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HOW DO BEHAVIOURAL BIASES INFLUENCE ASSET PRICING AND THE EFFICIENCY OF FINANCIAL MARKETS?

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Abstract

This paper investigates how behavioural biases influence asset pricing and financial market efficiency. Classical finance theory conceptualizes the EMH; it assumes financial markets to be rational, with the efficient market passing on all available information to reflect prices. However, where behavioural finance does oppose this assumption is in its acceptance of the presence of psychological factors leading to deviations from rational decision-making. This paper looks at the traditional behavioural biases that, in common sense, lead to decisions on the part of investors with an overview or projection of how asset prices will behave. Price bubbles, excessive volatility, and mispricing of assets all emerge as market anomalies, so opportunities to exploit inefficiency are created. As indicated by the other writer's works and empirical studies, it describes how biases due to behaviour run through an investor's perception and behaviour and how it causes inefficient pricing mechanisms to develop. It also analyzes the influence of these biases in matters related to asset allocation, risk management, and market stability. The research suggests while behavioural biases limit any normal economic functioning of the market, acknowledging and understanding these behavioural biases could present numerous opportunities to formulate more impressive investment options and policy interventions for a better working market."

Keywords: *Financial markets, Behavioural Biases, Risk Management, Assets*

Introduction

The Financial markets are integral to modern economies in allocating capital, determining prices, and hedging risks. Traditional economic theories, such as the Efficient Market Hypothesis, developed by Fama some 40 years ago, assume that investors are rational and that the market price already reflects all available information. This theory states that prices should adjust to true value, and any temporary miss-pricing should immediately correct itself so long as rational investors are around. However, rampant evidence goes against this claim. Market anomalies, such as price bubbles, momentum effects, and either overreaction or underreaction to new information, suggest that markets are not, at all times, efficient.

In that gap between theory and reality was born Behavioural Finance, a field of study in which psychology and sociology find their applications in financial models. This area calls into question the concept of perfect rationality and delves into the emotions and cognitive biases that influence investor decision-making. Authority bias, confirmation bias, herd behaviour, loss aversion, and anchoring bias are classic examples. These are more often the culprit for consistent rather than random errors: biases that could potentially even alter the price of assets and take markets away from the efficient side of price discovery. For example, overconfidence would push its way to excessive trading or herd behaviour inflating price bubbles and leading an eventual crash.

Using an example of the market crash of late 1990s focused on the dot-com bubble: overconfidence and herd mentality pushed stock prices extremely far above their true values, thereby setting the stage for a massive market crash. Investors' behavioural biases affect not only them individually, but also impact the general market efficiency, volatility, and stability. Due to emerging technologies leading to complex financial markets and bigger globalization, knowledge on these biases is more significant now than ever. Understanding such things would provide an insight that could be used to improve financial models, plug loopholes by strengthening regulation, and come up with smarter investment strategies.

It reviews the theoretical foundations of behavioural finance and empirical proof for market anomalies and cases that show how these biases work in practice. This paper is meant to cover the nuances of how behavioural biases relate to asset pricing and market efficiency. By discussing these themes, the study seeks to facilitate an understanding of how behavioural aspects shape financial markets and offer insights for investors, policymakers, and academics who can improve financial decision-making and market stability.

Literature Review

Behavioural finance is therefore an important critique of traditional finance theory, notably the Efficient Market Hypothesis (EMH). The EMH, proposed by (Fama, 1970), assumes rational behaviour on the part of the investors and that market prices impound all available information. The postulation fails to account for many market anomalies and empirical evidence against the rationality of behaviour. Behavioural finance integrates knowledge gained from psychology into financial decision-making, establishing a perception of how such cognitive biases and emotional factors determine market activity. The basis of this development is to be found in the Prospect Theory laid down by (Kahneman & Tversky, 1979) which shows that customers weight gains and losses asymmetrically: the loss of the same dollar value causes a greater depression than the joy obtained by a similar level of gain. This fundamental insight was helpful in explaining investor behaviour that traditional models could not explain.

One is overconfidence, one of the major devices that collude to frame asset prices. Such an attitude leads investors to grossly overestimate their knowledge and forecasting abilities. Within the context of this study, such behaviour leads to excessive trading and poor investment decisions; according to (Barber & Odean, 2001), it was found that overconfident traders actually earn lower net returns due to their higher trading activities. Another critical bias, herd behaviour, exists when investors are influenced by observing the actions of other investors rather than carrying an independent analysis. The herd behaviour reinforces the price trend and leads to market inefficiencies. (Bikhchandani et al. , 1992) elaborated about informational cascades, which explain how herd behaviour invalidates the market mechanism, especially in times of higher uncertainty.

