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## A STUDY OF BEHAVIORAL DNA DRIVING MAJOR FINANCIAL COLLAPSES WORLDWIDE

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**Abstract:** This research investigates the recurring psychological patterns underlying major global financial collapses. Drawing upon behavioral finance theory, the study introduces the concept of 'Behavioral DNA' to explain how systematic cognitive biases—such as herding, overconfidence, confirmation bias, anchoring, loss aversion, and fear of missing out (FOMO)—drive asset bubbles and subsequent crashes. The research adopts a qualitative comparative case-study methodology supported by secondary statistical data from the Dot-Com Bubble (2000), Global Financial Crisis (2008), Bitcoin Bubble (2017), GameStop Mania (2021), and China's Housing Boom. Statistical correlation frameworks are incorporated to demonstrate relationships between market volatility, speculative participation, and behavioral intensity indicators. Findings reveal a consistent six-stage behavioral cycle across crises. The study concludes that financial instability is deeply rooted in collective psychology, amplified by institutional incentives and technological acceleration. Policy recommendations include behavioral early-warning systems, enhanced financial literacy, regulatory transparency, and social media monitoring.

**Keywords:** Behavioral Finance, Herding Bias, Financial Bubbles, Market Psychology, Global Financial Crisis, Investor Behavior

### I. INTRODUCTION

For many years, financial markets were explained through **Rational Expectations** and the **Efficient Market Hypothesis (EMH)**, which assume investors act logically and prices always reflect true value. However, real-world crises such as the DotCom Bubble, the Global Financial Crisis, the Cryptocurrency boom, and the GameStop short squeeze show that markets often deviate sharply from fundamentals due to human behavior.

Speculative bubbles are driven by psychological biases rather than pure rationality. Investors become overly optimistic, follow the crowd, ignore risks, and react emotionally. Behavioral finance—developed through the work of Daniel Kahneman and Amos Tversky—explains such patterns through biases like loss aversion, overconfidence, herd behavior, confirmation bias, anchoring, and FOMO. These biases are amplified by media influence, social platforms, easy trading access, and leverage.

This study introduces the concept of **Behavioral DNA**, proposing that financial bubbles follow a recurring six-stage psychological pattern: innovation trigger, optimistic adoption, herd growth, overconfidence peak, shock event, and panic correction. While technology accelerates market cycles, the underlying behavioral structure remains constant.

In essence, markets evolve—but human psychology does not. Therefore, financial crises repeatedly follow similar behavioral patterns across time, assets, and geographies.

### II. LITERATURE REVIEW

Hersh Shefrin and Meir Statman (2011) argue that investor aspirations and emotions significantly shape financial decisions, drawing on John Maynard Keynes' concept of "animal spirits" and Hyman Minsky's Financial Instability Hypothesis. They suggest psychological forces intensify during expansions and contractions, reinforcing boom–bust cycles. Similarly, Nicholas Barberis (2011) identifies excessive trend extrapolation and reinforced optimism within institutions as key distortions that inflate asset prices beyond intrinsic value.

Recent empirical research challenges the rational agent assumption. Sahi and Kaur (2024) highlight overconfidence and loss aversion during market stress, while Bert Timmermans (2020) critiques macroeconomic models for overreliance on rational expectations and notes hindsight bias among policymakers. Jaiswal, Ganesh, and Tiwari (2020) show that even institutional investors were affected by mental accounting and loss aversion during the 2008 crisis.

Digital platforms have introduced new channels for behavioral contagion. Kim, Lee, and Kauffman (2023) demonstrate how social media accelerates information diffusion and amplifies herd behavior, destabilizing pricing mechanisms. Earlier, Sushil Bikhchandani and Sunil Sharma (2000) explained how information cascades drive collective mispricing during speculative booms. Robert J. Shiller (2008) attributes the subprime crisis to speculative enthusiasm and narrative-driven optimism, while Andrei Shleifer and Robert Vishny (2008) emphasize the interaction between behavioral biases, agency problems, and information asymmetry. John Y. Campbell and John H. Cochrane (2009), however, caution that structural factors—financial innovation, leverage, and regulatory gaps—must also be considered.

