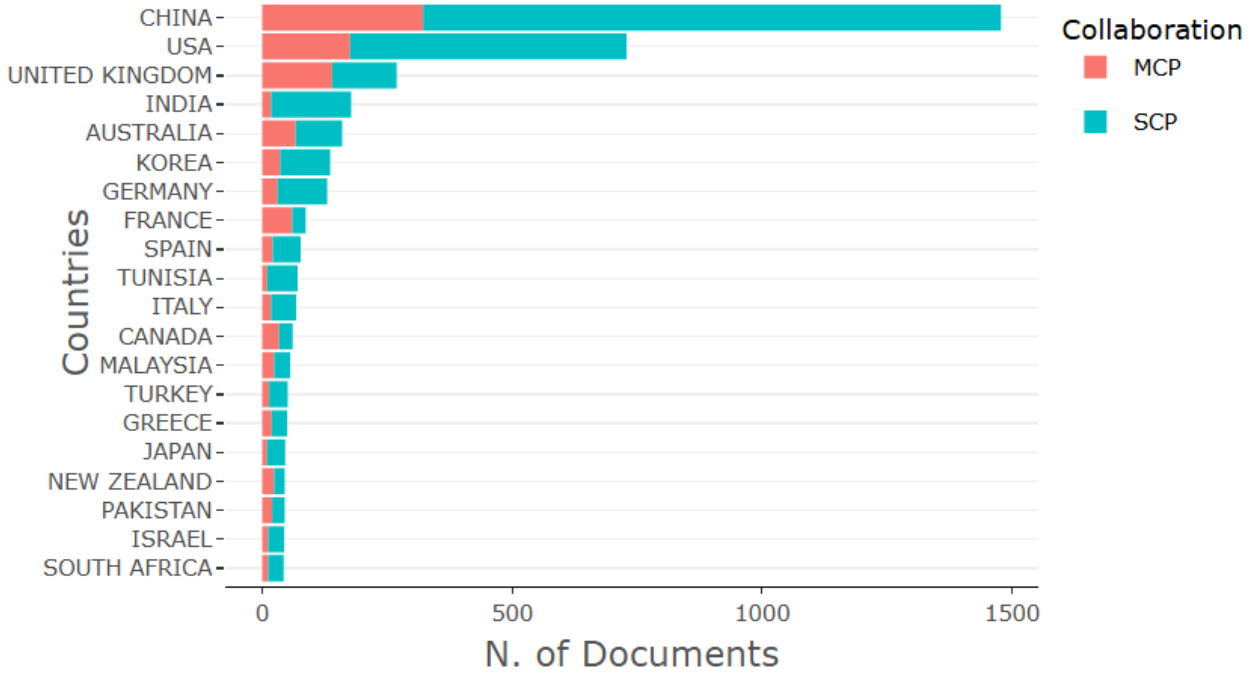

Figure 4. Leading countries in the field of investor sentiment

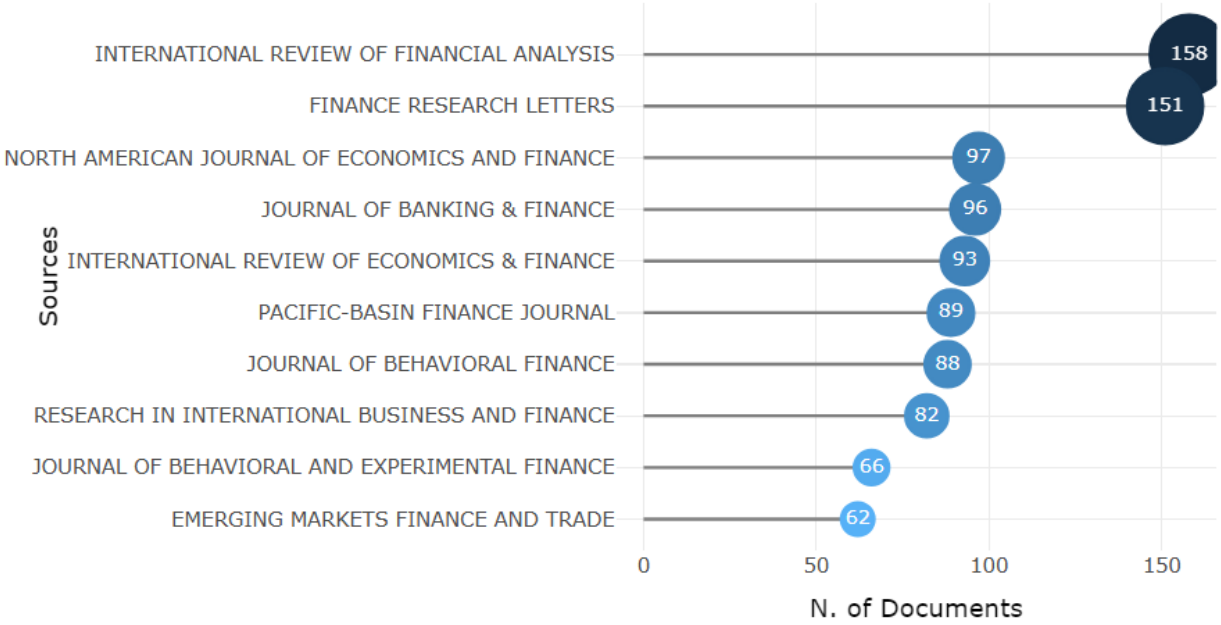

Figure 5. Prolific journals in the field of investor sentiment

A noteworthy observation is that journals such as the International Review of Financial Analysis and Finance Research Letters have published the most articles, underscoring their prominence and influence in investor sentiment research.

Figure 6 presents the distribution of publications across universities and research institutions in this field.

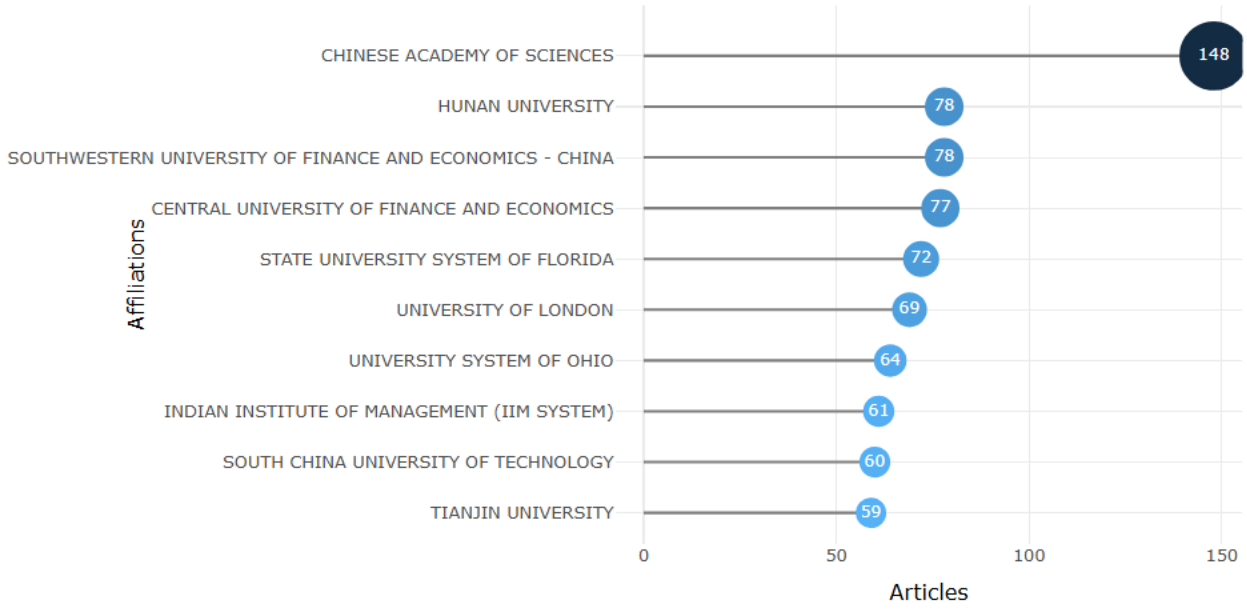

Figure 6. Prolific organizations and universities in the field of investor sentiment

Here, the institutions are displayed in order of the number of articles published:

1. ***Chinese Academy of Sciences****:* With the highest number of articles (148 articles).
2. ***Hunan University***: With 78 articles.

3. ***Southwestern University of Finance and Economics – China***: With 78 articles.
4. ***Central University of Finance and Economics***: With 77 articles.
5. ***State University System of Florida***: With 72 articles.

Other institutions, including the University of London and the University System of Ohio, have also contributed a notable number of publications to this field.

The chart further indicates that Chinese institutions—particularly the Chinese Academy of Sciences—have made the most substantial contributions to investor sentiment research.