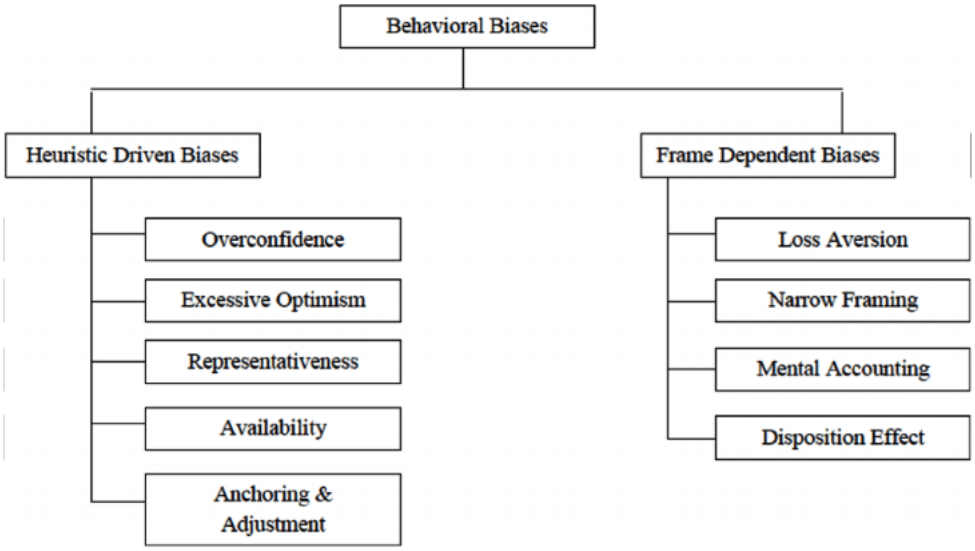
Another significant behaviour is called loss aversion; this is a case where people fear losses much more than they value an equivalent gain. (Kahneman & Tversky, 1979) explored the basis for this phenomenon, which they termed the disposition effect: investors overstay their commitment to losing stocks and sell winning stocks too soon. Anchoring, a related cognitive bias, further aggravates market inefficiencies. Investors often rely too heavily on irrelevant reference points, such as past prices, when making decisions. (Baker & Wurgler, 2006) demonstrated how anchoring and investor sentiment influence stock returns, challenging the assumptions of market efficiency.

The question of market efficiency has received considerable attention in behavioural finance. Evidence has been given by the work of (Shiller, 1981) showing discrepancies between market volatility and the EMH, showing how irrational exuberances push asset valuations far from a point where rationality would put them. His examination of stock price movements versus dividend changes implies that psychological factors play a role in financial markets. Momentum strategies, which have shown to yield abnormal returns (Jegadeesh & Titman, 1993), contradict the central tenet of the efficient market hypothesis, which states that prices follow a random walk. Findings point out that investors under-react to news and create price trends that continue longer than rational analysis posits.

These biases can be seen in remarkable case studies. One case in point is the dot-com bubble of the late 1990s, where overconfidence and herd behaviour allowed technology stock valuations to soar to unprecedented extremes, resulting in considerable market collapse. (Ofek & Richardson, 2003), studied this case, talking about speculative behaviour that inflated stock prices. More recently, the GameStop trading frenzy which took place in 2021 vividly illustrates the role of herd behaviour driven by social media. Retail investors, propelled by the speculative mood on platforms like Reddit, drove prices to high volatility, and made traditional price discovery processes untenable (Phillips & Gurdgiev, 2021).

These studies together show the strong impact of behavioural biases on asset pricing and market efficiency. Integrating psychological insights, behavioural finance makes a giant leap forward in understanding market behaviour and explains phenomena which conventional financial theories cannot.

Behavioural Biases



Source: Research Gate

This figure presents a structured classification of biases affecting decision-making in financial markets: heuristic-driven biases and frame-dependent biases.

Heuristic-Driven Biases

These biases stem from the mental shortcuts or "rules of thumb" that investors employ when making decisions, usually under conditions of uncertainty.

1. **Overconfidence:** Overestimation of skills or one's knowledge translates into overtrading or risk-taking trades.
2. **Excessive Optimism:** A cognitive bias affecting valuation that is characterized by undue weight placed on a possible perfect outcome.
3. **Representativeness:** An error in judgment about probability wherein representatives stand for some similarity rather than covering the otherwise objectively found data, e.g., thinking a start-up will succeed just because it resembles previous success stories.
4. **Availability:** Decisions are rather governed by any salient piece of information. Recent news, even if not relevant, is widely considered to be true.
5. **Anchoring & Adjustment:** Overweighing the initial information anchor and under adjusting for it, such as making investment decisions on past prices.

Frame-Dependent Biases

These biases derive from the way that choices or situations are presented, which leads to irrational financial behaviour.

1. **Loss Aversion:** A cognitive bias wherein losses are more painful than gains from equivalent actions, leading an investor to hang on to a losing investment longer than is economically rational.
2. **Narrow Framing:** Evaluating risks in isolation, neglecting the broader context of the portfolio in the interest of suboptimal diversification.
3. **Mental Accounting:** Distinguishing between forms of money inflow and types of expenditure, which is an impediment to an effective allocation of resources.
4. **Disposition Effect:** Selling winning investments too early while holding on to losing investments, contrary to rational behaviour.

Key Behavioural Biases and Their Influence

These behavioural biases significantly impact the decision-making of investors and the process through which the markets operate, regularly causing deviations from theoretical asset pricing models. Sections further beyond will discuss the four biases: overconfidence, herd behaviour, loss aversion, and anchoring-with their effect on asset pricing and market efficiency.

Overconfidence

Overconfidence refers to such a behavioural bias whereby the individual enjoys inflated confidence in their own knowledge, skills, or predictive abilities and fails to appreciate the related risks. It tends to be exaggerated in the financial marketplace, for most investors often have needless confidence in their approach toward their forecast or specific investment decisions. (Barber & Odean, 2001) handled overconfidence's contribution to trading in-depth and reported that

overconfidence caused excessive trading in the market. They further illustrated that overconfident investors execute too many trades, which cause them higher transaction costs and paradoxically lower net returns than less active traders.
Besides the influence on individual portfolios, overconfidence tends to influence the more aggregate market outcomes. In speculative periods, it is generally overconfident investors who may contribute to price bubbles by buying up overpriced assets aggressively. For example, during the dot-com bubble, overconfidence was apparent among many investors about technology stocks, who expected very high returns from them, despite respective fundamentals remaining weak. Such behaviour not only increases asset prices but causes higher volatility in the market due to pricing corrections that occur on subsiding overconfidence.

