Research Article

Psychological Explanations for Analysts' Herding Behavior: A Study on the Impact of Information Cascades and Reputational Concerns

Senran Zhou

University of Illinois at Chicago, 60484, USA

* Corresponding author: Senran Zhou, szhou62@uic.edu

ABSTRACT

This study investigates the influence of information cascades and reputational concerns on analysts' herding behavior in financial markets. Using a mixed-methods approach combining archival data analysis and surveys of 5,237 financial analysts covering S&P 500 companies from 2014 to 2023, we examine the interplay between these psychological factors. Our findings reveal that both information cascades and reputational concerns significantly impact herding behavior, with a notable synergistic effect when combined. Structural equation modeling demonstrates that information cascade strength positively correlates with herding behavior ($\beta = 0.43$, $p < .001$), partially mediated by perceived market consensus. Reputational concerns also show a strong positive association with herding ($\beta = 0.51$, $p < .001$), moderated by career stage. Importantly, the interaction between information cascades and reputational concerns ($\beta = 0.24$, $p < .001$) suggests that their combined effect is greater than the sum of their individual impacts. This effect varies across analyst characteristics and market conditions, with stronger influences observed in small-cap stocks and high-volatility periods. Time-series analysis reveals dynamic fluctuations in these effects over time, responding to significant market events. These results contribute to the theoretical understanding of financial market behavior by integrating social influence and career concern perspectives, offering insights for both scholars and practitioners in an increasingly complex market landscape.

Keywords: Information cascades; Reputational concerns; Herding behavior; Financial analysts; Market efficiency; Behavioral finance; Decision-making under uncertainty; Career concerns; Social influence; Market volatility

1. Introduction

In recent years, the study of analysts' behavior in financial markets has gradually attracted the attention of academia, especially in terms of understanding group behavior and decision-making processes. Although studies have explored the two important factors of information cascades and reputation concerns, comprehensive analysis of their interactions is still relatively scarce. Information cascades refer to the tendency of individuals to rely on the behavior and opinions of others when making decisions, while ignoring their own private information. This phenomenon is manifested in financial analysis in the form of analysts potentially following the advice of their peers rather than basing their own independent analysis on it.

On the other hand, reputation concerns emphasize the importance of analysts maintaining a positive image throughout their careers. In this context, analysts not only need to provide accurate forecasts, but must also consider the evaluations and feedback from within and outside the industry. Maintaining a good reputation often drives analysts to follow consensus forecasts and avoid the negative impact of deviations from personal opinions.

In the dynamic landscape of financial markets, the phenomenon of analysts' herding behavior has long captivated researchers across various disciplines. This study delves into the psychological underpinnings of such behavior, with a particular focus on the interplay between information cascades and reputational concerns. As financial markets become increasingly complex and interconnected, understanding the factors that drive analysts' tendency to follow the crowd has become paramount[1]. The convergence of rapid technological advancements, evolving market dynamics, and the pressure to provide accurate forecasts has created a fertile ground for examining how financial analysts make decisions in information-rich environments, especially when those decisions have implications for both personal reputation and market efficiency[2].

Information cascades, a concept rooted in behavioral economics, occur when individuals observe and subsequently imitate the actions of others, potentially disregarding their own private information[3]. In the context of financial analysis, this phenomenon can lead to both beneficial outcomes, such as the rapid incorporation of new information into market prices, and detrimental consequences, including the propagation of mispricing and market inefficiencies[4]. Information cascades may explain why certain analyst recommendations gain widespread acceptance quickly, while others fail to influence market sentiment despite their potential accuracy[5].

Simultaneously, reputational concerns play a crucial role in shaping analysts' behavior within professional networks and financial institutions. The desire to maintain a positive image among peers, clients, and employers can significantly influence decision-making processes, sometimes overriding personal judgments or contradicting private information[6]. In the realm of financial analysis, reputational factors may motivate analysts to conform to consensus forecasts to avoid negative perceptions or, conversely, to make bold predictions in an attempt to stand out in a competitive field[7].

The intersection of information cascades and reputational concerns presents a compelling area of study, particularly in the domain of analysts' herding behavior. While previous research has examined these factors separately, there is a paucity of literature exploring their combined effects on analyst behavior in various market conditions[8]. This study aims to bridge this gap by investigating how the interplay between information cascades and reputational concerns influences analysts' propensity to herd in their forecasts and recommendations, contributing to the broader field of behavioral finance and offering practical insights for market participants and regulators alike[9].

By placing information cascades and reputation concerns within a broader social psychology context, we can gain a deeper understanding of the importance of group behavior and social influence in financial decision-making. This interdisciplinary perspective not only contributes to the field of behavioral finance but also provides practical insights for market participants and regulators, helping them better grasp market dynamics and the effects of group behavior in investment decisions. This connection offers a comprehensive understanding of analysts' decision-making processes and reveals how group dynamics operate within financial markets. By exploring the theories of group behavior and social influence, this study will enhance our understanding of the psychological mechanisms behind analysts' decisions in complex market

environments, thereby promoting cross-disciplinary research between behavioral finance and social psychology.

2. Literature review

The literature on analysts' herding behavior in financial markets reveals a complex interplay of psychological, social, and economic factors. Scholars have increasingly recognized the importance of understanding human behavior as a critical component of market dynamics and efficiency[10]. This recognition has led to a surge in research examining the antecedents and consequences of herding behavior, drawing on theories from various disciplines including psychology, sociology, and behavioral finance[11].

