

“5% Canary Application: A Tool for Early Warning in Indian Financial Markets.”

ABSTRACT:

The objective of this research is to study the possibility of applying “5% Canary” concept of NAAIM founders among others. It is the first derivative in assessing the market direction in any Indian equity markets while looking specifically at Sensex, Nifty 50 and Nifty 500 only. It also explores how long a market tends to go down after a 5% drop from the 52-week high and how long it takes for the market price to change after such a drop. This study draws on the work of other researchers but differs from theirs, in that it adopts theoretically based concepts—brachistochrones—that are also more than two centuries old, with the aim of generating knowledge that will be useful to the everyday and professional investors in the Indian capital markets in particular in protecting and growing their investment.

Keywords: Financial Markets, Risk Management, Predictive Analytics, Canary Application, Financial Surveillance, Investment Strategies

INTRODUCTION:

Amidst the rapid changes in Indian equity market, investors have confronted the typical question; is it prudent to invest in the falling market or expect the market to fall even further? This critical factor comes into play more so in the market structure due to the presence of movements and trends. Based on pioneering studies such as the 5% Canary study, this paper strives to assess the feasibility of one such investment strategy popularly known as “buying the dip” in the Indian context.

Many have argued that the “5% canary” study, which started from studies of S&P 500 and Dow Jones Industrial Average, has placed much credence on the analysis of the first five percent declines from 52-week highs and how they affect future markets. Thus, this paper intends to explore these issues in regard to equity markets in India and particularly, Nifty 50 and Nifty 500 equity indices.

Considering all the historical data and the fact that Indian indices have previously gone through great drawdowns, this research also goes through an extensive investigation of the decline of the market drawdowns and whether they can be used for forecasting purposes. the study consists of two main parts; the first analyses the consequences on equity indices when they fall by 5 percent within certain periods; The second examines how the protracted falls may present attractive bullish positions for the investor.

Essentially, the objective of this paper is to reconcile the two from a very practical aspect of research and its implementation in the Indian market. By conducting a thorough analysis and relying on the available evidence, it intends to elaborate on measures that equity investors in India can take

regarding timing and their effectiveness in the Indian context so as to assist them in making decisions in the market amidst all the challenges that it presents.

LITERATURE REVIEW:

Early Speed:

Literature on the research topic which involves gauging the market risks threatening the value of investments as well determining targets for the investment is quite broad and varied. The studies touch on several areas, including but not limited to mathematical theories, historical perspectives, and practical cases.

Herrera's 1994 thesis considers the history and various equations of the brachistochrones curve which is essential when the travelling time takes gravity into account. By looking back at Johann Bernoulli's question and its responses, Herrera gives the reader the brachistochrone curve theory and some of its uses beyond its original domain - classical mechanics.

In turn, complementing the theoretical aspects reviewed by Herrera, 3Blue1Brown's (2016) brachistochrone curve polish offers engaging animations and clear explanations on the whole concept, including the geometric features of the curve, which explains the use of the complicated mathematical tool. Therefore, this kind of research material enhances knowledge of the applicability of the curve in physics, mathematics, engineering and many other fields.

According to the theoretical explanation posed by Herrera and 3Blue1Brown, Henry & Watt (1998) examined the means of utilizing the brachistochrone curve in practice in such extreme activities as surfing. Using primary data collection methods, the researchers reveal a fascinating fact about how sportspeople apply the principles of speed given their prior position. This shows how the curve is applied in practice and improves performance in sports.

Likewise, Jennings (2017) explores the applicability of the curve in skiing. Working with case studies and biomechanics, Jennings explains the optimization of trajectories that allow skiers traverse a particular slope in an easier manner. Also, the degree to which speed before a turn affects a skier's overall performance is measured, thus further asserting the applicability of the curve in different sporting activities.

In addition to these works, the "5% Canary" research conducted by the NAAIM builders offers an analysis of market corrections and their predictive ability regarding the trends in the price actions that follow. In doing so, this paper defines the relevance of the existing caveats or warnings in trends of market downturns. It also serves as a good guide for the strategic investment plans for instance the hedging strategy levels above the market price during such times.