Herd Behaviour

Herd behaviour refers to the imitation of the investment decisions of others, rather than relying on independent analysis. This behaviour tends usually to be motivated by feelings of fear of missing out or belief that others have superior information. The notion of informational cascades, first coined by (Bikhchandani et al., 1992), happens when early movers in a market influence subsequent investors thereby moving trends further along the continuum.
Herd behaviour has played a key role in significant financial events. During the dot-com bubble, investors rushed to invest in Internet companies. They were driven more by peers than by fundamental analysis. Similarly, during the 2008 financial crisis, herd behaviour occurred in the real estate market, leading to speculative buying that drove prices to an untenable level. After the bubble burst, this herd mentality caused a race for exit, thereby seizing on the collective selling tendency of the investors, resulting in more intra-market collapse.
Herd behaviour distorts market efficiency by causing a deviation in the market price of the asset from its intrinsic value. It also causes volatility due to the swaying of the market between extreme optimism and pessimism, depending on the prevailing mood.

Loss Aversion

Loss aversion, a key concept in Prospect Theory (Kahneman & Tversky, 1979), refers to the tendency for individuals to strongly prefer avoiding losses to acquiring equivalent gains. This asymmetry requires that losses hurt more than their corresponding gains, which causes investors to behave irrationally whenever they perceive the threat of losses.
Loss aversion is closely tied to the disposition effect, whereby the investor holds on to losing stocks for too long in the hope of a rebound and sells worthy stocks prematurely in order to lock in a gain. This behaviour causes market inefficiency, as it prevents prices from quickly reflecting true values. For example, loss aversion may delay price corrections during down cycles, as ordinarily would-be sellers shy away from selling their underperforming assets.
Loss aversion also has significant implications for risk-taking behaviour. Investors, given loss prospects, may resort to taking unmanageable risks to recover their losses, further destabilizing the market. Conversely, when investors profit big, loss aversion may inhibit risk-taking and signal overweighting of anticipated versus immediate gains.
Yet another example is that investors who remained inclined in their anchor to earlier peak prices during a market correction tended to believe too much in the repositioning capacity of those sinking prices. (Baker & Wurgler, 2006) have shown that anchoring is often in conjunction with investor sentiment, greatly influencing stock returns in ways that contradict traditional efficient market models.
The anchor does have influence over IPOs and valuation metrics, in that investors tend to latch on to very early price estimates and completely ignore any of the follow-up information that might provide some sort of contrary intrinsic value. Such behaviour was on display in the 2000 dot-com bubble, where many IPOs were priced on information quite speculative in nature rather than by underlying fundamentals.

Nudge

Nudge bias is a more subtle form of behavioural influence whereby choices are structured to subtly steer individuals toward a particular decision while not limiting their freedom to make a different choice. The term arose out of behavioural economics as introduced by Richard Thaler and Cass Sunstein in their book Nudge: Improving Decisions About Health, Wealth, and Happiness.
This bias springs up in the context of finance and asset pricing when the way of presenting the whole information can influence the investor's decisions. By accentuating specific financial metrics or framing the investment options in a particular context, nudge invests into investor behaviour. The nudges themselves depend on cognitive shortcuts (also known as heuristics) and biases, such as loss aversion or a predisposition to suit the default options.

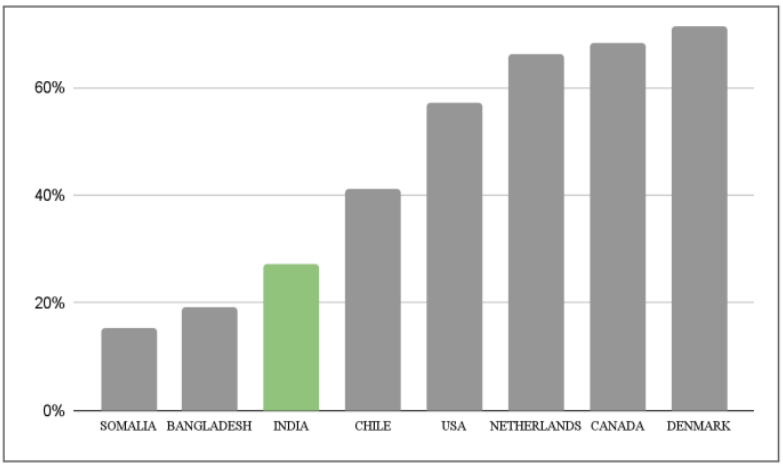
Recency Bias

Recency or put another way recent bias refers to the contaminated mindset of investors directing undue stress towards current events and trends whilst the historical data, also termed the long-term fundamentals, receive relatively less seasoned consideration. This cognitive bias leads investors to project past performances into the future, causing an overreaction or underreaction in most cases. For example, recent biases during a bull market may lead investors to think prices will keep on rising like this: indefinitely, tipping prices well beyond sustainable levels, while in bear markets, investors may sell off their assets prematurely just because they appear reluctant on further performance. This bias works against market efficiency by misplacing price discovery in that prices do not actually reflect intrinsic values. Another case in point is the 2008 financial crash: the housing market crash was partly rescued by the supply of investors and lenders following recent increasing home prices and neglecting past cycles during correction.

esearch Objectives

1. To analyze the behavioural biases and their influence on asset pricing and the degree of inefficiency in the market.
2. To analyze financial literacy and its relation to the behavioural biases and how this percolates down to the stability and efficiency in the market.
3. To compare traditional financial theories and behaviour finance models on a scale for their explainability of market anomalies.