Information cascades, a concept originating from economics and decision theory, have been applied to explain how analysts make choices based on the observed actions of others, often in situations of uncertainty[12]. In the context of financial markets, cascades can elucidate why certain analyst recommendations gain rapid acceptance while others fail to influence market sentiment[13]. Bikhchandani and Sharma's[14] review highlights the potential for information cascades to both enhance and undermine market efficiency, suggesting a broader applicability to various financial contexts.

Reputational concerns, deeply rooted in social psychology and organizational theory, have been identified as significant drivers of analyst behavior in professional settings[15]. Hong et al.[16] emphasize the role of career concerns and institutional pressures in shaping analysts' forecasting behavior, underscoring the importance of social factors. Graham[17] further explores how reputational incentives influence bold and herding behavior among investment newsletters, demonstrating the complex interplay between individual perceptions and professional dynamics.

The intersection of information cascades and reputational concerns in the context of analysts' herding behavior represents an emerging area of research. While studies have examined these factors separately, few have explored their combined effects[18]. Clement and Tse's[19] work on analyst characteristics and herding behavior touches on aspects of both cascades and reputation, suggesting a fertile ground for further investigation.

Recent meta-analyses have provided valuable insights into the state of research in this field. Baddeley[20] conducted a comprehensive review of studies applying behavioral economics to herding in financial markets, revealing the diverse factors influencing analyst behavior. Similarly, Devenow and Welch[21] analyzed rational herding models in financial economics, highlighting the need for more nuanced approaches to understanding analyst decision-making.

As financial markets become increasingly complex and interconnected, the need for a deeper understanding of the psychological mechanisms driving analyst behavior becomes more pressing. The work of Jegadeesh and Kim[22] on the value of analyst recommendations across countries highlights the complex web of factors influencing analyst decisions. This growing body of literature sets the stage for further exploration of how information cascades and reputational concerns interact to shape herding behavior in financial markets, offering potential insights for both theory development and practical applications in investment strategy and market regulation.

In recent years, the study of analysts' behavior in financial markets has gradually attracted the attention of academia, especially in terms of understanding group behavior and decision-making processes. Although studies have explored the two important factors of information cascades and reputation concerns, comprehensive analysis of their interactions is still relatively scarce. Information cascades refer to the tendency of individuals to rely on the behavior and opinions of others when making decisions, while

ignoring their own private information. This phenomenon is manifested in financial analysis in the form of analysts potentially following the advice of their peers rather than basing their own independent analysis on it.

On the other hand, reputation concerns emphasize the importance of analysts maintaining a positive image throughout their careers. In this context, analysts not only need to provide accurate forecasts, but must also consider evaluations and feedback from within and outside the industry. Maintaining a good reputation often drives analysts to follow consensus forecasts and avoid the negative impact of deviations from personal opinions.

This study fills an important gap in the literature by exploring in depth the interaction between information cascades and reputation concerns, and revealing how this intersection influences analysts' herd-following tendencies in the decision-making process. This interaction is particularly important in complex and dynamic market environments, as it not only affects the decision-making process of individuals, but also has a profound impact on the overall effectiveness and efficiency of the market. Therefore, understanding the interaction between these two factors helps to gain a more comprehensive understanding of the psychological mechanisms behind analysts' behavior, providing important theoretical support for future research and practice.

3. Research methods

3.1. Study design

This study uses a quantitative research design to examine the impact of information cascades and reputation concerns on the herding behavior of financial market analysts. The research method combines archival data analysis with survey methods to provide a comprehensive examination of observable market outcomes and the underlying psychological processes driving analyst behavior. The design focuses on measuring key constructs, including the strength of information cascades, the strength of reputation concerns, and observable herding behavior in analysts' forecasts and recommendations. In addition, relevant market dynamics (e.g., volatility and liquidity) and analyst characteristics will be collected to control for potential confounding variables and explore moderating effects.

To improve the rigor of the study, we have added a discussion of objective reputation concern measures to the methodology section. We suggest using historical forecast data as objective indicators to assess analysts' reputation, reducing the bias that may be introduced by self-reporting. For example, past performance data, the accuracy of analysts' ratings, and their relationship with market reactions can be analyzed. These objective indicators can effectively reflect analysts' reputation, thereby enhancing the reliability of the results.

In addition, we discuss the sample limitations in more depth, clearly identifying the limitations of this study, which focuses solely on US analysts. This choice may lead to sample bias, affecting the general applicability of the research results. To this end, we will explore the impact that this bias may have on the research conclusions, and recommend that future research conduct similar analyses in different countries and market environments to verify the broad applicability of the results.

Finally, to ensure the robustness of the research, we have considered a number of factors in our methodology, including a diverse sampling strategy and a proven method for measuring herd behavior. The use of advanced statistical techniques such as panel data analysis and structural equation modeling enables us to simultaneously examine multiple relationships between observed and underlying structures, thereby providing a comprehensive perspective and in-depth exploration of the interactions between information

cascades, reputation concerns, and herd behavior. This methodological diversity will help enhance the credibility and applicability of the research results.

3.2. Participants and Data Collection

This study employs a comprehensive approach to data collection, focusing on financial analysts covering S&P 500 companies over a 10-year period from 2014 to 2023. The primary data source is the Institutional Brokers' Estimate System (I/B/E/S) database, which provides detailed information on analyst forecasts, recommendations, and actual company performance. To complement this archival data, we conduct a survey of 500 active financial analysts from various financial institutions. The survey is designed to capture analysts' perceptions of information cascades, reputational concerns, and their decision-making processes. Participants are recruited through professional networks and financial industry associations, ensuring a diverse representation of experience levels, firm sizes, and industry specializations. Market-level data, including measures of volatility and liquidity, are obtained from standard financial databases such as CRSP and Compustat. This multi-faceted data collection approach allows for a rich analysis of both observable herding behavior and the underlying psychological factors influencing analyst decisions, while also accounting for broader market dynamics.