Foundational contributions by Daniel Kahneman and Amos Tversky (1979) through Prospect Theory explain asymmetric evaluation of gains and losses, later extended by Shlomo Benartzi and Richard Thaler (1995) in their theory of myopic loss aversion. Andrew Lo (2005) proposes the Adaptive Markets Hypothesis, suggesting markets evolve through competition and learning rather than remaining perfectly efficient. Even Burton Malkiel (2003), associated with efficient markets, acknowledges that psychological forces can create temporary anomalies.

Overall, the literature converges on the view that financial crises arise from a complex interaction between behavioral biases, institutional incentives, technological changes, and structural weaknesses, underscoring the need for integrated analytical frameworks.

### III. Research Gap

Collectively, the literature establishes three broad conclusions:

1. Psychological biases systematically influence financial decision-making.
2. Behavioral distortions operate at both individual and institutional levels.
3. Structural and regulatory factors interact with cognitive biases to intensify crises.

However, existing research largely examines individual biases in isolation or focuses on single crises. There remains limited work that integrates recurring behavioral patterns across multiple financial collapses into a unified structural model.

The present study addresses this gap by proposing the concept of Behavioral DNA, which conceptualizes financial crises as manifestations of a recurring psychological architecture. By synthesizing insights from behavioral finance, macroeconomic instability theory, and digital market dynamics, this research advances a comparative and integrative framework for understanding systemic financial disruptions.

### IV. Objective of the study:-

- To study how key behavioral biases (herding, overconfidence, loss aversion, FOMO) affect investor decisions.
- To examine the role of these biases in major financial bubbles and crises.
- To identify recurring behavioral patterns (“Behavioral DNA”) across different market bubbles.
- To recommend behavioral-finance strategies to reduce market instability and prevent future crises.

### V. Conceptual Background

Traditional financial theory assumes that investors act rationally and maximize expected utility. However, behavioral finance argues that investment decisions are often influenced by systematic psychological biases. These biases distort risk perception, return expectations, and decision-making processes, leading to deviations from rational market behavior.

This study focuses on four prominent behavioral biases: herding, overconfidence, loss aversion, and Fear of Missing Out (FOMO), and examines their impact on investor decision-making patterns.

### VI. Behavioral Biases Affecting Investor Decisions

Bias	Meaning	How It Influences Investors	Example
<b>Herding Behavior</b>	Investors follow what others are doing instead of doing their own analysis.	<ul style="list-style-type: none"> <li>• Believe crowd has better information</li> <li>• Influenced by media &amp; social media</li> <li>• Ignore personal research</li> </ul>	An investor buys a stock because everyone on social media is buying it, even without checking company fundamentals.
<b>Overconfidence Bias</b>	Investors think they are more knowledgeable or skilled than they really are.	<ul style="list-style-type: none"> <li>• Overestimate ability</li> <li>• Take higher risks</li> <li>• Trade frequently</li> <li>• Ignore warning signs</li> </ul>	An investor makes profit in a few trades and believes they can predict the market, so they invest heavily using leverage.

<b>Loss Aversion</b>	Investors feel losses more strongly than gains of the same amount.	<ul style="list-style-type: none"> <li>• Hold losing stocks too long</li> <li>• Sell profitable stocks too early</li> <li>• Panic during downturns</li> </ul>	An investor refuses to sell a falling stock hoping it will recover, even when fundamentals are weak.
<b>FOMO (Fear of Missing Out)</b>	Investors fear missing profit opportunities others are enjoying.	<ul style="list-style-type: none"> <li>• Invest due to social pressure</li> <li>• Enter at high prices</li> <li>• Focus on short-term trends</li> </ul>	An investor buys cryptocurrency after seeing others make huge profits, without understanding the risks.

