The Psychology of Panic: How Herd Mentality Triggers Market Crashes

DSK Chakravarthy
SIENT Technologies,
New Zealand,

Pushpa Mahapatro
Vidyalankar School of Information Technology,
Wadala East,
Mumbai,

Payal Mahapatro
Vidyalankar School of Information Technology,
Wadala East,
Mumbai,

Kanksha Dakua
ICLES' Motilal Jhunjhunwala College,
Vashi,
Navi Mumbai,

Abstract: Financial markets are thought to be efficient, driven by data, but also greatly influenced by our own emotions. That is, people follow what the majority is doing, also known as herd instincts. This kind of mentality has been identified as a cause of serious distortions in financial markets, whether bullish or bearish. Behavioral finance studies these effects by examining the impact of fear, greed, and imitation on investment decisions. History offers many examples of the effects of mass panic and trading on emotions, as witnessed in events such as the 2008 crisis, the Dot-com Bubble, and more recently with GameStop.
This paper examines the psychological rationale for following the herd, the cognitive biases that reinforce it , and technology fueling market volatility. This also provides the tactics to reduce the effect of herd imitation, disseminate investors' information, and stabilize the market.
Behavioral finance, herd behavior, market panic, investor psychology, and cognitive bias

Acronym	Full Form
EMH	Efficient Market Hypothesis
ETF	Exchange-Traded Fund
S&P 500	Standard & Poor's 500 Index
IPO	Initial Public Offering
SEC	Securities and Exchange Commission

1. INTRODUCTION

Rather than making independent decisions, herd mentality refers to the tendency of individuals to imitate the actions of a larger group. In financial markets, these often result in massive buy-ins or sell-offs driven by collective emotion rather than fundamental analysis. By introducing psychological factors into economic decision-making, behavioral finance challenges the assumption of the Efficient Market Hypothesis (EMH), which posits that markets reflect all available information [1-3].

The foundation of herd behavior in psychology and its manifestation in financial markets, as well as its significant impact, is explored in this paper through historical case studies. The cognitive biases that drive herd mentality and how modern technology contributes to the acceleration of this behavior are also examined. Strategies for both individuals and institutions to combat

and lessen the effects of herd dynamics are offered [4-7].

Herd mentality in financial markets arises when investors substitute independent, fundamentals-based evaluation with imitation of observed market behavior. Let investor $i$choose an action. $D_i(t) \in \{B, S, H\}$(buy, sell, hold) at time t. The decision is modeled as a weighted combination of private and social information:

$D_i(t) = \arg\max_a ((1-\alpha_t)\, U_i(a \mid I_i) + \alpha_t\, U_i(a \mid A_{-i}))$, where $U_i(\cdot)$is the expected utility of action a, $I_i$denotes investor i's private information set, A_{-i}represents observed actions of other investors, and $\alpha_t \in [0,1]$measures the intensity of herding at time t. Higher α_t Indicates greater reliance on the crowd. Early investors are perceived to possess superior information about the actual asset state $\theta \in \{\text{good}, \text{bad}\}$. Subsequent investors update beliefs using observed actions $a_1, \ldots, a_k$ through Bayesian inference:

$$\Pr(\theta \mid a_{1:k}) \propto \Pr(\theta) \prod_{j=1}^{k} \Pr(a_j \mid \theta),$$

Where $\Pr(\theta)$is the prior belief and $\Pr(a_j \mid \theta)$is the likelihood of observing action a_j Given state θ.

An information cascade occurs when the accumulated social signal outweighs a new investor's private signal s_{k+1}, such that

$$\log \frac{\Pr(\theta = \text{good} \mid a_{1:k})}{\Pr(\theta = \text{bad} \mid a_{1:k})} > \left| \log \frac{\Pr(s_{k+1} \mid \theta = \text{bad})}{\Pr(s_{k+1} \mid \theta = \text{good})} \right|.$$

Here, s_{k+1}denotes the private signal received by investor $k+1$. When this condition holds, the investor rationally follows the herd even if their private information disagrees. As imitation-driven behavior increases aggregate demand, the market price $P_t$deviates from fundamental value V_t. The resulting mispricing is defined as

$$m_t = P_t - V_t,$$

Where persistent herding implies $|m_t|$Increases over time.