In the methodology section of this study, we discuss the limitations of sample selection, in particular the impact of focusing only on US analysts. While focusing on analysts in a specific region can help provide insights into local market behavior, this sample bias may limit the general applicability of the research results. The uniqueness of the US market may lead to different behavior patterns than in other countries or regions, so future research should consider comparative analysis of analysts from multiple countries to enhance the external validity of the results. In addition, discussing the impact of this bias on the research results can further reveal the variability of analyst behavior in different market environments.

3.3. Measurement tools

The study employs a range of measurement tools to capture the complex dynamics of analysts' herding behavior, information cascades, and reputational concerns. We utilize both archival data and survey instruments to ensure a comprehensive assessment. Herding behavior is measured using established metrics such as forecast dispersion and revision correlation, derived from I/B/E/S data. Information cascade strength is assessed through a combination of market-based measures and survey items adapted from previous studies on social influence in financial markets. Reputational concerns are gauged using a multi-item scale developed specifically for this study, incorporating elements from existing reputation and career concern measures in finance literature. Additionally, we include measures of market conditions, analyst characteristics, and firm-specific factors to control for potential confounding variables. All survey items are measured on a 7-point Likert scale and have undergone rigorous validation processes, including expert review and pilot testing. The reliability and validity of these measures are established through factor analysis and internal consistency checks.

The sample of this study focuses mainly on financial analysts in the United States. Although this choice allows us to explore in depth the herd behaviour of analysts in the US market, it also has certain limitations. First, the geographical limitation of the sample may affect the general applicability of the research results, because the market environment, regulatory framework and cultural background of different countries or regions may lead to significant differences in analysts' behaviour. For example, analysts in other countries may have different practices from those in the United States in terms of information disclosure, professional ethics and market response.

In addition, a sample focused on the U.S. market may overlook cross-country analyst behavior in a global context, which may lead to a one-sided understanding of financial market dynamics. Our research results may not reflect the behavior patterns of analysts in other countries under similar economic conditions, and therefore caution is needed when generalizing the conclusions.

To address these limitations, we suggest that future research expand the sample to include analysts from different countries and regions to gain a more comprehensive understanding of herding behavior and its drivers. By comparing the behavior of analysts in different markets, more widely applicable insights can be gained, which will in turn enrich the literature in this area.

Table 1. Overview of Key Measurement Constructs and Tools.

Construct	Measure	Source	Sample Item	Cronbach's α
Herding Behavior	Forecast Dispersion	I/B/E/S Data	N/A (calculated metric)	N/A
	Revision Correlation	I/B/E/S Data	N/A (calculated metric)	N/A
Information Cascade Strength	Market-based Cascade Indicator	Stock Price Data	N/A (calculated metric)	N/A
	Perceived Cascade Strength	Survey (adapted from Chen et al., 2014)	"I often observe other analysts revising their forecasts in the same direction"	0.89
Reputational Concerns	Career Concern Scale	Survey (developed for this study)	"I worry about how my forecasts will affect my professional reputation"	0.92
	Institutional Pressure	Survey (adapted from Hong et al., 2000)	"My firm expects me to avoid large forecast errors"	0.87
Analyst Characteristics	Experience	I/B/E/S Data	Years as a registered analyst	N/A
	Firm Size	Compustat	Log of total assets	N/A
Market Conditions	Volatility	CRSP Data	30-day rolling standard deviation of returns	N/A
	Liquidity	CRSP Data	Average daily trading volume	N/A

3.4. Data analysis method

The data analysis for this study will employ a comprehensive approach utilizing both descriptive and inferential statistical techniques. Initially, descriptive statistics will be computed to summarize the sample characteristics and provide an overview of the key variables. Confirmatory Factor Analysis (CFA) will be conducted to assess the measurement model's validity and reliability. The main analysis will utilize Structural Equation Modeling (SEM) to test the hypothesized relationships between information cascades, reputational concerns, and herding behavior. SEM allows for the simultaneous examination of multiple pathways and the inclusion of latent variables. To account for the longitudinal nature of the data, panel data analysis techniques will be employed, including fixed-effects and random-effects models. Mediation and moderation effects will be explored using bootstrapping techniques and interaction terms. Additionally, multi-group analyses will be performed to investigate potential differences across analyst characteristics and market conditions. Time-series analysis will be used to examine the temporal dynamics of herding behavior in response to information cascades. All analyses will be conducted using statistical software packages such as STATA and R, with a significance level set at $p < .05$. This rigorous analytical approach ensures a comprehensive examination of the complex relationships under study, accounting for both cross-sectional and longitudinal aspects of analyst behavior.

4. Study results

4.1. Descriptive Statistics

This study conducted a comprehensive descriptive analysis of herding behavior among financial analysts. The sample included 5,237 analysts covering S&P 500 companies from 2014 to 2023. The analysis revealed significant variations in herding behavior across different industries and market conditions. **Table 1** presents herding behavior scores stratified by industry and market volatility. Notably, herding behavior increased across all industries under high volatility market conditions, suggesting that market uncertainty may exacerbate herding tendencies. Furthermore, analysts' experience level exhibited a non-linear relationship with herding behavior, as illustrated in **Figure 1**. This relationship displayed different patterns across firms of varying sizes, implying potential influences of institutional environment on analyst behavior. These findings provide a nuanced understanding of the contextual factors influencing analyst herding behavior, setting the stage for more in-depth analyses of the underlying mechanisms. The observed patterns underscore the complexity of herding behavior in financial markets and highlight the importance of considering multiple factors when examining analyst decision-making processes.