Financial literacy around the global



Source: Research Gate

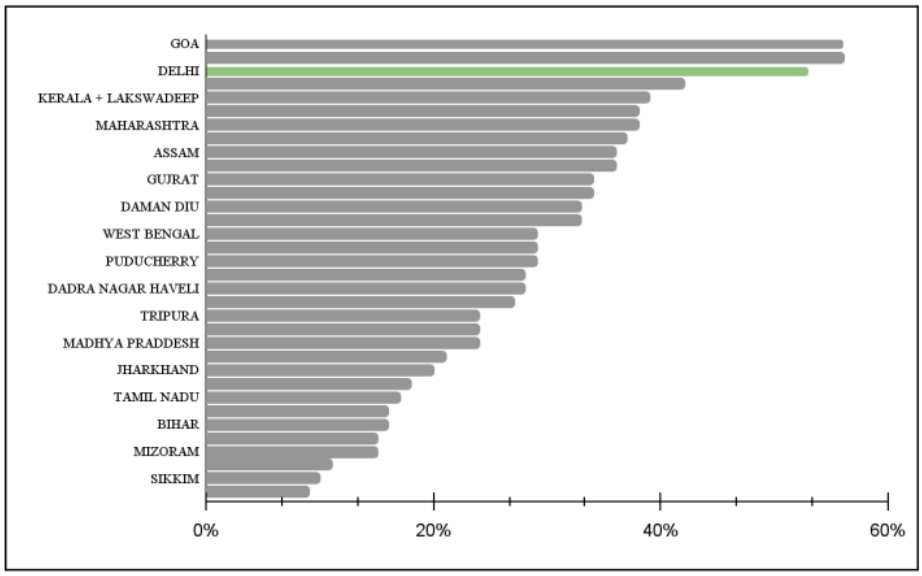
The financial literacy chart depicts a strong relationship with how behavioural biases influence asset pricing and the market efficiency, where countries with a low level of financial literacy, like India and Somalia, are likely to show behavioural biases such as overconfidence, herding, and loss aversion. Due to these considerations, this results in poor decision-making on part of investors which also inflate the prices of the assets besides being an important cause of market inefficiency. In markets where people do not possess financial knowledge as highly as desirable, investors might begin reacting using their emotions or impulsiveness; due to herd instincts or speculative sentiments rather than evidence-based financial principles. In other words, because financial literacy in India is below 25%, retail investors may overestimate their skills and abilities to move the market to overvalue assets, very much alike to speculative bubbles, as asserted for the case of the Bitcoin surge.

Contrarily, the countries, which had higher financial literacy in particular, namely Denmark and Canada, were observed to have better market efficiency. It is because such investors would consider the fundamentals of an investment over its emotional prompters; in such markets, the behavioural biases are rare, allowing for asset prices to reveal the underlying economic phenomena. As noted by (Shleifer, 2000), well-informed investors are less likely to overtrade or follow herd behaviour, and therefore, a higher degree of efficiency can be anticipated.

Therefore, the level of financial literacy provides a more or less direct indication of the extent of influence on the distortions of the pricing of assets and therefore on market efficiency by behavioural bias. There is scope for greater public dissemination of financial literacy knowledge to allow for such biases to dissipate and therefore build a more

stable and efficient market environment.

Financial Literacy in India



Source: Research Gate

From the chart showing financial literacy across Indian states, we can see the plight of substantial regional diversity in financial literacy. Slightly on the side of this scenario, states like Goa and Delhi-their heads held high-indicate more than 60 percent financial literacy, and this shows that people in those states would tend to make relatively informed financial decisions. Such instances of behavioural biases like overconfidence and herd behaviour would thus be less likely to be expected in these regions because the investor's decision-making is usually based on knowledge and rational analysis rather than speculative trends.

Conversely, whereas the states that fit in the box of the least financially literate, such as Bihar, Mizoram, and Sikkim, reveal a trajectory of 0-20 percent financial literacy, in states like these, one expects a lot of behavioural biases to interfere with decision-making. Biases, such as overconfidence and mental accounting, could prevail more in these states because they could cause poor decision-making. Those in these states tend to be at higher risk of overestimating their ability to foresee the movement in markets or neglectfully place lesser weight on adequate risk assessment-this is one of the more striking inefficiencies when it comes to asset pricing. Behavioural biases are also capable of artificially creating volatility in asset prices, inconsistency in asset pricing, and impulsiveness or herd-player behaviours based on mimicry of other participants.

Thus likely, the data perhaps show the regional gating of financial literacy exerts some effect on how investors might alter their asset pricing behaviour. The higher the financial literacy level, the less the behavioural bias can work: hence, providing better rational decisions and function in a greater extent market efficiency. Building literacy skills in low literacy regions may lessen cognitive biasness and improve market than in a completely illiterate region.