Price dynamics are driven by excess demand:

$$P_{t+1} - P_t = \lambda(D_t - S_t),$$

where $D_t$is total market demand, $S_t$is total market supply, and $\lambda > 0$is the price-adjustment coefficient. Demand consists of a fundamentals-based component $D_t^{(f)}$and a herding component:

$$D_t = D_t^{(f)} + \beta H_t,$$

where $H_t$measures aggregate herding behavior and $\beta > 0$captures its strength.

When $H_t > 0$and persists, prices rise above intrinsic value, forming speculative bubbles. When sentiment reverses and $H_t < 0$, the same amplification mechanism produces rapid market declines. Thus, herd mentality systematically undermines price discovery and generates cycles of excessive booms and busts.

2. PSYCHOLOGICAL FOUNDATIONS OF HERD BEHAVIOR

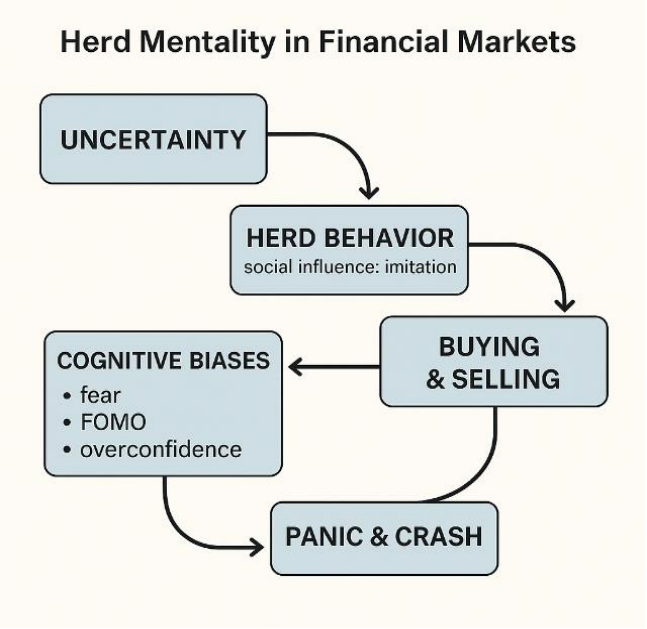
The social nature of humans results in help being sought from others when unclear situations are encountered, through their actions and statements. People adopt herd behavior as they seek safety and rely on the actions of others. The psychological process of relying on group signals instead of personal evaluation leads to information cascades, which are initiated when an individual takes an action [8, 9].

The system operates through emotional responses, which include fear and greed. Market optimism leads to increased consumer spending, as people become more enthusiastic about buying things. However, fear causes them to sell their assets during market declines [10]. John Maynard Keynes developed the concept of "animal spirits," which demonstrates how emotional factors, together with social mental states, affect economic choices independently of rational thinking [11].

3. HERD MENTALITY IN FINANCIAL MARKETS

The financial sector experiences investors who follow a herd mentality, which leads them to abandon logical investment methods and make unreasonable financial choices. People who invested in specific assets first received superior information, which led others to make similar investment decisions [12-14].

The market value of this asset is expected to experience substantial price increases, which do not accurately reflect its actual worth [15, 16].
Stock market operations frequently experience information cascades. Investors tend to follow trends after they become visible, rather than conducting their own evaluation process [17, 18]. The market fails to establish proper security values due to this collective behavior, which leads to both excessive market bubbles and unnecessary market declines.



4. CASE STUDIES OF HERD BEHAVIOR

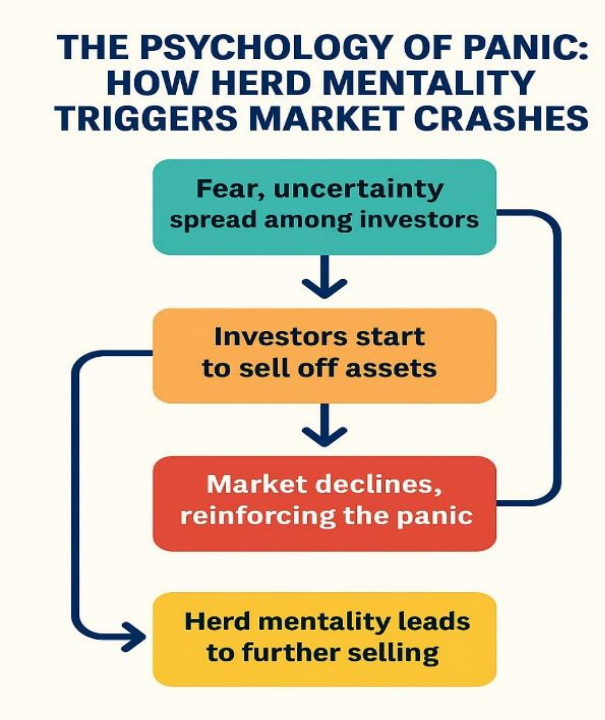
4.1 Dot-com Bubble (2000)