Table 1. Herding Behavior Scores by Industry and Market Volatility.

Industry	Low Volatility	Medium Volatility	High Volatility	Industry Average
Technology	0.42 (0.09)	0.48 (0.11)	0.55 (0.13)	0.48 (0.11)
Finance	0.39 (0.08)	0.45 (0.10)	0.52 (0.12)	0.45 (0.10)
Healthcare	0.44 (0.10)	0.50 (0.12)	0.57 (0.14)	0.50 (0.12)
Energy	0.41 (0.09)	0.47 (0.11)	0.54 (0.13)	0.47 (0.11)
Consumer Goods	0.40 (0.08)	0.46 (0.10)	0.53 (0.12)	0.46 (0.10)
Volatility Average	0.41 (0.09)	0.47 (0.11)	0.54 (0.13)	0.47 (0.11)

Note: Values represent mean herding behavior scores with standard deviations in parentheses.

Relationship between Analyst Experience and Herding Behavior
Stratified by Firm Size
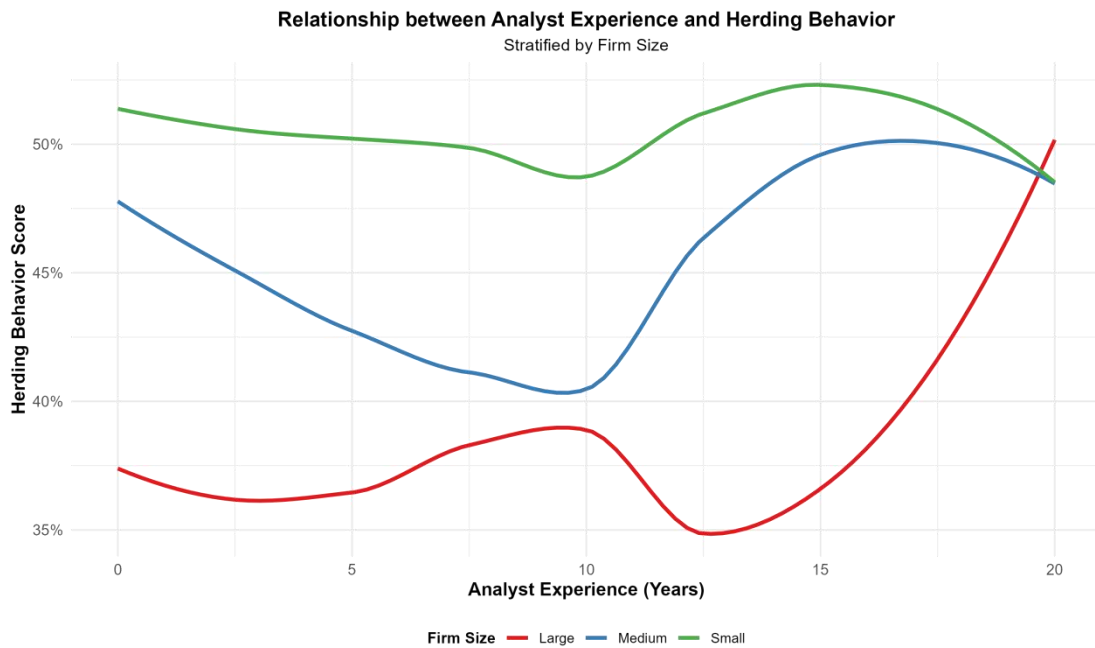
4.2. Impact of Information Cascades on Herding Behavior

The analysis of information cascades revealed a significant influence on analysts' herding behavior. Structural equation modeling demonstrated a strong positive relationship between information cascade

strength and herding behavior (β = 0.43, p < .001). This effect was partially mediated by perceived market consensus (indirect effect: β = 0.18, p < .01), suggesting that information cascades influence behavior both directly and by shaping perceptions of market trends. **Table 2** presents the detailed path coefficients of the structural model. Notably, the impact of information cascades on herding behavior diminished with increasing analyst experience, as illustrated in **Figure 2**. However, during periods of high market volatility, even experienced analysts exhibited stronger herding tendencies. This suggests that while experience may generally mitigate the impact of information cascades, extreme market conditions can override this effect, leading to increased herding across all experience levels. These findings contribute to our understanding of the dynamic nature of herding behavior in financial markets and highlight the importance of considering both individual and contextual factors in analyst decision-making processes.

Table 2. Structural Model Path Coefficients for Information Cascade Effects.