Case Study - The dot-com bubble of 1997–2000

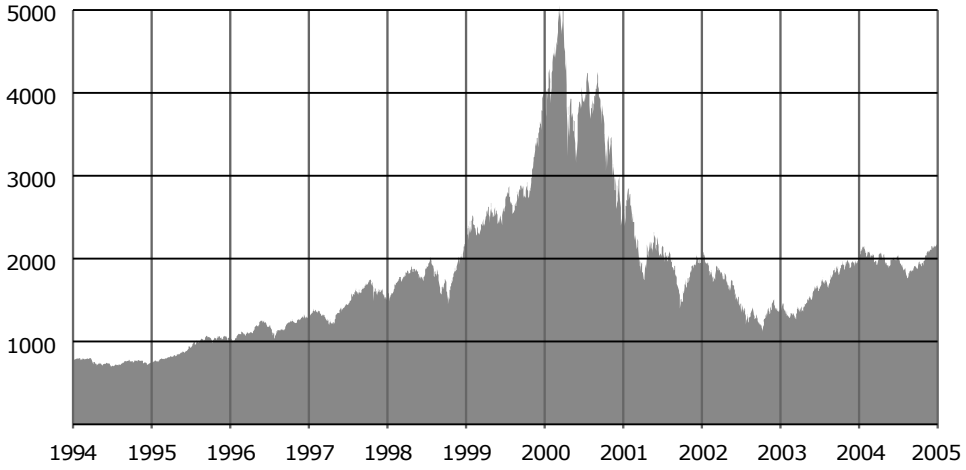
The dot-com bubble of 1997–2000 exemplifies how overconfidence and herd behaviour bias can ultimately affect asset pricing and market efficiency. This period was marked by large-scale speculation on the internet-related business (dot-coms) under the pretext of having no or a little profit but being valued in ridiculously high dollar amounts. Investor overconfidence based on the idea of the internet being a magical wand led to those neglected traditional metrics of valuation, namely cash flow and profitability. Employees of dot-com start-ups occasionally became millionaires overnight, increasing optimism among other investors. This irrational exuberance was a term famously coined by Alan Greenspan.

Brought about by herding, during this period, the growth of dot-com stocks was triggered by others investing in tech stocks, spurred on by ones not interested in missing lucrative exponential gains. Informational cascades simply served to accelerate these trends, trifling with a feedback loop that continuously inflated the valuations. The NASDAQ Composite Index peaked in March 2000, rising almost seven fold from 743 in 1995 to 5,048. Yet the surge was not to last.

The bubble collapsed in 2000, spurred by rising interest rates and the souring of many dot-coms. Over the following two years, the NASDAQ dropped 78%, erasing trillions in market value and devastating economic impact. High-profile failures such as Pets.com and Webvan were symptomatic of a business model that relied on speculative optimism rather than a solid underlying financial footing.

While the episode amply illustrated the serial dangers arising from overconfidence and herd behaviour within financial markets, it at the same time highlighted the need for rigorous due diligence and sound valuation frameworks. In regulatory terms, post this episode, as remedial action, the SEC announced tighter IPO requirements and compelled fuller risk disclosures to prevent a reemergence of such speculative bubbles.

NASDAQ Composite Index

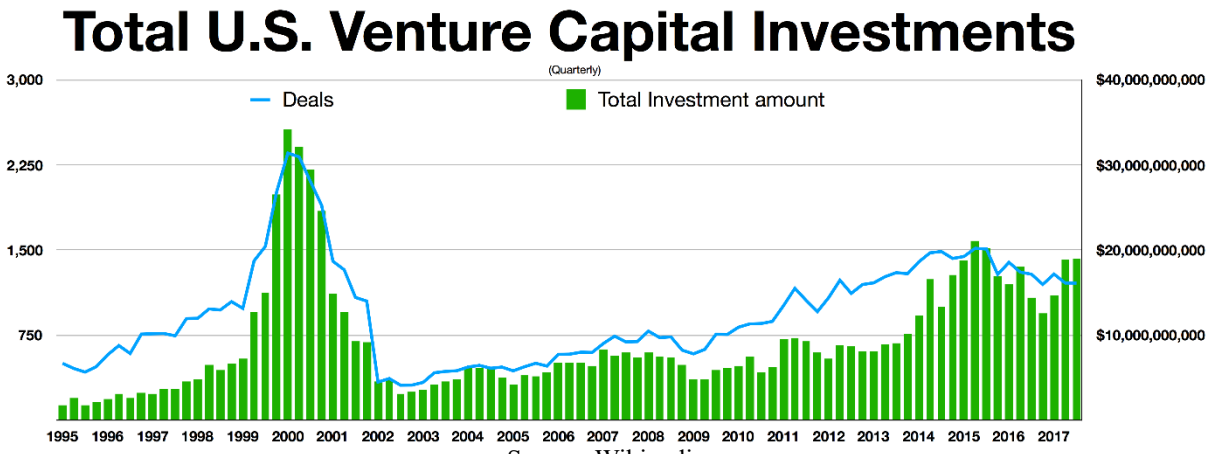


Source- Wikipedia

The NASDAQ Composite Index tracks the trajectory of the bubble:

- Rise: Between 1995 and its crest in March 2000, the index shot upwards almost seven times, from 743 to 5,048.
- Decline: Between March 2000 and October 2002, the index fell around 78%, to 1,139.

This massive reversal lost $5 trillion in market capitalization, and devastation hit institutional and retail investors. The overall crash made visible the unsustainable nature of many dot-com companies that thrived on investor sentiment, rather than by sound financial strategies.