During the late 1990s, investors poured money into companies that operated online. The rapid influx of investment capital into these stocks occurred because people became enthusiastic about technology companies that did not have established profitable business models [19-21].

The group's enthusiasm created a speculative bubble. The market collapse caused substantial financial damage because investors lost their faith in the market [22].

4.2 Global Financial Crisis (2008)

In the housing market and among financial institutions that underestimated the risks associated with mortgage-backed securities before 2008, a herd mentality was evident [23, 24]. As defaults began to occur, investors became anxious and hastily sold off their investments. The resulting loss of confidence sparked a global economic meltdown.



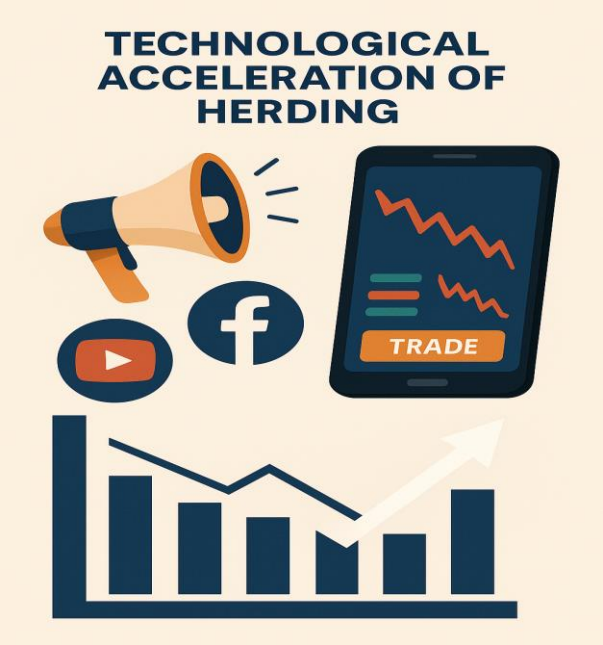
4.3 GameStop Short Squeeze (2021)

Retail investors united through social media to target hedge funds that had significantly shorted GameStop's stock, leading to an artificial increase in its price [25-27]. This surge was fueled more by emotional energy and collective action rather than by the company's fundamentals. Unfortunately, many who entered the market late faced losses when the stock eventually plummeted.

5. COGNITIVE BIASES AMPLIFYING PANIC

- The fear of missing out, known as FOMO, drives investors to make irrational decisions [28]. The market faces an increased risk of developing a bubble because investors purchase stocks at excessively high prices during market upswings [29].
- People tend to seek evidence that supports their existing beliefs through confirmation bias, while ignoring all evidence that contradicts their opinions [30]. The practice of investing groups creates conditions that facilitate the dissemination of false information.
- The intense pain of losing often surpasses the pleasure of winning, which leads investors to sell their assets rapidly when prices drop, thereby exacerbating market declines [31]. People develop emotional decisions because these biases, which occur during booms and busts, lead them to follow others in their investment choices [32].

