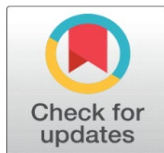
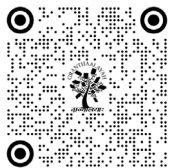


A BIBLIOMETRIC ANALYSIS OF BEHAVIOURAL FINANCE: INVESTOR SENTIMENTS

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ABSTRACT

This study presents a comprehensive bibliometric analysis of research on investor sentiment using the Scopus database. The dataset includes publications from 1994 to 2023, focusing on "investor sentiment" and related terms across subject areas such as finance, economics, management sociology etc. The analysis was conducted using VOSViewer software to visualize trends in academic publishing, co-authorship networks, and citation patterns. Our findings indicate a growing interest in the influence of investor sentiment on financial markets, with a notable rise in publications in the past decade. Key research themes identified include behavioral finance, the impact of sentiment on asset pricing, and the role of investor psychology in market volatility. The analysis also highlights key authors, influential papers, emerging sources etc. This bibliometric study contributes to a deeper understanding of the intellectual structure and evolution of the investor sentiment research field, providing valuable insights for academics, policymakers, and market participants.

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Keywords: Investor Sentiment, Bibliometric Analysis, Behavioral Finance, VOSViewer, Investor Psychology, Financial Markets.



1. INTRODUCTION

The foundation of Standard Finance was laid down by John Stuart Mill in 1844 by introducing the concept of "homo-economicus". The term "homo-economicus" means that human beings are rational and always try to maximize their utility through rational assessment of different available alternatives. In 1944, Von Neumann and Morgenstern propounded the EUT on the assumption of homo-economicus. It was assumed that people make their decisions based on final outcomes and state of wealth. From then onwards standard finance models have dominated the financial world over the last few decades. But the failure of standard finance models in explaining the reasons behind Stock Market anomalies, bubbles and crashes led to birth of a new domain of finance i.e. behavioral finance.

Behavioural finance is a modern study area that investigates human frailty in competitive marketplaces. As per (Baker and Wurgler 2007) in the domain of behavioural finance “there are two major assumptions, namely limited arbitrage and the presence of investor sentiment. The first major underpinning of behavioral finance is limited to arbitrage. The second major foundation of behavioral finance is investor sentiment. Investor sentiment is the theory of how individuals form their beliefs about the market and future security prices”. During periods of high or low sentiment, the stocks become overpriced or underpriced, resulting in imaginable successive returns (Baker and Wurgler 2007). The concept of investor sentiment challenges the traditional assumption of fully rational investors, proposing instead that market participants are subject to cognitive biases and emotions that can lead to systematic mispricing (Shiller, 2000; Thaler, 1985). It influences asset pricing, market volatility and investment decisions, often driving markets away from their fundamental values (Baker and Wurgler, 2006; Brown and Cliff, 2004).

Sentiment analysis in finance has been intensively researched during the last two decades. The researchers created an investor sentiment index (ISI) based on sentiment analysis to measure market mood. Baker and Wurgler composite investor sentiment index (BW index) i.e. based on the quantitative market data, is a popular ISI. There are various techniques to construct an ISI; however, they are applicable only in specific countries. Investor sentiment refers to investors' overall feelings about a certain event or piece of information. A price rise is typically referred to as a positive mood, whilst a price reduction is usually referred to as a negative mood. Furthermore, when it comes to emotion, low sentiment corresponds to decreasing prices and strong sentiment refers to rising prices. By following work of Baker and Wurgler, research on ISI began in the first decade of the twenty-first century. Following that, finance academics such as Corredor et al. (2015), Kim and Park (2015), and Tetlock (2007) used diverse ways to build ISIs. An ISI may be calculated using one of two methods: direct or indirect. Primary data for the direct assessment of an ISI are generally obtained from investors via a questionnaire. The indirect sentiment index approximates the ISI by using market, firm and investor specific data. Baker and Wurgler, on the other hand, created a composite ISI for US investors using an indirect assessment of an ISI.