Source: Wikipedia

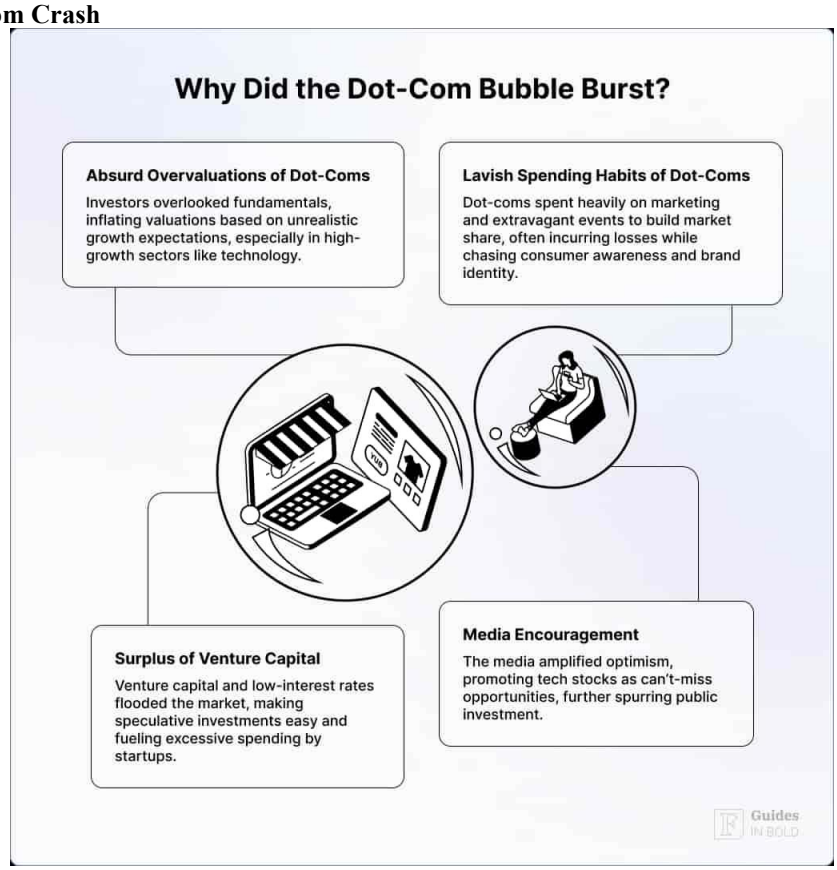
The chart shows quite clearly how venture capital funding was affected by behavioural biases; particularly during and after the dot-com bubble. Venture capital funding surged sharply alongside a rising number of deals, between 1995 and 2000. This increase was driven, in part, by overconfidence and herd behaviour. Investors, blinded by nearness in value and crazy projects into the transformative potential of the internet business, saw the real investment vehicles crying loo and could only have thought there is a huge overvaluation before 2000, when venture capital registered peak funding at a speculative frenzy that preceded the eventual collapse of the dot-com bubble.

A steep decline occurred between 2001 and 2003 in venture capital activity after the bubble burst, marking the turning point of the market. This was due to a reassessment of the excessive investments of the years before, forcing investors to be more cautious and focus on companies which had proven models and escapes from ruin. The immediate result of such a development was a recognition in the market about the risks that speculative behaviour poses, which clearly illustrates the damaging effects of both overconfidence and herd mentality over asset pricing.

From 2004 onward, venture capital investments stabilized and began to rise gradually but at more sustainable levels. A more rational approach, where the lessons learned from the bubble drove capital towards business fundamentals and away from speculative fancies, characterized that phase of recovery. The flow is shown clearly by the chart; funding activity grew steadily through the mid-2010s as investors washed their hands of lower-risk pursuits, very rational investment strategies with virtually no speculative fancies.

This case study demonstrates that overconfidence and herd behaviour can lead to market inefficiencies and mispricing of assets. The dot-com bubble and its aftermath are clean illustrations of how psychological variables drive decision-making in financial markets.

Causes of the Dotcom Crash



Source: Finbold

- **Overvaluation of Dotcom Companies:** Many tech companies that went public during the dotcom period were hugely overvalued as a result of unrelenting demand and speculative investing. Due to the lack of any proper valuation model, there were phenomenal stock prices with absurdly high price-earnings (P/E) ratios that were not in alignment with the real earnings potential. Instead, investors considered traffic indicators, like website hits, while evaluating these companies, rather than considering their ability to generate real revenue. Studies estimated that 40 percent of dotcom companies were overvalued based on their P/E ratios (Ofek & Richardson, 2003). The overvaluation stemmed directly from optimism regarding the probable future of internet businesses with no solid business models backing them up.
- **Lavish Spending Habits of Dot-Coms:** Many dot-coms under this model were given to prolific spending on everything from marketing, lavish events, and costly strategies of customer acquisition, with no visible paths to profitability. The focus was on market-share growth and awareness, even at loss of long-term sustainability. The turf war waged between the dot-coms for customer acquisition and brand identity forced them to eschew the generation of sustainable revenues in favor of aiming at higher burn rates and increasing losses (Zengler, 2000).
- **Abundance of Venture Capital**: The influx of venture capital played a most decisive role in the ballooning bubble. During this time, tech startups had access to vast sums of capital, usually at subprime rates. The effect of cheap funds and the more relaxed rules for acquiring investment resulted in unprecedented cash flow into internet-based companies. This infusion of investment money further promoted the tech-stock overvaluation, thereby creating a bubble that was destined to destabilize (Gompers & Lerner, 2001). The easy funding process in a rapidly expanding market, with few controls, further encouraged irrational investments that intensified the speculative frenzy.
- **Media Frenzy**: The role of the media was pivotal in promoting the dotcom bubble. Business publications such as *The Wall Street Journal*, *Forbes*, and *Bloomberg* played a major role in fueling public interest and investment by hyping the potential of tech companies. The media's portrayal of the internet as the "next big thing" encouraged investors to get involved, often with little understanding of the companies' fundamentals. The famous speech by Federal Reserve Chairman Alan Greenspan in December 1996, where he coined the term "irrational exuberance," further stoked the hype around technology stocks and contributed to the rapid rise in valuations.