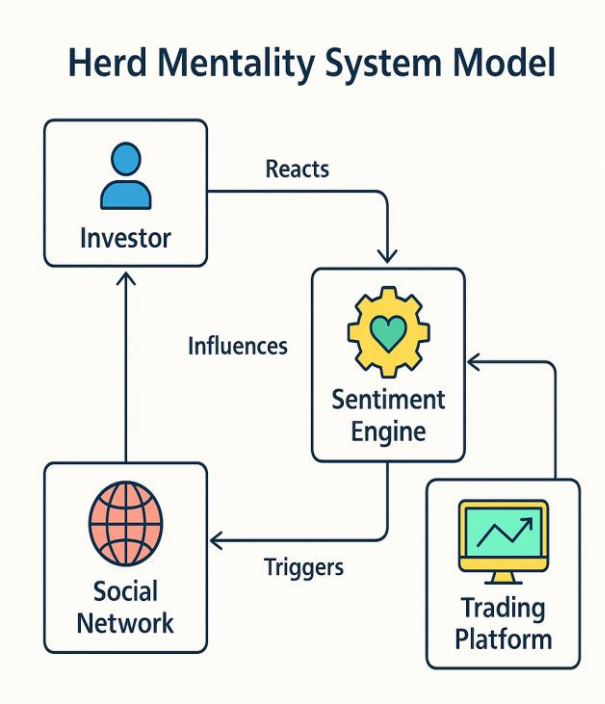
6.TECHNOLOGICAL ACCELERATION OF HERDING



The widespread dissemination of sentiment in relation to financial markets has accelerated dramatically with the advent of social media platforms, such as Reddit, Twitter, and TikTok [33-35].

Viral posts and influencer endorsements can mobilize thousands of retail investors simultaneously, thereby increasing the degree

of market fluctuation.



Platforms that charge no commissions, as well as mobile trading applications, are creating lower entry points for participation [36, 37]. The lower barrier to entry enables the democratization of access to financial markets however, it also encourages impulsive, emotionally driven transactions [38, 39]. Mobile trading platforms also facilitate rapid decision-making in large numbers through their notification systems and the use of gamification-based interfaces [40].

With technology now woven into the fabric of finance, herd behavior has morphed from a slow-moving wave into a high-speed digital tsunami, sweeping markets along with it.

7. STRATEGIES TO MITIGATE HERD BEHAVIOR

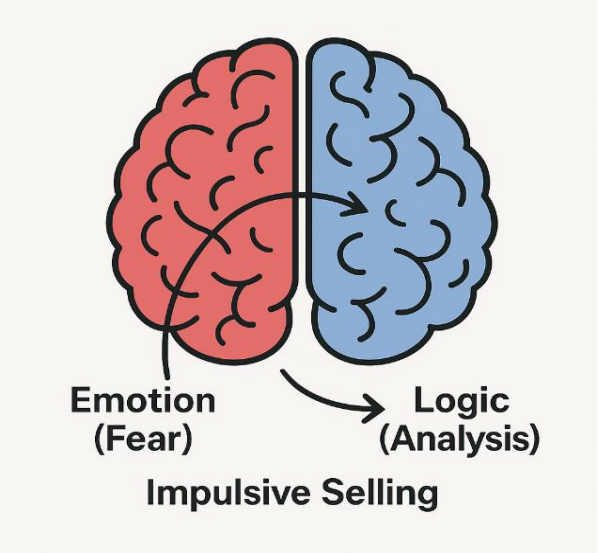
Investor protection and market stability can be preserved in a number of ways:

• Spreading investments across various asset classes like stocks, bonds, and real estate can mitigate risks tied to specific market fluctuations - that's the idea behind Asset Class Diversification [41, 42].

• When markets take a hit, contrarian investors see opportunity. By betting against the crowd during downturns, they can snag some big wins - that's the Contrarian Investing playbook [43, 44].

•Education of Investors: Through the education of individuals regarding their cognitive biases and how they relate to Behavioural Finance, individuals will be better equipped to make rational investment decisions [45, 46].

• To curb wild price swings, markets deploy some key safety nets - trade halts, circuit breakers, and transparency measures [47]. These help keep things in check when volatility gets too intense.