2. LITERATURE REVIEW

The concept of homo-economicus, introduced by John Stuart Mill (1848), forms the basis of many financial theories, positing that individuals are rational agents aiming to maximize utility through logical evaluation of alternatives. This notion underpins Expected Utility Theory (EUT), developed by Von Neumann & Morgenstern (1944), which asserts that rational decision-makers aim to maximize expected utility when faced with risk. However, Prospect Theory, introduced by Kahneman & Tversky (1979), challenges this view, suggesting that individuals weigh perceived gains and losses differently, often giving disproportionate importance to losses (Kahneman & Tversky, 1979; Von Neumann & Morgenstern, 1944). Markowitz's (1952) modern portfolio theory expanded this framework by balancing risk and return, laying the groundwork for optimal portfolio selection, a key component in finance today (Fama, 1970; Markowitz, 1952). Eugene Fama's Efficient Market Hypothesis (EMH) (1970), which posits that stock prices fully reflect all available information, has been a cornerstone of modern financial thought, although behavioral finance has introduced challenges to this idea by incorporating psychological factors into market behaviour (Fama, 1970; Kahneman & Tversky, 1979).

The study of investor sentiment gained momentum with Baker & Wurgler's (2006) development of the Investor Sentiment Index (ISI), using principal component analysis (PCA) to predict stock market returns, along with Tetlock's (2007) research on media influence, which demonstrated that media content significantly affects market performance (Baker & Wurgler, 2006; Tetlock, 2007). In the European context, Fernandes et al. (2013) found a negative correlation between investor sentiment and stock market returns, particularly in the telecommunications sector, while Simpson (2013) identified a strong correlation between sentiment and share prices during high-sentiment periods in the U.S. market (Fernandes et al., 2013; Simpson, 2013). In emerging markets, Andleeb & Hassan (2023) identified a significant short-term impact of investor sentiment on stock returns in Russia, China, Brazil, and India, though the influence diminished over the long term, while in India, Naik & Padhi (2016) constructed an ISI that revealed positive sentiment leading to higher excess returns, often driven by investor overconfidence (Andleeb & Hassan, 2023; Naik & Padhi, 2016). Similarly, the study that investor sentiment significantly influenced stock returns in Indian markets, further corroborating the global relevance of behavioral finance insights (Aggarwal & Mohanty, 2018; Pandey & Sehgal, 2019). De Long et al. (1990) argued that positive feedback investment strategies could destabilize markets by amplifying speculative bubbles, while Debata & Mahakud (2018) analyzed the effects of economic policy uncertainty on stock

market liquidity, particularly during financial crises (De Long et al., 1990; Debata & Mahakud, 2018). In the context of the COVID-19 pandemic, Dhall & Singh (2020) investigated herding behavior in India's stock market, revealing how crisis-induced sentiment can drive market volatility (Dhall & Singh, 2020; Eachempati et al., 2021). These studies collectively underscore the significant role investor sentiment plays in influencing market behavior, challenging traditional financial models and highlighting the psychological and informational factors that drive market outcomes (Baker & Wurgler, 2006; Fama, 1970).

3. OBJECTIVES OF THE STUDY

- 1) To analyse the key countries contributing to the research on the investor sentiment.
- 2) To identify the most prominent authors and examining their contributions in the study of investor sentiment.
- 3) To evaluate the leading academic sources publishing significant research on investor sentiment.
- 4) To explore the most frequently used keywords related to the investor sentiment
- 5) To examine the distribution and citation impact of documents related to investor sentiment over the last three decades, providing insights into the evolution of research in this area.

4. METHODOLOGY AND DATA

4.1 RESEARCH METHODOLOGY:

This study used bibliometric analysis as the primary tool to explore the current knowledge structure of the investor sentiments in India. The analysis focuses on identifying key sources, scholars, documents, selected keywords and the connections among academic publications. By providing a descriptive overview of the contributions made by authors, organizations, journals, and countries, the study highlights their roles and influence in the field. Analysing these components helps to profile their activities and impact on the research landscape. Bibliometrics also allows for the assessment of research collaboration between individuals, institutions, and nations. This approach has been widely applied in various fields to analyse large volumes of academic publications, making it a suitable method for investigating the body of knowledge on the investor sentiment index over the past three decades.

4.2 DATA COLLECTION

The document search consisted of finding documents containing the words "Investor Sentiments", "investors' sentiments", "investor sentiment", "investors' sentiments" in the "Titles, Abstracts, and Keyword" section of **Scopus database (from 1994 to 2023)** as depicted in table 1 below. The search was conducted using the entire dataset. To ensure the academic rigor and exceptional quality of the material, only peer-reviewed English-language articles were included. A total of 1802 articles were included in this study.