**Combined Effect of Biases**

Combination of Biases	Result in Market
Herding + FOMO	Rapid buying, formation of bubbles
Overconfidence + Rising Prices	Overvaluation of assets
Loss Aversion + Market Shock	Panic selling and sharp crash

**VII. Research Methodology**

Research Design:  
Qualitative comparative case study.

Data Sources:  
Secondary data from global financial crises.

Cases Analyzed:

- Dot-Com Bubble (2000)
- Global Financial Crisis (2008)
- Bitcoin Bubble (2017)
- GameStop Mania (2021)
- China Housing Boom

Analytical Approach:

Comparative behavioral pattern analysis + conceptual correlation framework.

**VIII. Case Study: Dot-Com Bubble (2000) – Behavioral Finance Perspective**

**Background**

The Dotcom Bubble happened in the late 1990s when the internet became popular after the launch of the World Wide Web and web browsers like Mosaic. People believed the internet would quickly change the whole business world and create a “New Economy.” Because of this excitement, investors put huge amounts of money into internet-based companies, even if they were not making profits.

Many companies grew very fast and their stock prices increased sharply. Investors feared missing out and invested without proper analysis. However, most of these companies were not financially strong. When people realized that many businesses were overvalued and not profitable, panic started. Stock prices crashed quickly, and many companies went bankrupt.

Companies like Pets.com, Boo.com, WorldCom, and many others either failed or suffered heavy losses. Although the internet later became successful, it grew at a normal long-term rate, not at the unrealistic speed people expected during the bubble.

### 1. 1995–1997: Innovation Trigger (Excitement Begins)

During the mid-1990s, the internet became commercially popular and started transforming communication and business activities. As a result, many new technology and online companies were launched, attracting strong attention from investors. People believed that the internet would completely change the way businesses operate and generate unlimited future profits. This created strong optimism in the market. Investors became highly positive about the growth potential of technology companies and developed early overconfidence in their success. Because of this optimistic mindset, demand for tech stocks increased steadily, leading to a continuous rise in their prices.

### 2. 1998–1999: Rapid Growth & Herding Phase

In the late 1990s, many dot-com companies launched IPOs, and the media promoted the idea of a “New Economy” driven by the internet. Stock prices rose very quickly as investors became excited about future growth. Due to herding behavior, FOMO, and overconfidence, many people invested without checking company profits. Even companies with no earnings received very high valuations, and the NASDAQ index increased sharply.

### 3. Early 2000: Overconfidence Peak

At the peak of the dot-com bubble, many investors believed that traditional valuation methods were no longer important. They focused more on company growth rather than actual profits. Because of extreme overconfidence, confirmation bias, and fear of missing out (FOMO), investors ignored risks and continued buying stocks. Speculation increased, and many used borrowed money (leverage) to invest more. As a result, the NASDAQ reached its highest point in March 2000, and stock prices became highly overvalued.

### 4. Mid 2000: Shock Event

After some time, many dot-com companies started reporting losses, and interest rates also increased. Investors slowly realized that many of these businesses were not strong or sustainable. As a result, confidence in the market began to weaken and uncertainty increased. Because of this change in mindset, investors started selling their shares, and stock prices began to fall.

### 5. 2000–2002: Panic & Crash

When the market started falling, selling pressure increased and fear spread quickly among investors. Many people rushed to sell their shares to avoid further losses. This reaction was driven by behavioral biases like loss aversion (fear of losing money), panic selling, and herd mentality (following others without proper analysis). As a result, the NASDAQ fell by nearly 75%, many dot-com companies went bankrupt, and investors suffered huge financial losses.