All in all, these studies provide an integrated assessment of the theoretical aspects, applications, and market effects of the brachistochrone curve. This comprehensive literature review provides a solid foundation on current research that seeks to understand the interaction of falling markets and

subsequent recovery trends. It has a bearing on the investment choices made, and the risks involved in such action.

Investor Sensitivity to losses:

Compounded by wave patterns and trends in the mentioned indices at the stage where they are beginning to drawdown, the investor will now have to assess if there is a need to protect himself from further falls in the markets or if it is possible for the index to peak and then turn upwards. In their examination of Prospect Theory, Kahneman and Tversky found that the negative oh of a loss was double that of the positive oh of a gain, Loss Aversion However has an emotional effect on decision making as it makes one prone to avoiding losses more than seeking out gains thus inhibiting o's rationality.

Due to investors' heightened sensitivity to losses, significant market movements tend to attract more attention. For instance, when aggregate stock prices experience a substantial drop, even typically passive investors become motivated to trade because mounting losses capture their focus. This increased attention can lead to irrational behavior among market participants and exacerbate downward market trends. Retail investors, in particular, exhibit attention-driven buying behavior. They tend to be net buyers on high-volume days, reacting to both extremely negative and extremely positive one-day returns, as well as news-related stock movements.

In this paper, we address the emotional impediment to buying decisions, specifically in Section Two. We apply a data-dependent approach to evaluate buying opportunities following extended periods of price weakness. The emphasis on attention-grabbing data and media is amplified by the growing availability of resources for investors. However, there appears to be a stronger reliance on external sources for broad market perspectives compared to stock-specific opinions. Researchers Peng and Xiong argue that investors place greater focus on broad market and sector-level information inputs rather than individual stock-related data points. Properly assessing the price movements of broad equity market indices is crucial for a pragmatic investment approach.

Furthermore, investors tend to overreact to major downside market events and expect them to occur more frequently than historical data suggests. A survey conducted from 1980 to 2004 found that accredited investors believed there was a 19% probability of a crash similar to the 1929 or October 1987 events happening again. However, actual crash-like declines occurred only 1.7% of the time between 1925 and 2015. While significant market weakness is not abnormal, it occurs less frequently than many investors anticipate. Developing a methodology to evaluate market declines early on can provide warning and help investors make informed decisions, avoiding the pain of losses that Kahneman and Tversky highlighted.

The concept of market timing, often reliant on technical analysis, involves making investment decisions based on changes in price and volume data to seek capital appreciation or preservation actively. It's a contentious practice within the financial realm, eliciting strong opinions from both proponents and critics. Critics commonly argue that the potential downside of missing the market's best days outweighs the benefits of avoiding its worst days. However, Antoons (2016) challenged this

notion by analysing market history from 1961 to 2015. The research revealed that missing the 25 best days in the S&P 500 yielded an annualized return of 5.74%, while avoiding the worst 25 days resulted in a return of 15.27%. Remarkably, even missing both extremes produced an annualized return of 10.94%, surpassing the return of a buy-and-hold strategy at 9.87%.

RESEARCH METHODOLOGY:

Problem Statement:

In the dynamic Indian equity markets, investors face a perennial dilemma: whether to capitalize on market downturns or prepare for further declines. This critical decision gains significance amid market volatility and enduring trends. However, there is a lack of research exploring the effectiveness of specific investment strategies, such as "buying the dip," within the Indian market context. This research will outline a methodology for investors to assess whether the more prevalent 5% declines in the Nifty 50, Nifty 500, and Sensex are likely to persist downward, posing the risk of a more severe downturn, or present an opportunity for mean-reversion bullish trades.

Quality:

The purpose of this article is to provide insightful knowledge through studies such as the one on the hypothetical '5% Canary' research, which was the result of the understanding of American indices. Even so, the study will endeavour to apply their research ideas to the Indian market in a prudent way with the intention of maintaining high analytical level practices and ensuring that the outcome is credible and dependable.

Quantitative:

Research will include a detailed study of the secondary data available with respect to the Indian equity indices with an emphasis on Nifty 50 and Nifty 500, drawing more attention to the major drawdowns and market rises and their degradation and what loss in the market can be anticipated from these incidents. The research will bridge the existing gap in the body of knowledge by including considerable amount of data that will help support whatever claims made within the paper.