Table 1: Search Query

TITLE-ABS-KEY("Investor Sentiments" AND "investors' sentiments" AND "investor sentiment" AND "investors' sentiments") AND PUBYEAR > 1993 AND PUBYEAR < 2024 AND (LIMIT-TO (SUBJAREA,"ECON") OR LIMIT-TO (SUBJAREA,"BUSI") OR LIMIT-TO (SUBJAREA,"SOCI")) AND (LIMIT-TO (DOCTYPE,"ar") OR LIMIT-TO (DOCTYPE,"re")) AND (LIMIT-TO (PUBSTAGE,"final")) AND (LIMIT-TO (LANGUAGE,"English"))

Source: Scopus database

5. RESULTS AND DISCUSSION

5.1 COUNTRY WISE CO-AUTHORSHIP ANALYSIS

The table 2 and fig. 1 provides a Country Wise Co-Authorship Analysis, detailing the number of co-authored research documents and their corresponding citation counts for various countries. It captures both the research output, measured by the number of documents, and the academic influence, gauged by the total number of citations received by these documents. The United States and China clearly dominate the landscape of co-authorship, with the highest number of documents and citations, signifying their leadership in global research output and influence.

Country	Documents	Citations	Country	Documents	Citations
United States	459	33257	Vietnam	27	1681
China	418	9796	Canada	35	1681
United Kingdom	165	5104	Germany	69	2501
France	68	2192	Hong Kong	39	1317

Australia	90	2276	Netherlands	32	1095
New Zealand	38	1441	Russian Federation	20	437
Taiwan	121	1575	Pakistan	32	764
South Africa	38	779	Spain	49	1224
Turkey	42	1086	Tunisia	68	1204

Source: Authors' calculations

Other countries like the United Kingdom, Germany, Australia, and France also contribute significantly to international research but with lower output and citations. Countries with fewer documents, such as New Zealand, Taiwan, and South Africa, show substantial academic impact relative to their output, suggesting efficient research with meaningful contributions.

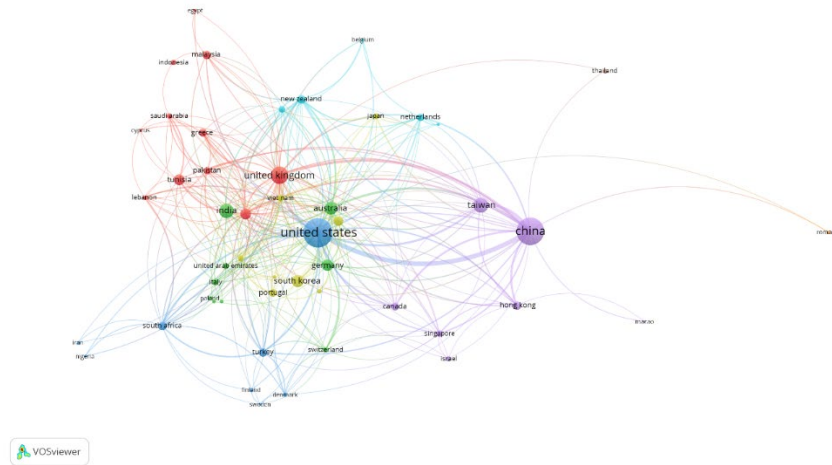


Fig. 1 Country wise co-authorship analysis

In contrast, countries like the Russian Federation and Pakistan exhibit more modest participation and impact. Overall, the table highlights the disparities in research collaboration and influence, with a concentration of high-impact research in a few leading countries and varied levels of contribution from others.

5.2 AUTHOR KEYWORDS CO-OCCURRENCE NETWORK

The "Author Keywords Co-Occurrence Network" table 3 (see fig. 2) highlights the key research themes, with **investor sentiment** being the most frequent keyword, appearing 844 times, indicating its central role in the field.