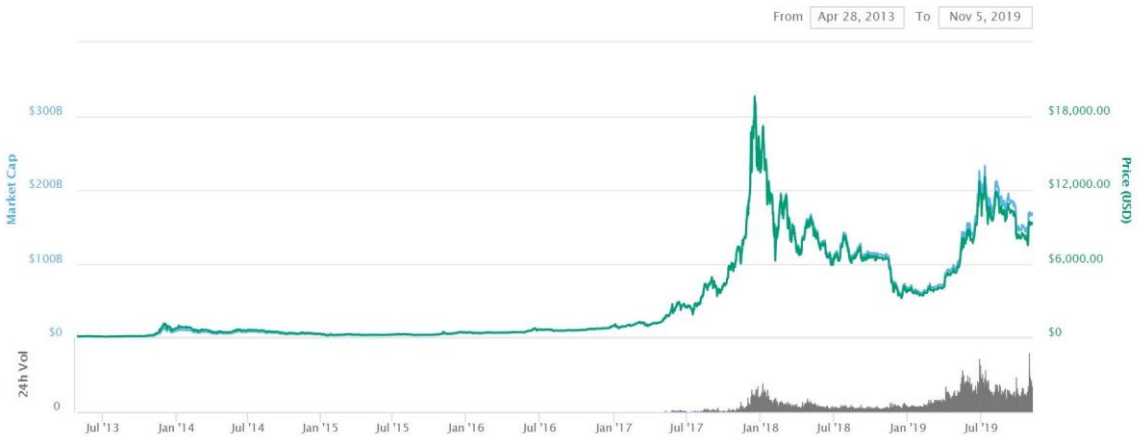
Case Study: The Bitcoin Market and Cryptocurrency Bubble (2017)

The notorious rise and fall of Bitcoin and other cryptocurrencies began in 2017 as a strong evidence of varying behavioural biases operating in asset pricing and financial market efficiency. The surge in Bitcoin price and its subsequent dramatic plunge demonstrate how overconfidence, herd behaviour, and speculative sentiment impact the market.

1. **Overconfidence and Speculative Frenzy:** From around $1,000 in January and nearly $20,000 in December in 2017, this was a susequent rise. Many investors attributed this rise due to the overconfidence bias that developed from that rapid price increase, whilst reasonably assuming that it would accelerate even more due to increasing acceptance of cryptocurrencies and blockchain technology. Investors tended to become over-optimistic, underestimating risks,

neglecting information about the asset's fundamentals and this led to inflated valuations (Barberis, Shleifer, & Wurgler, 2005).

2. **Herd Behaviour and the Speculative Bubble:** As prices climbed up, other retail investors entered, adopting a herd mentality immersed in fear of missing out (FOMO). Other social media such as Reddit and Twitter seemed to amplify the social influence and made people follow the crowd instead of thinking critically. It was this type of herd behaviour that led to swift price increases regardless of Bitcoin's intrinsic value (Bikhchandani, Hirshleifer, & Welch, 1992).
3. **Loss Aversion and the Market Crash:** When Bitcoin traded around a historic high in December 2017, it started to decline soon after. One of the drivers for the drop in the market dealt with loss aversion which represents the tendency of investors' unwillingness to recognize losses-in other words, avoid taking the decision to sell a losing asset under any circumstances. Because most retail investors had their purchases at peaks, they were often quiet about selling them in a panic if a loss occurred. This inability to exit deepened the decline into panic selling and further compounded market correction (Kahneman & Tversky, 1979).



Source: Bitcoinwiki

Behavioural biases in a market are exemplified by the Bitcoin price spike that registered between 2013 and 2017. By 2017, Bitcoin had peaked to just below $18,000, driven by herding and overconfidence, with retail investors pouring into the market for fear of missing out. This short-sighted speculative rush inflated Bitcoin's market price far above its intrinsic worth and created a bubble. When the price began to crash in 2018, loss aversion led investors to hold to their losing positions while hoping for recovery, further dragging the market down. The whole event made injudicious investor behaviour distinctly visible to cause the departures in prices of available assets away from their fundamentals, thus contravening the Efficient Market Hypothesis (EMH) (CoinDesk, 2019; Journal of Behavioural Finance, 2020).

Conclusion

The Bitcoin bubble that formed in 2017 is a prime example of how various behavioural biases including overconfidence, herd behaviour, and loss aversion can warp and distort asset prices to the point of manifestation in market inefficiencies. The market behaviour was dominated by irrational swings orchestrated by investor volatility that created this massive price bubble. The eventual bursting of the bubble subsequently brought on a much-needed corrective movement that exposed market inefficiencies resulting from such biases. The case further reinforces the renewed effort among investors to rigorously account for such psychological factors with an eye to the inductive impacts they engender on market dynamics, instead of resolutely resting on orthodox financial tenets based on rational decision-making.

Implications for Asset Pricing Models: Traditional vs. Behavioural Approaches

Traditional Asset Pricing Models

Traditional models such as Capital Asset Pricing Model (CAPM) and the Efficient Market Hypothesis (EMH) assume rational investors and efficient markets. The CAPM states that an asset's expected return is based on its systematic risk (beta), which reflects the trade-off between risk and return. Similarly, the EMH posits the markets are efficient, such that asset prices fully incorporate all available information; thus, persistent abnormal returns cannot exist. These models explain asset pricing by assuming rational behaviour on an investor's part, whereby he/she maximizes utility.

However, testimonials from real life prove inconsistencies in such assumptions. Some anomalies follow on the heels of momentum effects (firm prices for assets whose recent returns have been high continue exceeding others' returns) and value premiums (undervalued stocks outshine others in total return). Such speculative bubbles as the dot-com or Bitcoin bubbles illustrate how irrational behaviour-including herd mentality and overconfidence-can pull prices away from their intrinsic values.