Scope:

Divided into two main sections, the paper will examine the effect of a 5% drop in equity indices over certain periods and look for possible short position revealing opportunities after periods of prolonged decline. By focusing on these key areas, the research aims to bridge the gap between established research findings and their applicability in the Indian market context. It seeks to provide actionable insights to Indian equity investors, informing their decision-making processes amidst the complexities of the market landscape.

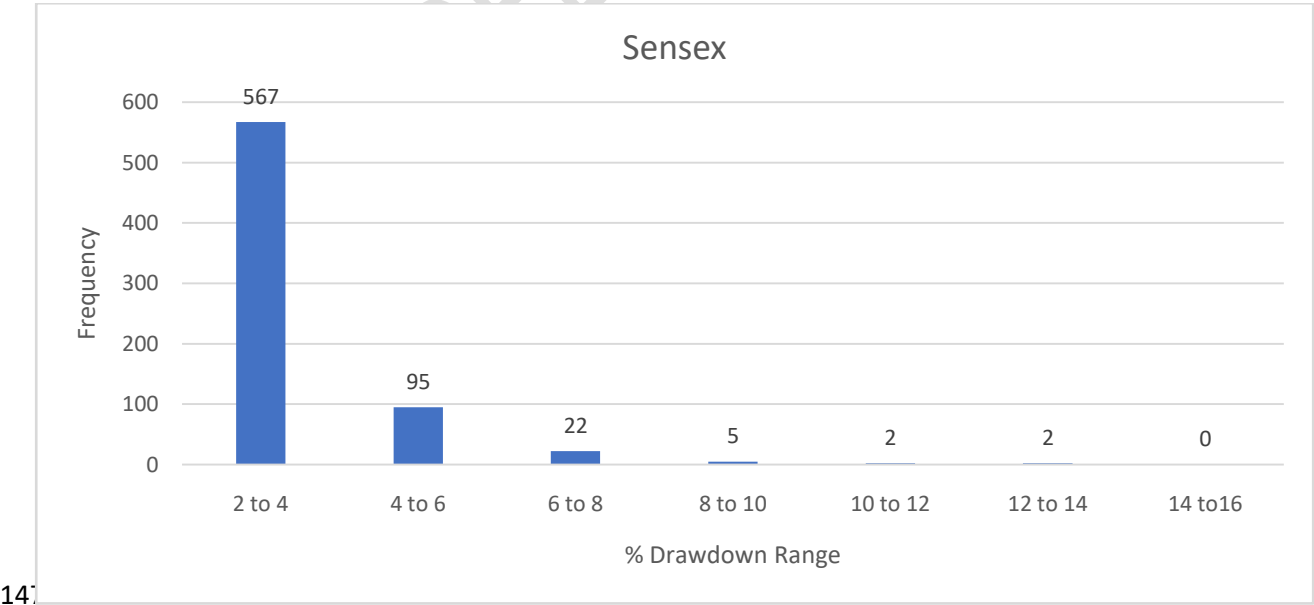
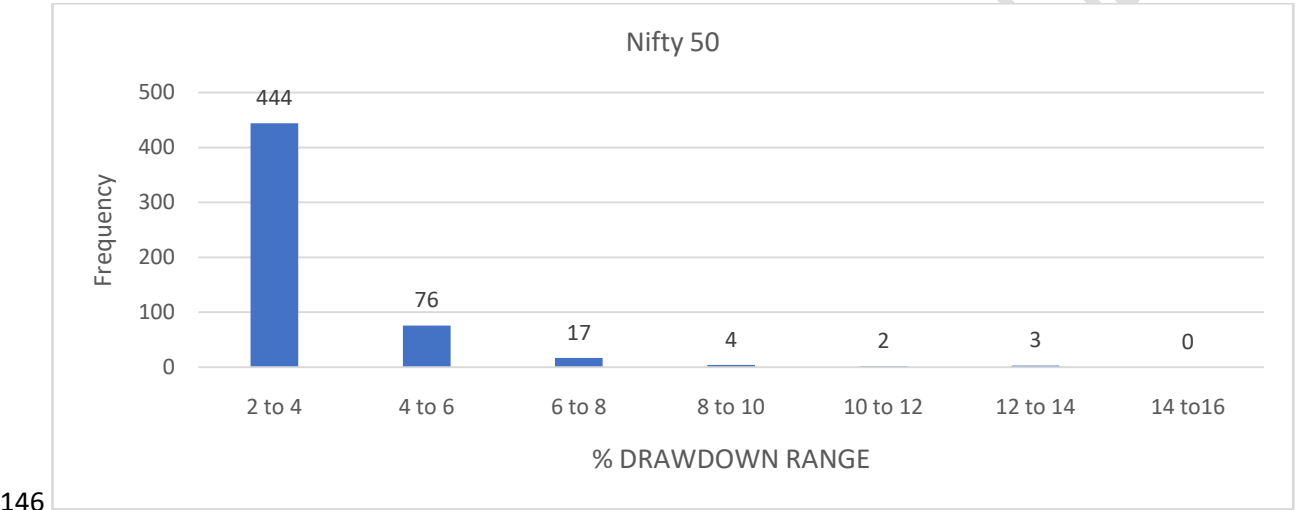
Data Analysis and interpretation:

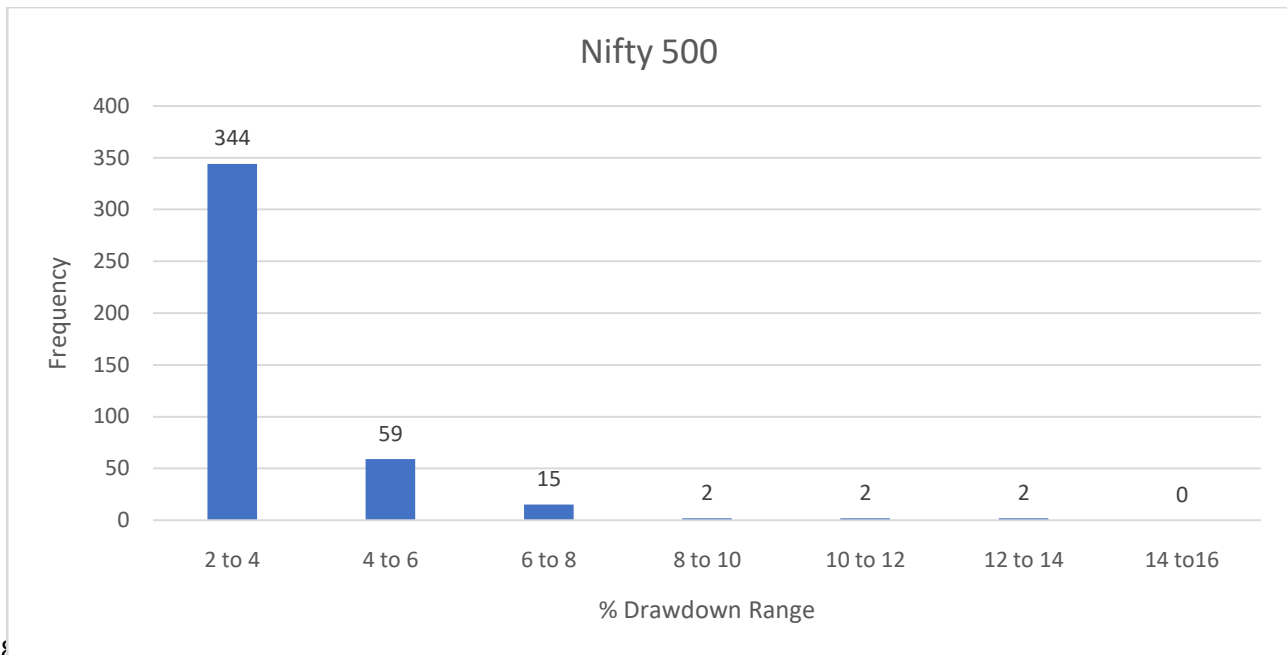
Using the idea from the brachistochrone curve and what Newton and Bernoulli discovered, it's clear that objects move fastest at the beginning of their decline this research will outline a methodology for

investors to assess whether the more prevalent 5% declines in the Nifty 50, Nifty 500, and Sensex are likely to persist downward, posing the risk of a more severe downturn, or present an opportunity for mean-reversion bullish trades.