Table 3: Author Keywords Co-occurrence Network			
Author Keywords	Occurrence	Author Keywords	Occurrence
investor sentiment	844	market efficiency	39
behavioral finance	116	bitcoin	29
stock returns	87	social media	24
sentiment	94	cryptocurrency	22
covid-19	68	anomalies	15
volatility	57	G14	19
asset pricing	49	VIX	22
stock market	50	stock return	27
behavioural finance	36	sentiment index	21
return predictability	46	investor attention	18

Source: Authors' calculations

Other prominent topics include **behavioral finance** (116 mentions), **sentiment** (94), and financial concepts like **stock returns** (87), **volatility** (57), and **asset pricing** (49). Emerging topics such as **COVID-19**, **social media**, **bitcoin**, and **cryptocurrency** also appear, reflecting the influence of contemporary issues. The focus on **market efficiency** and

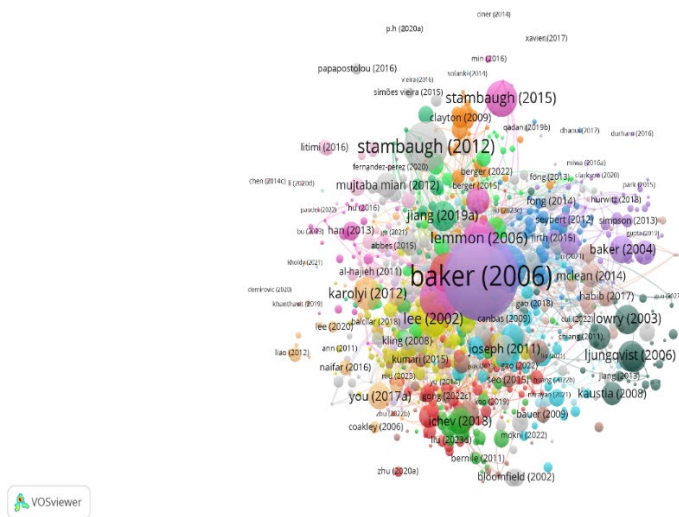


Fig. 3 Document Wise Citations

5.4 BIBLIOGRAPHIC COUPLING OF SOURCES

The table 5 and fig. 4 presents citation counts for various finance journals, revealing their impact and productivity. The **Journal of Financial Economics** leads with **7,695 citations** from **26 documents**, marking it as a key source of influential research. The **Journal of Banking and Finance** follows with **3,479 citations** across **49 documents**, highlighting its relevance in banking studies. Other notable journals include the **International Review of Financial Analysis** and **Finance Research Letters**, with **1,712** and **1,728 citations**, respectively, indicating a strong discourse in financial analysis. Meanwhile, the **Journal of Behavioral Finance** and **Applied Economics** showcase interest in behavioral aspects and practical applications, with **824** and **567 citations**.

Journals like **Economic Modelling** have fewer citations, suggesting they may contribute valuable insights but are less widely referenced. Overall, the table underscores the varying degrees of influence among finance journals, showcasing key sources that significantly shape research and practice in the field.

Table 5: Bibliographic Coupling of Sources		
Sources	Citations	Documents
Journal of Banking and Finance	3479	49
International Review of Financial Analysis.....	1712	56
Journal of Behavioral Finance	824	44
International Review of Economics And.....	711	41
Finance Research Letters	1728	78
Journal of Behavioral and Experimental....	857	34
Pacific Basin Finance Journal	914	36
Applied Economics	567	28
Economic Modelling	538	25
Journal of Financial Economics	7695	26

Source: Authors' calculations

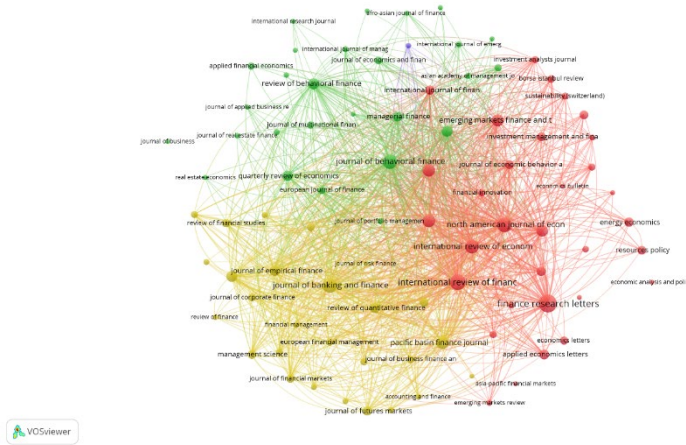


Fig. 4 Bibliographic Coupling of Sources

5.5 CITATIONS WISE REFERENCES

The table 6 and fig. 5 presents citation counts for various scholarly works focused on investor sentiment, reflecting their significance within the finance literature. Baker and Wurgler feature prominently, with multiple entries showcasing their influential research, such as “Investor Sentiment and the Cross” with 178 citations and “Global, Local, and Contagion Effects” with 106 citations. Their consistent presence highlights their role in shaping the understanding of investor sentiment and its implications on market dynamics.