Behavioural Asset Pricing Models (BAPMs)

However, unlike the standard models of pricing assets, BAPMs integrate cognitive biases and emotional influences into their frameworks. Probably the first of their kind, Shefrin and Statman behavioural models account for factors such as

investor sentiment, overreaction, and loss aversion. The purpose of these models is fairly straightforward: to explain the observed market behaviour in relation to the recognized theoretical prediction.
• Investor Sentiment: Investors driven by sentiment, such as optimism, media play, or speculation, can inflate or depress prices. The bottom line is that good sentiments create bubbles, such as the infamous dot-com bubble of the late 1990s, whereas bad sentiments act to deepen bear markets.
• Loss Aversion and Disposition Effect: Because of loss aversion (attractive losses versus equal gains), investors would sometimes exhibit a disposition effect whereby they unseriously hold on to losing investments rather than letting them go once underwater. In extreme cases, a few times, corrections take place far too rapidly due to ongoing losses mounting up.

Comparison and Practical Implications

- **Flexibility:** Unlike traditional models, BAPMs account for irrational behaviours and sentiment-driven mispricing, providing more robust explanations for anomalies like speculative bubbles, herding, and overreaction to news.
- **Market Efficiency:** Behavioural models acknowledge that markets are not perfectly efficient and integrate the role of noise traders and sentiment-driven investors who amplify volatility.
- **Asset Pricing Insights:** By incorporating investor psychology, BAPMs refine our understanding of risk premiums and asset valuation, especially in speculative and highly volatile markets.

Comparison of Traditional and Behavioural Models

Aspect	Traditional Models	Behavioural Models
Investor Assumptions	Rational, utility-maximizing investors	Investors influenced by cognitive and emotional biases
Market Efficiency	Markets are fully efficient and reflect all information	Markets are prone to inefficiencies due to biases
Explanatory Power	Limited in explaining anomalies	Explains anomalies and psychological influences
Risk Factors	Systematic risk (beta)	Investor sentiment and behavioural risks
Practical Relevance	Useful for structured and stable markets	Better suited for volatile and speculative markets

Source: Authors Calculation

Policy Implications and Market Strategies

For Regulators

1. Behavioural Nudges

Policymakers can use behavioural nudges to influence better financial decisions without limiting options. For example, introducing default options in retirement savings plans has significantly increased participation rates. Employees enrolled automatically are more likely to save, leveraging inertia and overcoming choice paralysis (Thaler & Sunstein, 2008).

2. Transparency and Disclosures

Regulators can reduce herd behaviour and speculation by enhancing market transparency. Real-time disclosures of insider trading or large trades can lower information asymmetry, helping investors make rational decisions. Studies by Bikhchandani et al. (1992) show that better information flow reduces uncertainty and mimetic behaviour.

3. Educational Initiatives

Financial literacy programs help investors identify and counteract biases like loss aversion and anchoring. By equipping individuals with tools to make rational decisions, regulators can reduce emotionally driven market inefficiencies.

For Investors

1.Awareness of Biases

If investors can cite those propensities in their thinking which create an overconfidence and a recency bias, they will be able to better make their choice. For example, suppressing overconfidence would prevent excessive trading, which reduces overall returns (Barber & Odean, 2000).

2. Portfolio Diversification

A diversified investment approach mitigates narrow framing by prompting investors to view their portfolios from a holistic perspective rather than narrowing their focus of losing a particular individual security. Diversification reduces concentration in volatile assets while smoothing returns.

3.Systematic Investing

Approaches such as dollar-cost averaging assist in countering emotional decision-making. These systematic approaches reduce within-shock selling during dramatic downturns, operating and affecting matters related to herd behaviour and avoidance of loss.

Empirical Evidence

1. Automatic enrolment in 401k plans has seen participation rates soar from 20% to over 80% (Madrian & Shea, 2001), as evidence of the efficacy of behavioural nudges.
2. Policies such as MiFID II have ushered in an era of assuming real-time disclosures, which in turn prevents disruptive bubbles built by excessive speculation and herd behaviour on the market.

3. Individual investors lose approximately 1.5% in returns annually due to overconfidence and overtrading (Barber & Odean, 2000).

Conclusion

This research project draws attention to the significant influence of behavioural biases on asset pricing and on the efficiency of financial markets. In other words, this is clearly a challenge to the parameters set by conventional economic theory. Whereas the Efficient Market Hypothesis claims that rational behaviour will lead to efficient markets, our findings show that cognitive biases of investors like overconfidence, herd behaviour, loss aversion, and anchoring lead, in so many situations, to inefficiencies in market behaviour and distorted prices on assets. Such indicators do not exist on a random basis but instead have a systematic influence on decision-making among investors that creates scenarios of speculative bubbles and mispricing.

A strong relation also emerged between financial literacy and market efficiency, with markets in lower financial literacy areas being more prone to these biases. The research contends that these biases are among the leading causes of market volatility or inefficiencies, as was witnessed through historical market events.

Policymakers and regulators could deploy behavioural nudges, improve transparency, and ramp up financial education to mitigate the effects of those biases. Similarly, investors could take advantage of their ability to notice and manage those biases through actions such as diversification and systematic investing. As a whole, the fighting of biases is integral to achieving more rational and sound financial markets.

This work certainly adds weight to the argument for formalizing behavioural insights into both financial models and market conduct, so that legislature, regulation and decision-making become increasingly effective when directed at ensuring stable and resilient markets in the future.

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