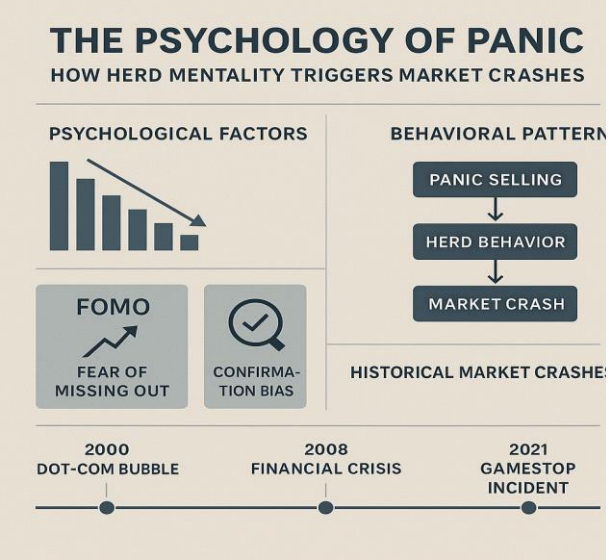


8. NEUROSCIENCE OF PANIC AND DECISION-MAKING

Investor panic runs deep - it's hardwired in our brains. The amygdala, our fear centre, goes into overdrive when markets get rocky, hijacking our rational thinking [48]. It shuts down the prefrontal cortex, which handles planning and logic, and flips the fight-or-flight switch. Result? Hasty decisions and knee-jerk selling.

The digital shift in financial markets enables AI systems to track and predict investor sentiment effectively. Natural Language Processing (NLP) technology analyzes social media platforms, such as Twitter, Reddit, and Facebook, in real-time, detecting emotional

keywords and sentiment shifts [49, 50].



9. AI AND REAL-TIME SENTIMENT TRACKING TO PREDICT HERD BEHAVIOR

Digital platforms that power financial markets utilize AI as a powerful tool for tracking and predicting investor sentiment.

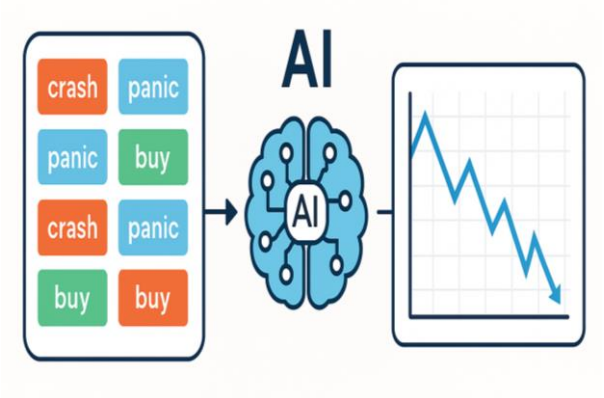
AI systems leverage Natural Language Processing (NLP) to analyze social media platforms like Facebook, Reddit, and Twitter in real-time, tracking keywords like "crash", "panic", "buy", or "moon" to gauge market sentiment. This generates early alerts and sentiment indexes, helping predict market shifts.

Advanced AI systems analyze past market panics, providing institutions with early warnings of potential crashes. With real-time tracking, traders can spot sudden Reddit spikes and take preventive action in seconds. AI's predictive capabilities outpace traditional analysis, offering a game-changing edge.

These AI tools integrate with fintech platforms, giving retail investors real-time market sentiment dashboards. Soon, trading algorithms and AI sentiment tracking will team up to curb irrational herd behavior, shielding markets from emotional contagion.

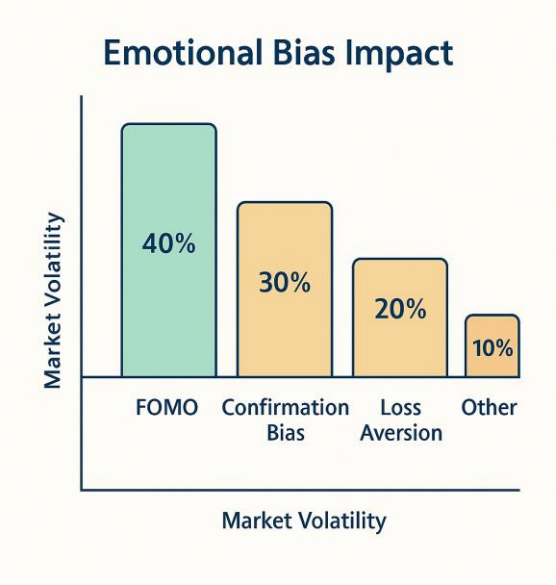
9. EXPANDING AWARENESS AND LONG-TERM INVESTOR PSYCHOLOGY

A cultural shift is needed to promote psychological resilience and forward thinking, helping people break free from the herd mentality. Financial literacy should encompass emotional intelligence, behavioral awareness, and decision-making frameworks, not just numbers and maths. Recognizing our brain's built-in biases (greed, fear, envy, regret) is key to making smarter financial choices.