Table 6: Citation wise cited references	
Cited References	Citations
baker m., wurgler j, investor sentiment and the cross...	178
brown g.w, cliff m.t, investor sentiment and the near-...	136
schmeling m., investor sentiment and stock returns: s...	113
baker m., wurgler j., yuan y, global, local, and contagi...	106
baker m., wurgler j, investor sentiment and the cross...	174
baker m., stein j.c., market liquidity as a sentiment indi...	158
baker m., wurgler j, investor sentiment in the stock m....	89
de long j.b., shleifer a., summers l.h., waldmann r.j., no...	106
stambaugh r.f., yu j., yuan y, the short of it: investor s...	93
barberis n., shleifer a., vishny r., a model of investor se...	87
baker m., wurgler j, investor sentiment in the stock m...	101
lemmon m., portniaguina e., consumer confidence an...	120

Source: Authors’ calculations

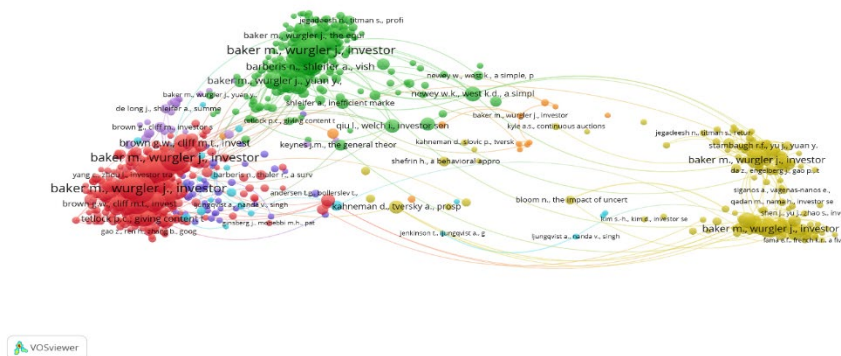


Fig. 5 Citations wise cited references

6. SUMMARY OF FINDINGS

The comprehensive analysis of research on investor sentiment reveals significant insights into the landscape of academic collaboration and focus within finance. The Country Wise Co-Authorship Analysis highlights the dominance of the United States and China in producing impactful research, with the U.S. leading in documents (459) and citations (33,257). Other countries, including the United Kingdom, Germany, and Australia, also contribute significantly but with lower outputs. The Author Keywords Co-Occurrence Network underscores investor sentiment as the most prevalent theme, appearing 844 times, alongside related topics such as behavioral finance and emerging issues like COVID-19 and cryptocurrencies. In terms of citation impact, seminal works by Baker and Wurgler stand out, with numerous entries demonstrating their influential role in the field. Journals like the *Journal of Financial Economics* and the *Journal of Banking and Finance* are identified as key sources of significant research, leading in citations and document counts. Overall, this analysis showcases the dynamic nature of research in investor sentiment, the varying degrees of contribution from different countries and journals, and the evolving focus on contemporary issues, highlighting the interplay between academic output and influence in finance.

7. CONCLUSION AND FUTURE RESEARCH DIRECTIONS

This study highlights the critical role of investor sentiment in financial research, with a strong focus on its influence across global markets. Key findings reveal the dominance of countries like the United States and China in research output, while emerging topics such as COVID-19, cryptocurrencies, and social media are gaining attention, reflecting the evolving nature of the field. Seminal works by Baker, Wurgler, and Barberis continue to shape the discourse, though newer research is emerging, particularly in the areas of behavioral finance and market volatility. The study also underscores the importance of academic collaboration and the growing impact of smaller countries with high academic influence relative to their output. Future research should focus on expanding the study of emerging topics, conducting more cross-country comparisons, and refining sentiment indices with advanced data sources like social media and real-time analytics. There is also scope to explore behavioral and psychological factors, as well as the growing impact of technology and AI on investor sentiment and market dynamics. Additionally, the integration of machine learning techniques to predict investor behaviour and market trends could offer valuable insights into future market fluctuations and financial decision-making.

CONFLICT OF INTERESTS

None.

ACKNOWLEDGMENTS

None

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