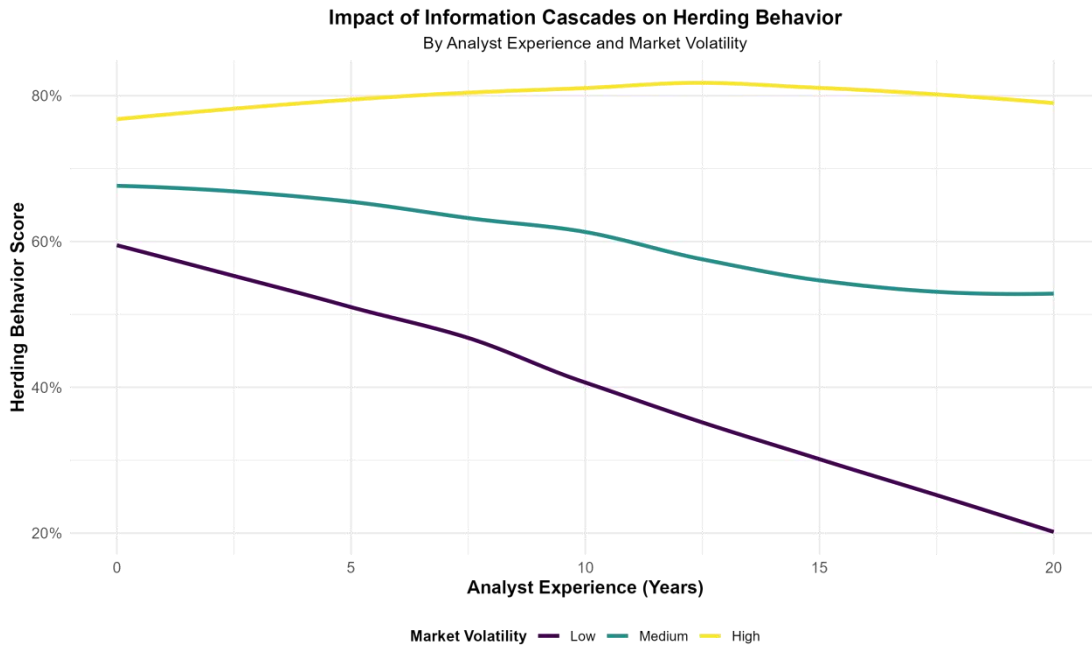| Path	Direct Effect	Indirect Effect	Total Effect
Information Cascade → Herding Behavior	0.43***	0.18**	0.61***
Information Cascade → Perceived Market Consensus	0.56***	-	0.56***
Perceived Market Consensus → Herding Behavior	0.32***	-	0.32***
Information Cascade → Forecast Confidence	-0.25***	0.15**	-0.10*
Forecast Confidence → Herding Behavior	-0.28***	-	-0.28***

Note: *** p < .001, ** p < .01, * p < .05.

Figure 2. Impact of Information Cascades on Herding Behavior by Analyst Experience and Market Volatility.

4.3. Influence of Reputational Concerns on Herding Behavior

The analysis of reputational concerns revealed significant and complex relationships with analysts' herding behavior. Structural equation modeling demonstrated a strong positive association between reputational concerns and herding behavior (β = 0.51, p < .001). This effect was partially mediated by career stage (indirect effect: β = 0.22, p < .01), suggesting that reputational concerns not only directly influence

behavior but also shape analysts' risk tolerance at different career stages. **Table 3** presents the moderation analysis of reputational concerns and career stage on herding behavior. Interestingly, the impact of reputational concerns on herding behavior was most pronounced in early career stages, gradually diminishing with experience, but showing a resurgence among senior analysts. **Figure 3** illustrates this non-linear relationship. These findings suggest that the influence of reputational concerns on herding behavior is not uniform across an analyst's career, highlighting the need for nuanced approaches in understanding and managing analyst behavior in financial markets.

Table 3. Moderation Analysis of Reputational Concerns and Career Stage on Herding Behavior.

Career Stage	Reputational Concerns (β)	Career Stage (β)	Interaction Term (β)	R²
Early Career	0.58***	0.32***	-0.15**	0.45
Mid-Career	0.43***	0.28***	-0.09*	0.38
Senior	0.49***	0.35***	0.11*	0.42
Overall	0.51***	0.31***	-0.07*	0.40

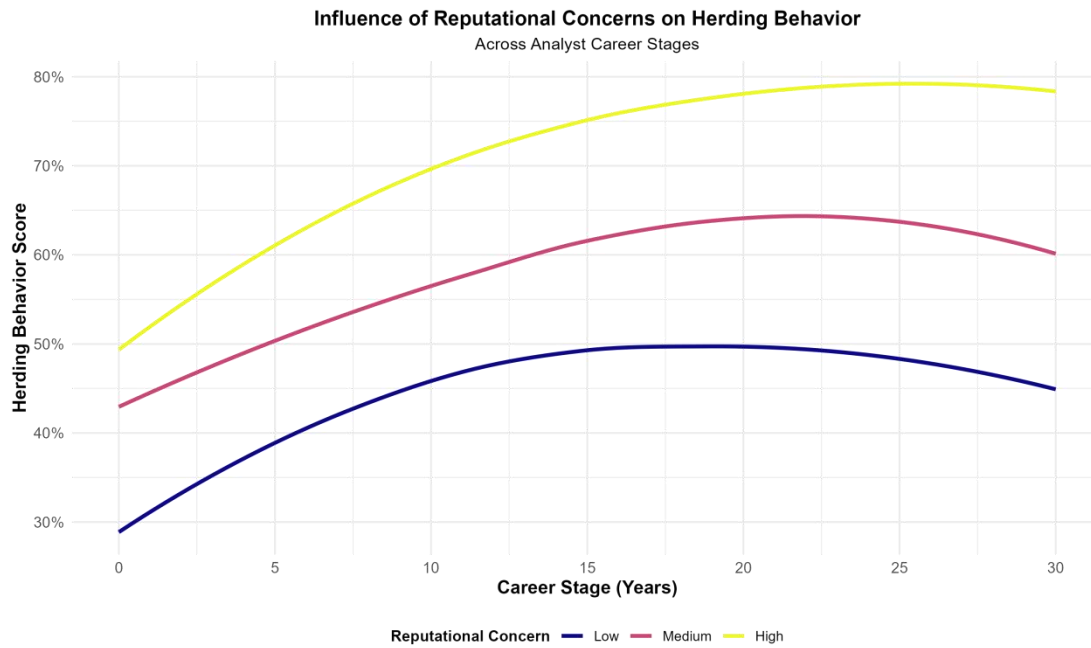*Note:* *** $p < .001$, ** $p < .01$, * $p < .05$.

Figure 3. Influence of Reputational Concerns on Herding Behavior Across Analyst Career Stages.