Institutions also exist within this system. The trading platform needs to implement confirmation prompts which will ask investors to confirm their high-risk trades during volatile market conditions. Behavioral finance needs to become a core subject which schools should teach to their students. The development of emotional resilience occurs through interactions with case studies and simulations and gamified learning resources. Trading communities, along with financial influencers, must actively work against mob-style trading while promoting full market transparency.

The future of investment will combine psychological understanding with technological tools to overcome human behavioral patterns, rather than achieving market superiority.



11. CULTURAL AND DEMOGRAPHIC DIMENSIONS OF HERDING

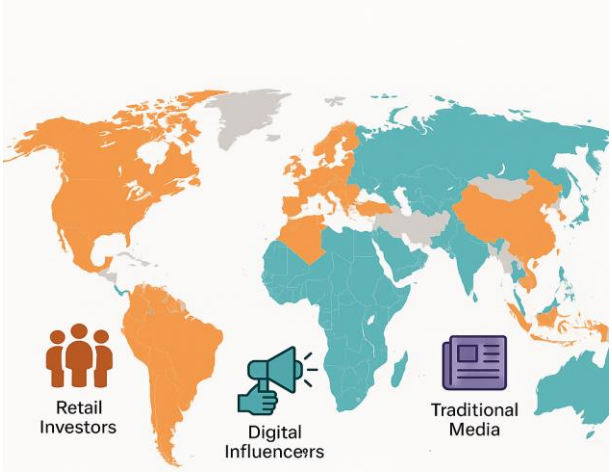
Different cultural backgrounds and population segments show unique patterns of herd behavior. The collectivist societies of China, Japan, and India promote conformity as a fundamental virtue, which they actively support. The cultural tendency promotes herd behavior because people depend on word-of-mouth marketing in markets that primarily operate through personal recommendations. People base their financial choices primarily on advice from their social circles, which often leads to rumors and group decisions influencing their actions more than formal economic statistics. People in individualistic societies, such as the US and the UK, freely express themselves, but they still follow a herd mentality when interacting with online communities and listening to social media influencers.

People develop herding behavior through their personal traits, which include their age, education level, and ability to use technology. Young investors who grew up with technology tend to follow social trends through platforms such as YouTube and TikTok and Discord. People choose to invest in meme stocks and cryptocurrencies because of their recent popularity, rather than their actual market value. Older investors who maintain conservative views still have the 1ential to follow analyst predictions and market fears induced by mainstream media. The research shows that men tend to trade more herd-like and overconfidently during bull markets due to subtle gender influences. A financial system needs to become resilient through various policies and educational approaches tailored to each specific profile.

12. THE ROLE OF FINANCIAL JOURNALISM AND INFLUENCERS

People who follow others in their decision-making process receive strong influence from modern media systems. Financial news media serves as a platform to disseminate both positive and negative market outlooks through its presentation of market trends in headlines, real-time reporting, and expert

analysis. The financial market responds immediately to sudden market events that investors detect through their ability to read news items which spread rapidly across social media platforms. The digital universe provides content creators and financial influencers with a power surge which enables them to shape market dynamics.



Cultural and demographic variations in global herd behavior

Twitter celebrities and YouTubers, along with meme page administrators, now collectively control millions of followers. The way markets respond to opinions and warnings, as well as stock recommendations, becomes more powerful when online discussion boards and forums disseminate their content. The GameStop story shows how grassroots influencers now have the same market power as Wall Street. Media literacy has become an essential skill for investors during the current investment environment. The platforms need to choose verified information sources instead of unproven financial claimants, while regulatory organizations require new rules to supervise financial content on digital platforms.

13. HERDING IN EMERGING MARKETS VS. DEVELOPED ECONOMIES

The emerging markets of South Africa, Brazil, and India, along with other developing economies, face particular risks from herd-driven market collapses. The markets tend to attract numerous retail investors who lack access to analytical tools, so they depend heavily on recommendations from friends and local news sources. The situation worsens when people panic due to uncertain political events, unstable economic conditions, and inadequate regulatory systems. The rapid spread of false information and rumors through these channels leads to sudden emotional selling by investors.