4.3. What does the co-occurrence network of keywords reveal?

Figure 7 presents the keywords most frequently used by authors in publications related to investor sentiment. The frequency of occurrence for each keyword is summarized below.

1. ***Investor sentiment,*** with 1147 mentions, is the most frequently used keyword.
2. ***Sentiment*** with 242 mentions.
3. ***Behavioral finance*** with 189 mentions.
4. ***Sentiment analysis*** with 169 mentions.
5. ***Covid-19*** with 165 mentions.

Keywords such as stock market, stock returns, and market sentiment are among the most frequently used terms. These keywords reflect the central themes of research in this domain, including analyses of investor sentiment, behavioral finance, and the impact of market dynamics on sentiment formation.

Figure 8 depicts the keyword co-occurrence network in the field of investor sentiment. In this visualization, each node represents a keyword, and connections indicate the degree of correlation and co-occurrence across published studies.

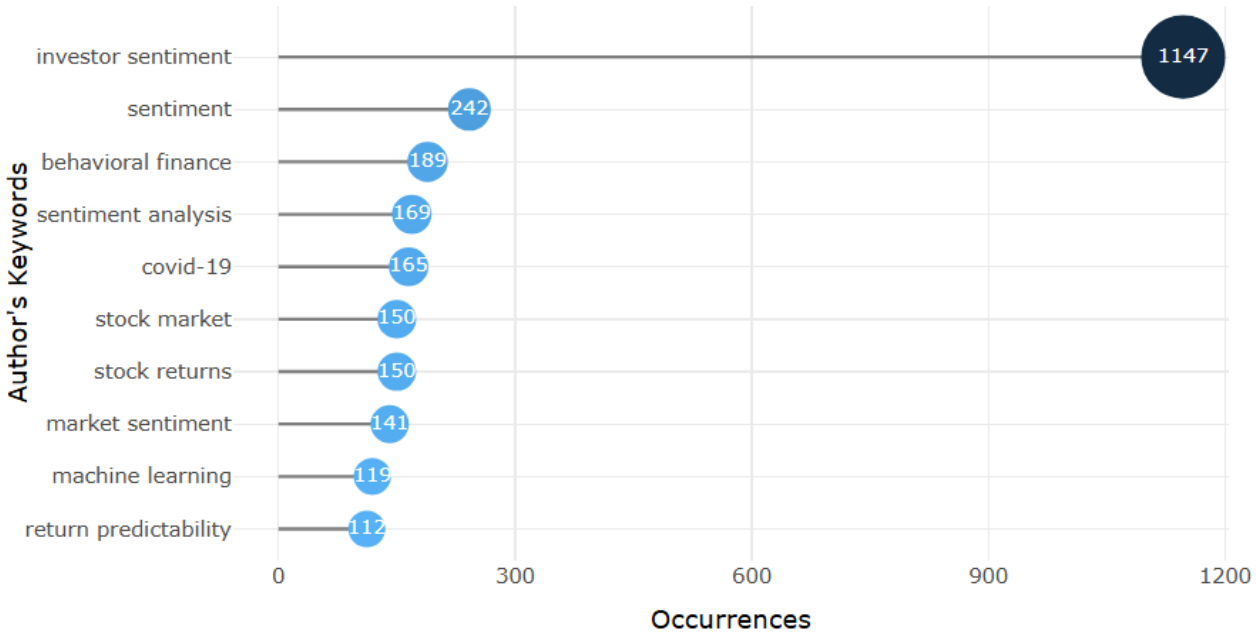

Figure 7. Keywords in the field of investor sentiment

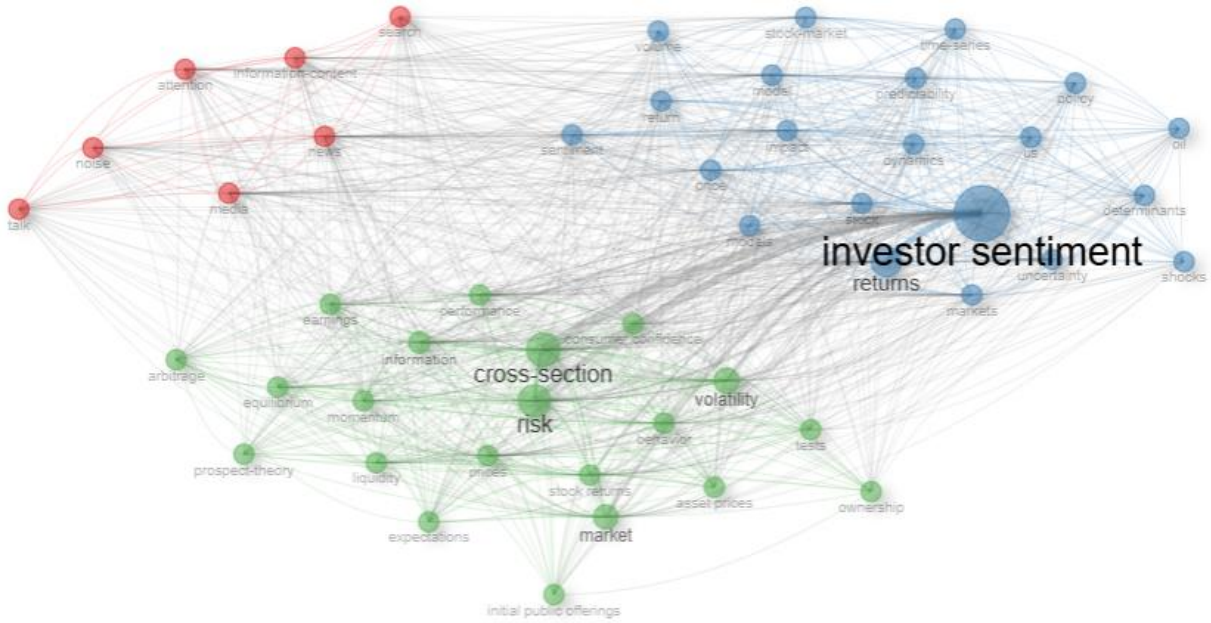

Figure 8. Keyword network in the field of investor sentiment

The keyword co-occurrence network reveals three major thematic clusters:

1. ***Words in Cluster 1 (Red):*** This group includes terms such as news, media, attention, information content, and noise (irrational traders). These keywords primarily relate to the role of information and media in shaping investor sentiment and behavior.
2. ***Words in Cluster 2 (Blue):*** This cluster contains keywords such as investor sentiment, returns, impact, model, stocks, and markets. It represents studies focused on analyzing and evaluating investor sentiment, stock returns, financial models, and market dynamics.
3. ***Words in Cluster 3 (Green):*** This group encompasses terms such as cross-section, risk, volatility, market, and performance, which are mainly associated with research on market analysis, risk, volatility, and financial behavior.

Overall, this network highlights the central importance of themes such as investor sentiment, stock returns, market volatility, and risk in the broader landscape of investor sentiment research.

4.4. What are the emerging topics in investor sentiment research?

Figure 9 illustrates the temporal trend in the emergence and usage of various keywords in investor sentiment research from 2008 to 2024. The length of each horizontal line represents the timespan during which a given keyword has appeared in publications, while the size of the circles reflects the intensity or frequency of its use at different points in time.