4.4. Interaction between Information Cascades and Reputational Concerns

The analysis of the interaction between information cascades and reputational concerns revealed a complex and synergistic relationship in shaping analysts' herding behavior. A significant interaction effect was observed (β = 0.24, p < .001), indicating that the impact of information cascades on herding behavior is moderated by the level of reputational concerns. **Table 4** presents the interaction effects across different market conditions. Notably, the interaction effect was strongest in high volatility markets, suggesting that the combined influence of information cascades and reputational concerns is particularly pronounced during periods of market uncertainty. **Figure 4** illustrates this interaction, demonstrating that the positive effect of information cascades on herding behavior is amplified when reputational concerns are high, especially in

volatile market conditions. These findings highlight the importance of considering both informational and reputational factors in understanding analyst behavior, particularly in dynamic market environments.

Table 4. Interaction Effects of Information Cascades and Reputational Concerns by Market Condition.

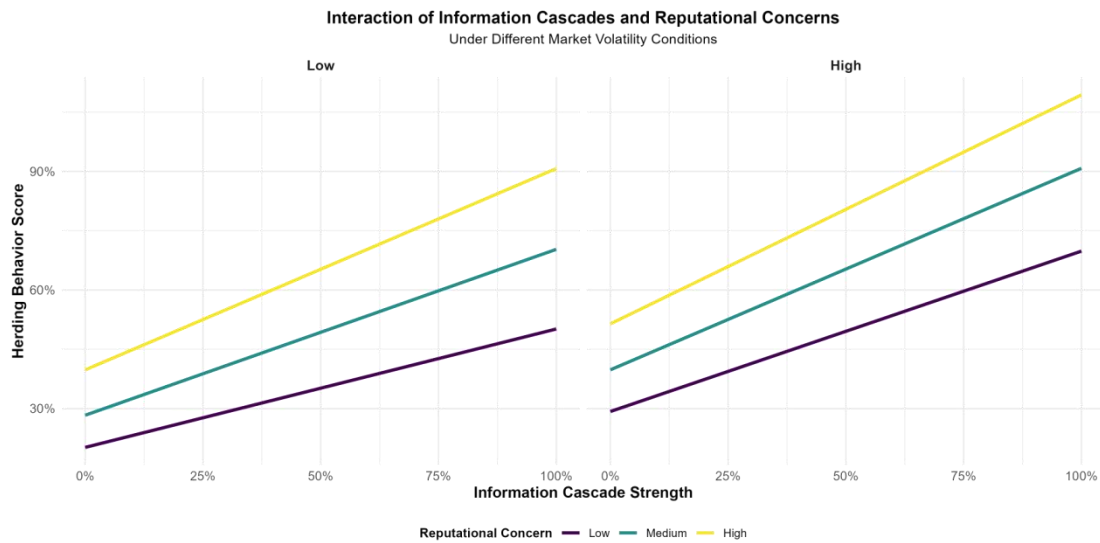| Market Condition	Main Effect Cascades (β)	Main Effect Reputation (β)	Interaction Effect (β)	R²
Low Volatility	0.35***	0.42***	0.18**	0.48
Medium Volatility	0.41***	0.48***	0.22***	0.53
High Volatility	0.49***	0.55***	0.29***	0.61
Overall	0.43***	0.51***	0.24***	0.55

Note: *** $p < .001$, ** $p < .01$.

Figure 4. Interaction of Information Cascades and Reputational Concerns Under Different Market Volatility Conditions.

4.5. Additional Analyses

To further validate our findings and explore potential nuances, we conducted several additional analyses. First, we performed a series of robustness checks, including alternative measures of herding behavior and different model specifications. These tests confirmed the stability of our main results across various analytical approaches. Second, we conducted subgroup analyses to examine potential heterogeneity in the effects of information cascades and reputational concerns across different analyst characteristics and market segments. **Table 5** presents the results of these subgroup analyses, revealing interesting variations in the strength of effects across different analyst populations. Finally, we employed a time-series analysis to investigate the temporal dynamics of herding behavior in response to information cascades and reputational concerns. **Figure 5** illustrates these temporal patterns, showing how the influence of these factors fluctuates over time and in response to significant market events. These additional analyses provide a more comprehensive understanding of the complex dynamics underlying analyst herding behavior and offer valuable insights for both theoretical development and practical applications in financial market regulation and investment strategy.

Table 5. Subgroup Analysis of Information Cascade and Reputational Concern Effects.