The stability of developed economies does not make them immune to this phenomenon. The 2008 Global Financial Crisis originated in the United States, whereas the 2021 GameStop frenzy unfolded through trading activities on a regulated American stock exchange. The key difference between these economies lies in their infrastructure and ability to withstand shocks, as advanced economies possess superior surveillance systems and stronger intervention tools, such as quantitative easing and circuit breakers, and deliver better financial education. The global expansion of social media, combined with easier access to investment, creates uncertainty about which financial practices people should follow. The protection of emotional market fluctuations requires emerging markets to establish two essential components: behavioral literacy and technological infrastructure.

14. POLICY RECOMMENDATIONS AND FUTURE DIRECTIONS

A system of multiple policies needs to be implemented to reduce the systemic risks that result from herd behavior. The educational system needs to incorporate behavioral finance into business and economics curricula to teach students about market psychological errors before they enter the market. The collaboration between regulatory bodies and technology companies enables real-time.

Exchanges should establish adaptive circuit breakers that base their operational triggers on market conduct patterns, along with percentage-based loss thresholds. Financial social media platforms should develop a system that displays disclaimers, rating systems, and credibility scores for all financial influencers. The local area activates investor protection cells and helplines during crisis events to provide instant psychological support and necessary guidance. Building an economic culture that prioritizes mindfulness over mob mentality is more important for policy in the future than focusing solely on numbers.

15. CONCLUSION

Financial markets operate according to basic rules that cause people to act in concert when trading financial instruments. People develop herd behavior due to their biological need to avoid risks and their natural tendency to follow emotions and social norms instead of relying on knowledge. The study examines herding behavior in markets, exploring its psychological elements, historical development, and technological enabling factors.

Financial markets experience larger and faster price swings because modern systems connect multiple markets, which operate based on rapid changes in sentiment. The development of stable markets requires the integration of behavioral prompts with protective systems, personal responsibility with institutional backing, and emotional knowledge with financial understanding.

The first step is to identify our psychological blind spots. We can move towards a more thoughtful investment culture by educating ourselves and others about behavioral pitfalls, developing financial systems that respect human limits, and creating policies that prevent collective overreaction.

Financial systems need to grasp the "why" behind money movements - these human factors are just as crucial as stats and algorithms for keeping the system stable.

REFERENCES

[1] Baddeley, M. (2010). Herding, social influence, and economic decision-making. Philosophical Transactions of the Royal Society B.

[2] Bikhchandani, S., & Sharma, S. (2001). Herd behavior in financial markets. IMF Staff Papers.

[3] Hott, C. (2009). Herding behavior in asset markets. Journal of Financial Stability.

[4] Shiller, R. J. (2015). Irrational Exuberance. Princeton University Press.

[5] Akerlof, G. A., & Shiller, R. J. (2009). Animal Spirits. Princeton University Press.

[6] Kahneman, D. (2011). Thinking, Fast and Slow. Farrar, Straus and Giroux.

[7] Tversky, A., & Kahneman, D. (1974). Judgment under Uncertainty: Heuristics and Biases. Science.

[8] Shefrin, H. (2002). Beyond Greed and Fear. Harvard Business Review Press.

[9] Barberis, N., Shleifer, A., & Vishny, R. (1998). A model of investor sentiment. Journal of Financial Economics.

[10] Odean, T. (1998). Are investors reluctant to realize their losses? Journal of Finance.

[11] Lux, T. (1995). Herd behaviour, bubbles and crashes. Economic Journal.

[12] Banerjee, A. V. (1992). A simple model of herd behavior. Quarterly Journal of Economics.

[13] Devenow, A., & Welch, I. (1996). Rational herding in financial economics. European Economic Review.

[14] Baker, M., & Wurgler, J. (2007). Investor sentiment in the stock market. Journal of Economic Perspectives.

[15] Hong, H., & Stein, J. C. (1999). A unified theory of underreaction, momentum trading, and overreaction in asset markets. Journal of Finance.

[16] Hirshleifer, D. (2001). Investor psychology and asset pricing. Journal of Finance.

[17] Daniel, K., Hirshleifer, D., & Subrahmanyam, A. (1998). Investor psychology and security market under- and overreactions. Journal of Finance.