Drawdowns and Market Timing:

Historically most downtrends by the Nifty 50, Sensex and Nifty 500 have been between 2% to 6%. Although declines ranging from 2% to 6% typically fall within the acceptable risk tolerance of most investors, it's the downturns exceeding double digits that often trigger discomfort and irrational reactions among investors. This paper will introduce a methodology that investors can employ to assess whether the frequent 5% declines in the Nifty 50, Nifty 500, and Sensex are poised to persist and potentially lead to a more significant drawdown risk, or if they present an opportunity for bullish mean-reversion trading.





Percentage declines in price for the Nifty 50, Nifty 500, and Sensex are based on closing values from 1990, 1995 and 1979 respectively to April 2024 grouped into seven buckets. Declines less than 2% were excluded for scaling purposes.

After the first 5% decline in the index within 15 days from a 52-week high as per the “5% canary” research paper the confirmation of the same is seen when there are two consecutive closings below the 200-day SMA/EMA within 42 days. And when after the 5% decline if the closing is not below 200-day SMA/EMA within 42 days then the buy the dip strategy comes into the picture. Buy the dip has a rule that when the price is above 200 SMA/EMA at the same time the 50 days SMA/EMA is crossing the 200 days SMA/EMA to the upside then entry can be taken.

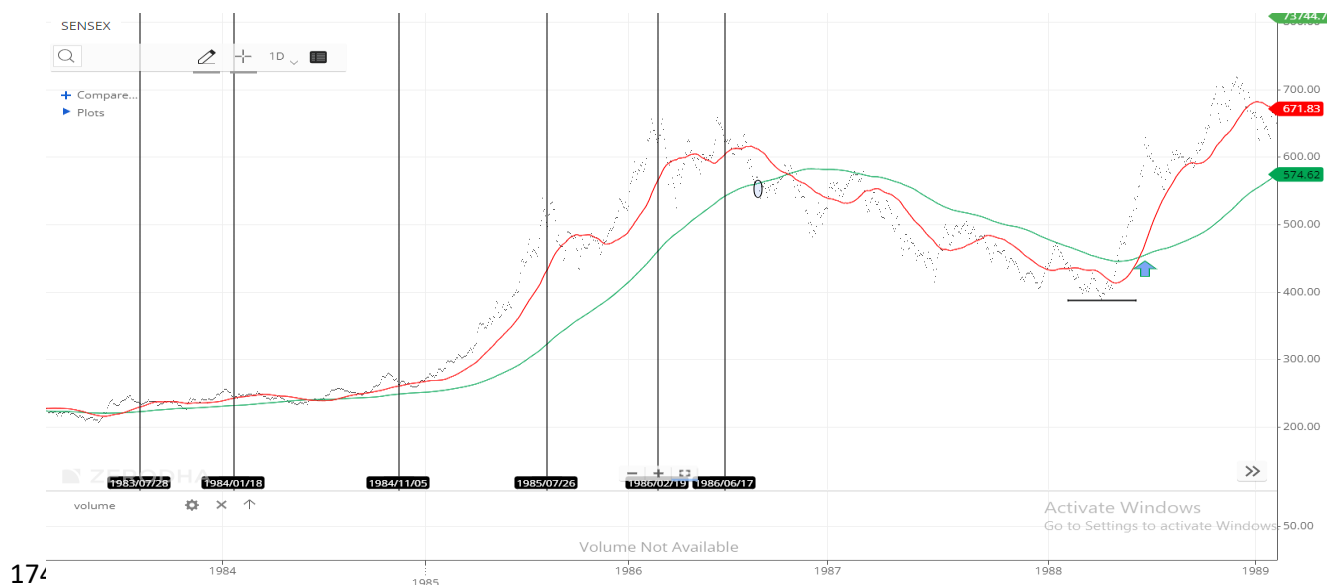
ANALYSIS:

Vertical lines indicate the first 5% decline from a 52-week high that has taken place within 15 trading days. The circle indicates the confirmation of the 5% canary. Up Arrow shows the buy time.