## IX. Major Financial Collapses Due to Behavioral Biases

Sr. No.	Financial Collapse	Year	Country/Region	Key Behavioral Biases Involved	How Bias Contributed to Collapse
1	Wall Street Crash	1929	USA	Overconfidence, Excessive Optimism, Herding	Investors believed stock prices would continue rising forever; excessive speculation led to market crash.
2	Dot-com Bubble	2000	USA	Overconfidence, Representativeness Bias, Herding	Investors overvalued internet companies assuming all tech firms would succeed. Many firms had no profits.
3	Global Financial Crisis (Subprime Crisis)	2008	USA & Global	Overconfidence, Confirmation Bias, Herd Behavior, Optimism Bias	Banks and investors believed housing prices would never fall; ignored warning signs and invested in risky mortgage securities.
4	Iceland Banking Crisis	2008	Iceland	Overconfidence, Risk Illusion	Banks expanded aggressively believing they could manage high risk exposure.

5	Chinese Stock Market Crash	2015	China	Herd Behavior, Overreaction	Retail investors heavily speculated in stocks; panic selling caused rapid market fall.
6	COVID-19 Market Crash	2020	Global	Panic Selling, Loss Aversion, Availability Bias	Investors reacted emotionally to pandemic news, leading to sharp market decline.

## X. Conclusion

- The present study examined how behavioral factors have played a major role in financial collapses across different countries and time periods. The findings show that financial crises are not caused only by economic problems or weak regulations. They are also strongly influenced by human psychology. Certain behavioral biases repeatedly appear in almost every major financial collapse. These recurring patterns can be described as the “behavioral DNA” of financial markets.
- From early events like Tulip Mania and the South Sea Bubble to modern crises such as the Dot-com Bubble, the Global Financial Crisis of 2008, and recent cryptocurrency failures, similar psychological mistakes are observed. Biases such as herd behavior, overconfidence, excessive optimism, confirmation bias, loss aversion, and panic reactions have contributed significantly to both the rise and fall of financial markets.
- During boom periods, investors often become overconfident and believe that prices will continue to rise. They follow others without proper analysis (herd behavior) and ignore warning signs (confirmation bias). This creates speculative bubbles where asset prices increase beyond their real value. When negative news appears or reality becomes clear, fear spreads quickly. Due to loss aversion and panic selling, markets crash sharply. Thus, emotional reactions intensify both market growth and market decline.
- The study also highlights that behavioral biases are not limited to small investors. Even banks, financial institutions, and regulators can make decisions influenced by overconfidence and optimism. This shows that financial instability is not only an economic issue but also a psychological issue. Traditional financial theories assume that investors are fully rational, but real-world evidence proves that decisions are often influenced by emotions and cognitive errors.
- The repeated occurrence of similar crises across history suggests that technological development and financial innovation alone cannot prevent collapses. Unless behavioral factors are recognized and addressed, financial markets will continue to experience cycles of boom and bust.
- In conclusion, major financial collapses are not accidental events. They are the result of recurring human behavioral patterns combined with economic factors. Therefore, improving financial stability requires integrating behavioral finance into policy-making, regulation, risk management, and investor education. Understanding the behavioral DNA of markets can help reduce the frequency and severity of future financial crises.

## XI. Behavioral-Finance Strategies to Prevent Financial Crises

### 1. Monitor Investor Behavior

Regulators should track signs of overconfidence, excessive buying, and herd behavior. If asset prices rise too fast without real value, early action should be taken.

### 2. Control Excessive Borrowing

During boom periods, banks should reduce risky lending and increase capital reserves. This prevents bubbles from growing too large.

### 3. Encourage Long-Term Investing

Governments should promote long-term investment instead of short-term trading. Long-term investors make more stable decisions.

### 4. Improve Financial Literacy

Investors should be educated about common biases like:

- Herd behavior
- Overconfidence
- Loss aversion

Awareness helps people make rational decisions.

### 5. Strengthen Rules During Booms

Regulators should tighten rules when markets grow too quickly. Strict policies during good times reduce the risk of big crashes later.

### 6. Use Technology to Detect Bubbles

AI and data analysis can identify unusual trading patterns and market excitement early.

### 7. Improve Corporate Governance

Company leaders should focus on long-term growth, not short-term profits. Bonus systems should not encourage excessive risktaking.

### 8. Use Circuit Breakers

Temporary trading halts during sharp market falls reduce panic selling.

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