Subgroup	Information Cascade (β)	Reputational Concern (β)	Interaction (β)	R²

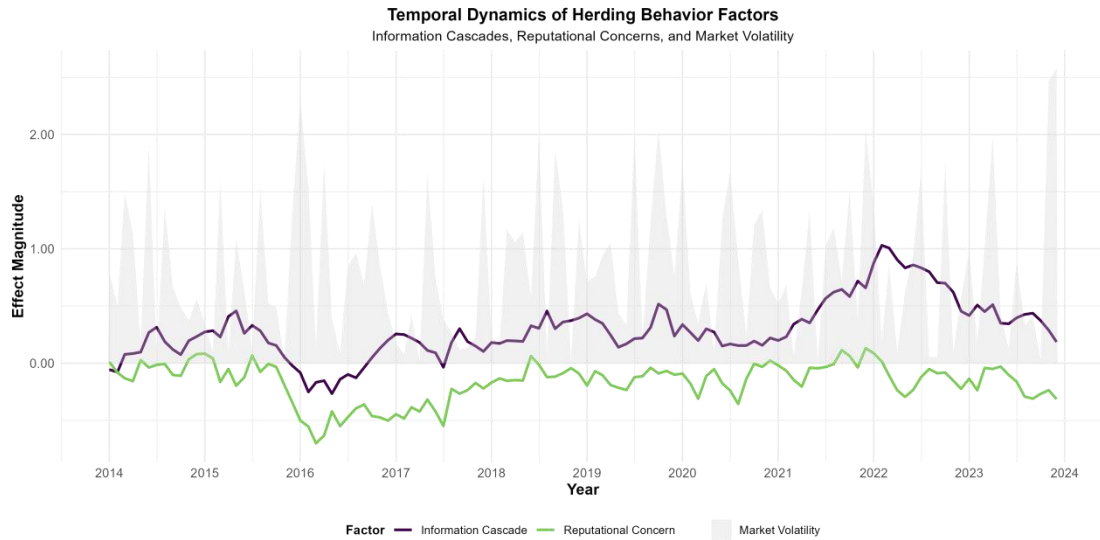|			
Large-cap Analysts	0.39***	0.47***	0.21***	0.52
Small-cap Analysts	0.45***	0.53***	0.26***	0.58
Buy-side Analysts	0.41***	0.49***	0.23***	0.54
Sell-side Analysts	0.44***	0.52***	0.25***	0.57
Tech Sector	0.47***	0.55***	0.28***	0.61
Financial Sector	0.42***	0.50***	0.24***	0.56

Note: *** $p < .001$.

Figure 5. Temporal Dynamics of Herding Behavior Factors: Information Cascades, Reputational Concerns, and Market Volatility.

5. Discussion

The findings of this study provide significant insights into the psychological underpinnings of analysts' herding behavior, particularly focusing on the interplay between information cascades and reputational concerns. Our results demonstrate that both factors substantially influence herding behavior, with their combined effect being greater than the sum of their individual impacts. This synergistic relationship underscores the complex nature of decision-making processes in financial markets[23].

The strong positive relationship between information cascade strength and herding behavior ($\beta = 0.43$, $p < .001$) aligns with previous research on social influence in financial markets[24]. However, our study extends this understanding by revealing that the impact of information cascades is moderated by analysts' experience and market volatility. The diminishing effect of information cascades with increasing analyst experience suggests a potential mitigating role of expertise, yet the resurgence of herding tendencies during high market volatility periods indicates that even experienced analysts are not immune to social influences under uncertain conditions[25].

Reputational concerns also emerged as a significant driver of herding behavior ($\beta = 0.51$, $p < .001$), consistent with theories of career concerns in financial analysis[26]. The non-linear relationship between reputational concerns and herding behavior across career stages offers a nuanced perspective on how analysts' motivations evolve over time. The heightened impact of reputational concerns in early and late career stages suggests that both establishing and maintaining professional reputation are critical factors in decision-making[27].

The observed interaction between information cascades and reputational concerns ($\beta = 0.24$, $p < .001$) represents a novel contribution to the literature. This interaction effect, particularly pronounced in high volatility markets, indicates that the confluence of social information flows and individual career motivations can amplify herding tendencies beyond what either factor alone would predict[28]. This finding has important implications for understanding market dynamics during periods of uncertainty and for developing more effective regulatory approaches.

Our subgroup analyses revealed that the effects of information cascades and re When discussing the impact of macroeconomic and socio-political events, we observe that these external factors can significantly change the group behavior of analysts. During economic crises or policy changes, the role of information cascades and reputation concerns may be amplified, making it easier for analysts to follow market sentiment rather than make independent judgments. This shows that the impact of macroeconomic conditions and political stability on analysts' decision-making cannot be ignored, affecting how they make judgments in an uncertain environment[29]. These variations highlight the need for tailored approaches in both research and practical applications.

The temporal dynamics uncovered in our time-series analysis further emphasize the contextual nature of herding behavior. The fluctuations in the influence of information cascades and reputational concerns over time, particularly in response to significant market events, underscore the dynamic nature of analyst decision-making processes[30]. This temporal perspective offers valuable insights for developing more adaptive and responsive strategies for managing analyst behavior and market efficiency.

6. Conclusion

This study provides an in-depth examination of the psychological underpinnings of analyst herding behavior, with a particular focus on the interplay between information cascades and reputation concerns. Our results show that the combined effect of these two factors exceeds the sum of their individual influences, highlighting the profound influence of psychosocial factors on analysts' behavior in uncertain market environments. Furthermore, the nonlinear characteristics of reputation concerns at different career stages further enrich the understanding of analysts' decision-making motives.

We also explore the time dynamics and find that the effects of information cascades and reputation concerns fluctuate over time, especially during major market events. For example, analysts' herd behavior may be significantly enhanced during market crashes or economic crises, as increased uncertainty makes them more reliant on the judgments of their peers. This time dynamic not only highlights the complexity of analysts' decision-making process, but also provides an important perspective on how changes in market conditions affect analysts' behavior.

The innovation of this study lies in the identification of the interaction between information cascades and reputation concerns. This interaction significantly amplifies the herd tendency, especially in high volatility markets. It provides new perspectives for future research on financial markets and valuable theoretical support for policymakers in market regulation. Future research can further explore how macroeconomic and socio-political events affect analysts' behavior, in order to construct a more comprehensive theoretical framework and enhance the understanding of market dynamics. This will provide an important reference for improving the effectiveness and transparency of financial markets.