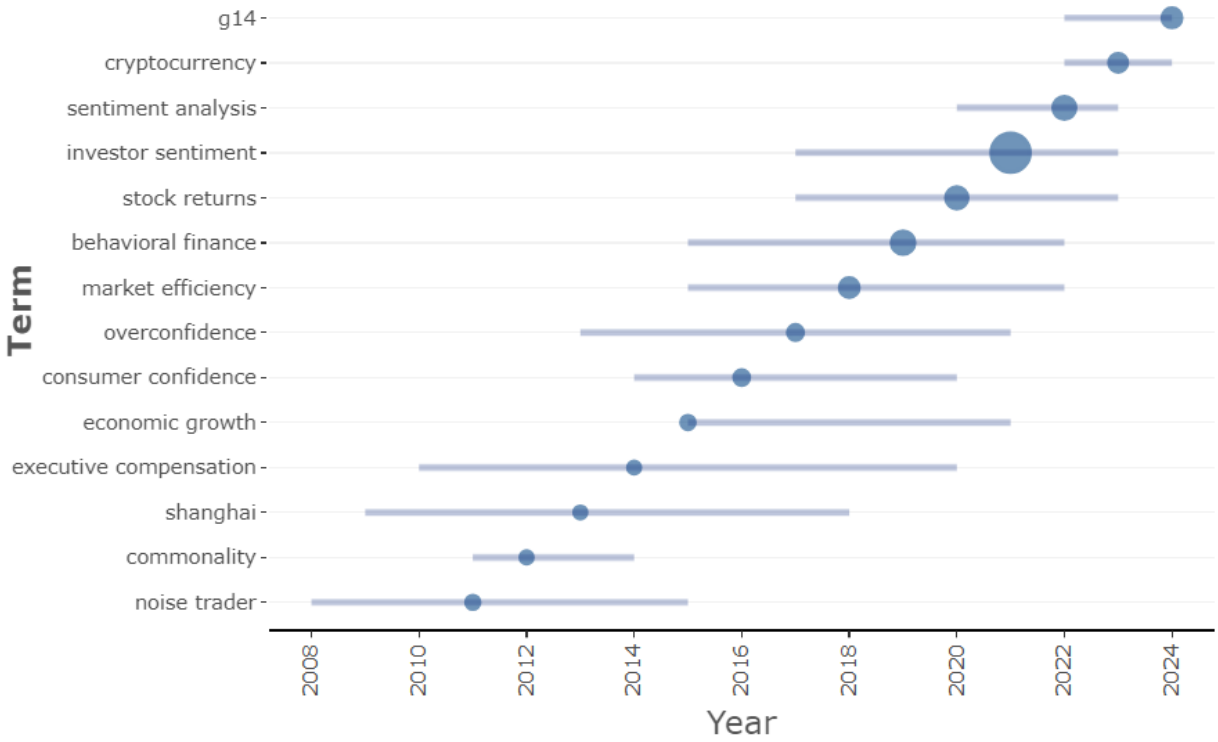

Figure 9. Trends of keywords in the field of investor sentiment

Highlights of this chart include:

1. ***Investor sentiment*** has shown continuous growth since 2015, with its usage significantly increasing in recent years.
2. ***Cryptocurrency*** *and* ***Sentiment Analysis*** have gained more attention since around 2018.
3. ***Behavioral Finance*** *and* ***Stocks Returns*** have also grown significantly in the 2010s.
4. Keywords such as G14 (Group of 14 major countries), economic growth, and executive compensation began to appear in publications in the early 2010s; however, their frequency of use has remained relatively low compared with other dominant keywords in the field.

The results indicate that research on investor sentiment and the factors influencing it has expanded rapidly in recent years. Emerging keywords such as cryptocurrency and sentiment analysis have gained increasing prominence, reflecting the evolving scope and interdisciplinary nature of this research area.

Figure 10 presents the positioning of various keywords in the field of investor sentiment based on two main dimensions:

1. *Development degree* or density, which indicates the growth and development of a topic.
2. *Relevance degree* or centrality, which shows the importance and connection of a topic with other topics in the existing research.

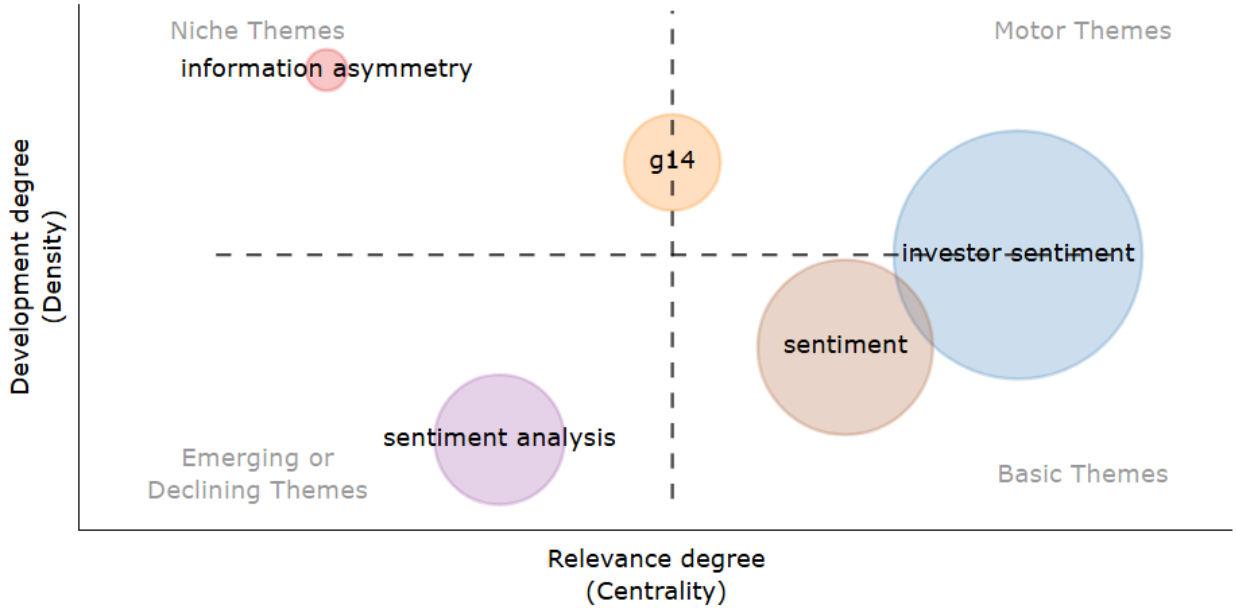

Figure 10. Strategic diagram of the field of investor sentiment

Figure 10 presents the thematic positioning of key concepts within the field of investor sentiment research. The analysis identifies four notable themes:

1. ***Investor sentiment****:* This keyword occupies a central and influential position within the thematic map, reflecting its strong connections with other research topics. It is categorized as a motor theme, representing the most developed and impactful area in this field.
2. ***Sentiments****:* This keyword falls within the basic themes category, signifying its foundational relevance to the domain, although its level of influence is somewhat lower than that of investor sentiment.
3. ***Sentiment analysis****:* Positioned within the emerging or declining themes quadrant, this topic has recently gained increasing scholarly attention and continues to develop as a growing research area.
4. ***Information Asymmetry****:* This keyword appears in the niche themes category, suggesting that relatively limited research has been conducted in this area thus far.

Overall, the thematic map highlights that *investor sentiment* and *sentiment analysis* currently represent two of the most dynamic and highly focused areas in the literature on investor sentiment.

5. Discussion and conclusion

The analysis of 4,546 articles on investor sentiment reveals that this topic has evolved over recent decades from a nascent and narrowly defined research area into a dynamic and rapidly expanding field. From 1987 to 2025, the number of publications has shown a strong upward trajectory, with an explosive increase after the 2010s. This sustained growth reflects not only the rising academic interest in investor sentiment but also its growing importance in explaining stock returns, market volatility, and financial behavior. An examination of the most cited articles, influential authors, countries, journals, and institutions indicates that seminal works by Baker and Wurgler (2006) and Barberis (1998) constitute the intellectual backbone of the field. The increasing contribution of countries—particularly China, which has gained visibility through international collaborations (MCP)—underscores the global significance of investor sentiment research. Furthermore, journals such as the

International Review of Financial Analysis and *Finance Research Letters* play a pivotal role in publishing and advancing knowledge in this domain. Keyword co-occurrence and trend analyses show that the dominant research themes revolve around "investor sentiment," "stock returns," and "sentiment analysis." Keyword clustering further highlights strong linkages among topics such as media coverage, market volatility, and risk. These results suggest that contemporary research increasingly focuses not only on the direct effects of investor sentiment on market performance but also on intermediary mechanisms such as the role of media and asymmetric information.

Moreover, the timeline analysis of keyword usage and the strategic positioning of the field reveal the emergence of rapidly growing themes such as *cryptocurrency* and *sentiment analysis*, identifying these as key emerging topics. These developments indicate that researchers are increasingly adopting innovative approaches in response to the fast-evolving nature of financial markets and the advent of new technologies for measuring investor sentiment.

Based on the research objectives and the findings obtained, the following conclusions can be drawn:

1. *Significant growth in research:* The steady increase in publications since the early 2000s—particularly in recent years—reflects the growing importance and influence of investor sentiment within financial research.
2. *Key references and resources:* Highly cited articles and influential authors represent key milestones in the evolution of this field. The active contribution of countries such as China, along with increasing international collaborations, has played a crucial role in advancing research on investor sentiment.
3. *Research focus on main topics:* Keyword analysis and co-occurrence networks indicate that studies primarily focus on the core concepts of investor sentiment, sentiment analysis, and stock returns, which together contribute to the exploration of behavioral and financial dimensions of the market.
4. *Emergence of new topics:* Recent attention to topics such as cryptocurrency and innovative sentiment analysis methods highlights emerging research frontiers and potential avenues for future exploration.
5. It is also suggested that future research should focus on the following areas:
6. *Encouragement of interdisciplinary research:* Given the complexity of investor sentiment, integrating insights from finance, psychology, and information technology could lead to more accurate and comprehensive analytical models.
7. *Development of predictive models:* With the exponential growth of financial and sentiment-related data, future studies are encouraged to employ artificial intelligence techniques and data-driven methods to better understand the effects of investor sentiment on market volatility.
8. *Increasing international collaborations:* Establishing global research networks—especially involving developing countries—can foster knowledge exchange, enhance methodological diversity, and improve the overall quality of research in this domain.

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