The following data of the Sensex, Nifty 50, and Nifty 500 respectively shows that the 5% canary works when the global developed countries' markets are about to crash or correct mainly the USA as it has the largest market capitalization in the world. In analysis, it is seen that the method does not seem to be working in the time when the crash happened due to India or Asia-related factors like the Harshad Mehta scam – 1992 crash, 1997 Asian financial crisis, 2004 – UBS carrying out large amount of selling, 2007 market crash.

Buying the dip strategy overall is working in the favour of the investors. After the golden crossover market has seen a substantial up move and given a good return to the investors.

171 The charts used here are candlestick charts. The 50-day and 200-day exponential moving average is
 172 used mainly on the chart as an indicator. Vertical lines indicate the first 5% decline from a 52-week
 173 high that has taken place within 15 trading days. The circle indicates the confirmation of the rule.



175 Figure 1



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Figure 3



Figure 4



Figure 5

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Figure 11



Figure 12



Figure 13



Figure 14



Figure 15



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Figure 25



Figure 26



Figure 27

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SWOT ANALYSIS:

Strengths:

- **Delivered Results:** The 5% canary approach has been proven through research to accurately forecast the crises or corrections in the global markets, particularly in the developed countries markets, such as the one in the USA.
- **Statistical Investigations:** The historical data of the indices received into the research are Sensex, Nifty 50, and Nifty 500 scope and trends of the markets to find patterns which cause extreme market drops studied in the research.
- **Overall View:** In doing so the analysis takes into account the dynamics of global markets and explains how such events taking place in developed countries markets, impact those in Indian markets.

Weakness:

- **Geographic Constraints:** The study primarily examines the viability of the 5% canary approach to issues related to Indian indexes, thus ignoring to a great extent the other peculiar market characteristics and factors driving the economy of the country.
- **Omnipresent Dependence on Past:** The historical information analysis may fail to take account how the approach's efficacy could be impacted by adjustments in the market structure, the regulatory regimes as well as the behavior of investors over time.

Opportunity:

- **Further Research:** There is a scope of more studies to improve the 5% canary techniques and make them more appropriate for the market in India.
- **Qualitative Considerations' Integration:** The strategic forces at play (geopolitical risks, regulatory changes, etc.) should be integrated in the research model as they will make the model more useful in terms of forecasting.

Threats:

- **Market Features:** A host of domestic social, economic and political conditions, as well as international ones work in the Indian markets, thus making it difficult to forecast market trends and changes.
- **Unpredictable Events:** Uncontrollable circumstances, both within a country and across nations, may distort the market and lead to the ineffectiveness of the 5% canary strategy in making forecasts.
- **Compliance Risks:** Adjustments to existing regulatory frameworks or the introduction of new market rules may influence behaviours within the market and make past trends less relevant in shaping future expectations.

LEARNING OUTCOME:

The users will learn about the efficiency of the 5% canary technique to forecast imaginary bear markets on Indian indexes such – Sensex 500, Nifty 50 and Nifty 500. While excavating the history and keeping in account the global market structure, the audience will learn the challenges of the 5 % canary method purely when there are regional disturbances involved e.g. money in Indian and Asian markets has been lost due to financial scandals and or crises. This research will enable people to learn about the aspects of predicting the behavior of the market and help them take better investing decisions during the periods of high volatility regarding the wider context.

CONCLUSION:

To summarize, assessing Indian indexes such as the Sensex, Nifty 50 and Nifty 500 using the 5% canary method, helps in understanding the dynamics of the market and the predictive strategies. Although the method is useful in forewarning global markets especially in the US where the market is heavily capitalized; when it comes to Indian and Asian markets – it is difficult to apply the metric due to the localized factors. Scandals like the Harshad Mehta scandal of 1992, the Asian crisis in 1997, UBS's firing selling in 2004 or 2007 market crash, all illustrate the method's serious inaccuracies when, for example, predicting bear markets with divested geographically confined issues. Still, this study builds upon the available body of knowledge regarding markets predictions techniques. Clearly it demonstrates reasons why market participants should pay more attention to other factors than relying purely on the models available for predictions. In the future, these insights can be used by investors to enhance their strategies, lower their risks and manage better the risks during the period of instability in the market.

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