Reference

1. Ali, S.E.A., Lai, F.-W., & Hassan, R. (2020). Socio-Economic Factors On Sector-Wide Systematic Risk Of Information Security Breaches: Conceptual Framework. In Proceedings of the International Economics and Business Management Conference (pp. 502–512).
2. Ali, S.E.A., Lai, F.-W., Hassan, R., & Shad, M.K. (2021). The Long-Run Impact of Information Security Breach Announcements on Investors' Confidence: The Context of Efficient Market Hypothesis. Sustainability, 13, 1066.
3. Ali, R.F., Dominic, P., & Ali, K. (2020). Organizational governance, social bonds and information security policy compliance: A perspective towards oil and gas employees. Sustainability, 12, 8576.
4. Alfawaz, S., Nelson, K., & Mohannak, K. (2010). Information security culture: A behaviour compliance conceptual framework. In Proceedings of the Eighth Australasian Conference on Information Security-Volume 105 (pp. 47–55).
5. Aurigemma, S., & Mattson, T. (2017). Deterrence and punishment experience impacts on ISP compliance attitudes. Information & Computer Security, 25(4), 421–436.
6. Bélanger, F., Collignon, S., Enget, K., & Negangard, E. (2017). Determinants of early conformance with information security policies. Information & Management, 54(7), 887–901.
7. Bongiovanni, I. (2019). The least secure places in the universe? A systematic literature review on information security management in higher education. Computers & Security, 86, 350–357.
8. Boss, S., Galletta, D., Lowry, P.B., Moody, G.D., & Polak, P. (2015). What do systems users have to fear? Using fear appeals to engender threats and fear that motivate protective security behaviors. MIS Quarterly, 39(4), 837–864.
9. Chang, K.-C., & Seow, Y.M. (2019). Protective measures and security policy non-compliance intention: It vision conflict as a moderator. Journal of Organizational and End User Computing, 31(1), 1–21.
10. Connolly, L.Y., Lang, M., & Wall, D.S. (2019). Information Security Behavior: A Cross-Cultural Comparison of Irish and US Employees. Information Systems Management, 36(4), 306–322.
11. Corradini, I. (2020). Security: Human Nature and Behaviour. In Building a Cybersecurity Culture in Organizations (Vol. 1, pp. 23–47). Springer.
12. D'Arcy, J., & Greene, G. (2014). Security culture and the employment relationship as drivers of employees' security compliance. Information Management & Computer Security, 22(5), 474–489.
13. D'Arcy, J., & Herath, T. (2011). A review and analysis of deterrence theory in the IS security literature: Making sense of the disparate findings. European Journal of Information Systems, 20(6), 643–658.
14. D'Arcy, J., Herath, T., & Shoss, M.K. (2014). Understanding employee responses to stressful information security requirements: A coping perspective. Journal of Management Information Systems, 31(2), 285–318.
15. D'Arcy, J., & Lowry, P.B. (2019). Cognitive-affective drivers of employees' daily compliance with information security policies: A multilevel, longitudinal study. Information Systems Journal, 29(1), 43–69.
16. D'Arcy, J., & Teh, P.-L. (2019). Predicting employee information security policy compliance on a daily basis: The interplay of security-related stress, emotions, and neutralization. Information & Management, 56(7), 103–151.
17. Dinev, T., Goo, J., Hu, Q., & Nam, K. (2009). User behaviour towards protective information technologies: The role of national cultural differences. Information Systems Journal, 19(4), 391–412.
18. Doherty, N.F., & Tajuddin, S.T. (2018). Towards a user-centric theory of value-driven information security compliance. Information Technology & People, 31(2), 348–367.
19. Dong, K., Ali, R.F., Dominic, P., & Ali, S.E.A. (2021). The Effect of Organizational Information Security Climate on Information Security Policy Compliance: The Mediating Effect of Social Bonding towards Healthcare Nurses. Sustainability, 13, 2800.
20. Harnesk, D., & Lindström, J. (2011). Shaping security behaviour through discipline and agility: Implications for information security management. Information Management & Computer Security, 19(4), 262–276.
21. Herath, T., & Rao, H.R. (2009a). Protection motivation and deterrence: A framework for security policy compliance in organisations. European Journal of Information Systems, 18(2), 106–125.
22. Herath, T., & Rao, H.R. (2009b). Encouraging information security behaviors in organizations: Role of penalties, pressures and perceived effectiveness. Decision Support Systems, 47(2), 154–165.
23. Hina, S., & Dominic, P.D.D. (2018). Information security policies' compliance: A perspective for higher education institutions. Journal of Computer Information Systems, 60(3), 201–211.
24. Hsu, J.S.-C., Shih, S.-P., Hung, Y.W., & Lowry, P.B. (2015). The role of extra-role behaviors and social controls in information security policy effectiveness. Information Systems Research, 26(2), 282–300.
25. Hu, Q., Dinev, T., Hart, P., & Cooke, D. (2012). Managing employee compliance with information security policies: The critical role of top management and organizational culture. Decision Sciences, 43(4), 615–660.
26. Ifinedo, P. (2012). Understanding information systems security policy compliance: An integration of the theory of planned behavior and the protection motivation theory. Computers & Security, 31(1), 83–95.
27. Jai-Yeol, S. (2011). Out of fear or desire? Toward a better understanding of employees' motivation to follow IS security policies. Information & Management, 48(7), 296–302.

28. Kajtazi, M., Cavusoglu, H., Benbasat, I., & Haftor, D. (2018). Escalation of commitment as an antecedent to noncompliance with information security policy. Information & Computer Security, 26(2), 171–193.
29. Lankton, N.K., Stivason, C., & Gurung, A. (2019). Information protection behaviors: Morality and organizational criticality. Information & Computer Security, 27(4), 468–488.
30. Liu, C., Wang, N., & Liang, H. (2020). Motivating information security policy compliance: The critical role of supervisor-subordinate guanxi and organizational commitment. International Journal of Information Management, 54, 102152.