[18] Shleifer, A. (2000). Inefficient Markets: An Introduction to Behavioral Finance. Oxford University Press.

[19] Lo, A. W. (2017). Adaptive Markets: Financial Evolution at the Speed of Thought. Princeton University Press.

[20] Sornette, D. (2003). Why Stock Markets Crash. Princeton University Press.

[21] Gennaioli, N., & Shleifer, A. (2010). What comes to mind: Salience and attention in the stock market. Quarterly Journal of Economics.

[22] Coval, J. D., & Moskowitz, T. J. (2001). The geography of investment. Journal of Political Economy.

[23] Statman, M. (2008). Countries and culture in behavioral finance. CFA Institute Proceedings Quarterly.

[24] Kim, K., Lee, S.-Y., & Kauffman, R. (2023). Social informedness and investor sentiment in the GameStop short squeeze. Electronic Markets.

[25] Yoon, J., & Oh, G. (2022). Investor herding behavior in social media sentiment. Frontiers in Physics.

[26] Tamplin, T. (2023). Herding Behavior: Definition, Causes, and Mitigation. Finance Strategists.

[27] Campbell, J. Y., & Shiller, R. J. (1988). Stock prices, earnings, and expected dividends. Journal of Finance.

[28] Thaler, R. H. (1993). Advances in Behavioral Finance. Russell Sage Foundation.

[29] Fama, E. F. (1970). Efficient Capital Markets: A Review of Theory and Empirical Work. Journal of Finance.

[30] Barber, B. M., & Odean, T. (2001). Boys Will Be Boys: Gender, Overconfidence, and Common Stock Investment. Quarterly Journal of Economics.

[31] Bursztyn, L., Ederer, F., Ferman, B., & Yuchtman, N. (2014). Understanding Mechanisms Underlying Peer Effects: Evidence from a Field Experiment on Financial Decisions. Econometrica.

[32] DellaVigna, S., & Pollet, J. M. (2009). Investor inattention and Friday earnings announcements. Journal of Finance.

[33] Bordalo, P., Gennaioli, N., & Shleifer, A. (2012). Salience theory of choice under risk. Quarterly Journal of Economics.

[34] Guiso, L., Sapienza, P., & Zingales, L. (2008). Trusting the Stock Market. Journal of Finance.

[35] Fernandes, M., & Ornelas, E. (2015). Herd behavior in Latin American capital markets. Emerging Markets Review.

[36] Breaban, A., & Noussair, C. N. (2015). Emotional state and market behavior. Review of Finance.

[37] Da, Z., Engelberg, J., & Gao, P. (2011). In Search of Attention. Journal of Finance.

[38] Tetlock, P. C. (2007). Giving content to investor sentiment. Journal of Finance.

[39] Bollen, J., Mao, H., & Zeng, X. (2011). Twitter mood predicts the stock market. Journal of Computational Science.

[40] Chen, H., De, P., Hu, Y., & Hwang, B. H. (2014). Wisdom of crowds: The value of stock opinions transmitted through social media. Review of Financial Studies.

[41] Johansen, A., Ledoit, O., & Sornette, D. (2000). Crashes as critical points. International Journal of Theoretical and Applied Finance.

[42] Easley, D., & O'Hara, M. (2004). Information and the cost of capital. Journal of Finance.

[43] Jain, P. C. (2001). Institutional design and behavior in financial markets. Financial Analysts Journal.

[44] Schultz, P. (2000). Stock splits, tick size, and sponsorship. Journal of Finance.

[45] Zajonc, R. B. (1965). Social facilitation. Science.

[46] Damasio, A. R. (1994). Descartes' Error: Emotion, Reason, and the Human Brain.

[47] Sapolsky, R. M. (2017). Behave: The Biology of Humans at Our Best and Worst. Penguin Press.

[48] Camerer, C., Loewenstein, G., & Prelec, D. (2005). Neuroeconomics: How neuroscience can inform economics. Journal of Economic Literature.

[49] Coates, J. M., & Herbert, J. (2008). Endogenous steroids and financial risk taking on a London trading floor. Proceedings of the National Academy of Sciences.

[50] Kahneman, D., & Tversky, A. (1979). Prospect Theory: An Analysis of Decision under Risk. Econometrica.