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Stock Market Bubble- Investigate Cause and Effect of Stock Market Bubbles and Examine How Bubbles can be Identified and Prevented

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ABSTRACT

When asset prices surge far beyond their true worth, a phenomenon known as a stock market bubble occurs, and it is frequently followed by a severe decline in value. Using statistical tools such as SPSS and Excel, this study delves into the issue of stock market bubbles. It specifically examines the top 100 businesses listed on the Bombay Stock Exchange (BSE) in India. Using examples such as the 1929 Wall Street Crash, the late 1980s Japanese asset price bubble, and the late 1990s dot-com boom, this study seeks to understand the causes of bubbles and how they affect investors and the financial system as a whole. Market mood, trading volumes, price-to-earnings ratios, and valuation trends are some of the early warning indicators that are analyzed using quantitative approaches in the study. While non-stationarity does not prove the existence of a bubble on its own, it does raise the possibility that prices are trending without undergoing a mean-reverting process, which is a hallmark of bubbles. This study intends to shed light on how to improve financial stability in the Indian stock market and reduce the risks of speculative bubbles by analyzing these powerful corporations.

Keywords- Stock Market Bubbles, Shareholders, Speculative Bubbles, Capital Stock, Financial Crisis.

I. INTRODUCTION

A stock market crash occurs "when stock prices suddenly and dramatically fall across a large portion of the stock market, leading to a substantial loss of wealth in paper form" (Galbraith, 1988). In India's stock markets, such irrational fluctuations have become typical. Numerous examples of acute crashes and rapid corrections have occurred in its past and subsequent "V" shape recoveries. Indian indices dropped by around 50% during the worldwide market downturns that occurred between 2000 and 2008. Panic among investors was the main cause of the crashes. This is according to Raut and Das (2015). When stock prices rise far beyond their intrinsic value, a "stock market bubble" forms, and a market correction or crash is possible. This bubble forms when the market's value of shares reaches extremely high levels due to investors' interest and expectations.

1.1. The Impact of Monetary Policy Shocks on Stock Market Bubbles

- When the money supply, interest rates, or other monetary instruments are drastically changed by a central bank to affect economic variables like growth, employment, or inflation, this is called a monetary policy shock.
- Monetary policy shocks can signal to the market, which in turn affects market expectations and uncertainty. Uncertainty regarding the future of the economy and government policy can cause financial market volatility and speculative activity, which in turn can lead to the construction or collapse of bubbles (Galí, & Gambetti, 2015).
- The attitude and willingness to take risks of investors can be influenced by shifts in monetary policy. More speculative investment and risk-taking might be encouraged by expansionary policies, which could lead to bubble dynamics. On the flip side, policy contraction can reduce investor

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confidence, which in turn can cause bubble deflation and a reversal of speculative excesses.

- Market liquidity is impacted by unexpected changes in monetary policy. Bubbles might burst if accommodating policies increased liquidity, which made borrowing and investing in assets easier for investors. On the flip side, bubble corrections can occur when liquidity is reduced due to tighter monetary circumstances, which makes it harder for investors to sustain inflated asset prices.
- Unanticipated interest rate adjustments or announcements of quantitative easing are examples of monetary policy shocks that can have a direct impact on stock values. Stock prices could rise and lead to bubbles if interest rates were to fall since the discount rate used to calculate future cash flows would be lower. On the flip side, hyperinflated asset prices could fall as a result of tightening monetary policy, which could cause a bubble to collapse.

II. LITERATURE OF REVIEW

Kanojia, S., & Malhotra, D. (2021) stated that different stock market crashes can help find companies with a long-term competitive edge. This was accomplished by analyzing stock market data from 2001 to 2018 and discovering that Nifty experienced ten significant crashes throughout that time. The Compounded Annual Growth Rate (CAGR) was calculated for stocks that either moderately or significantly outperformed during the crisis. The stocks that managed to weather the market downturns had a high CAGR and were deemed to have a durable competitive advantage (DCA), according to the results.

Martin, A., & Ventura, J. (2012) stated that a simplified model of economic expansion involving bubbles, wherein shifts in investor attitude caused the emergence and subsequent burst of large-scale economic speculative investments known as pyramid schemes. Financial frictions were lessened by these bubbles. When bubbles were in vogue, productive investors provided them and unproductive ones demanded them. Economic efficiency is enhanced through these resource transfers, leading to an increase in consumption, capital stock, and output. Consumption, capital stock, and production all decline as bubble episodes come to a close.

Sornette, D., & Cauwels, P. (2014) Stated that A financial bubble occurs during unsustainable growth, marked by rapid asset value appreciation, followed by sharp declines and recoveries. Typically, prices exhibit log-periodic oscillations and exceed exponential growth rates. Bubbles end abruptly with a regime shift, often leading to crashes or corrections. Early identification is critical to mitigate risks.

Arshanapalli, B., & Nelson, W. B. (2016) defined an asset price bubble as an occurrence when current value models consistently fail to account for asset price levels substantially surpassing the value justified by fundamentals. As far as the likelihood of bubbles is concerned, the financial services industry is divided. The Efficient Markets School maintains, on the one hand, that financial bubbles were impossible because asset prices were determined by the available information. Investors, retirees, and portfolio managers would greatly benefit from having access to real-time monitoring tools during bubble periods so they can rebalance their investments. Consequently, it was determined that asset prices were affected by both fundamental and psychological factors.

Quinn, W., & Turner, J. D. (2023) Analyzed that it seemed like these Bubbles happened more often. The bitcoin or cryptocurrency bubble is the most current and prominent example. The price of a single bitcoin increased from $555 in August 2016 to $19,783 in December 2017. One bitcoin's value dropped 65.1 percent in the seven weeks after its peak, and by December 2018, a full year after its peak, it had dropped 83.3 percent, to $3,332. This bubble was preceded by the dot-com bubble that burst in 2000.

Nenkov, D. (2017) stated the global financial crisis's precipitous drop in stock prices on stock market bubbles and, by extension, the irrationally high levels of stock indexes that had existed before the crisis. Several causes contributed to the global equity capital markets experiencing large bubbles. The widespread use of multiples valuation and other relative valuation techniques was one of them. There were several reasons why these methods were highly favored by market participants.

SINGH, S., et.al (2018) stated that National Stock Exchange (NSE) data showing monthly stock prices and dividends represents the existence of 'rational bubbles' in India's equity market. The sample consists of the 500 companies that make up the NSE 500 index, according to their market capitalization, and the study covers nearly twenty years, from January 1996 to April 2014. A variety of linear and non-linear cointegration methods, including symmetric and asymmetric adjustment, were utilized in the methodologies. A lack of cointegration between stock prices and dividends according to linear methods is a sign of "rational bubbles," according to the results. Nevertheless, the idea that there were 'rational bubbles' in the Indian stock market is disproven according to non-linear methods, which were more important than linear ones.

Dileep, S., et.al (2023) claimed that the stock market, as a worldwide and interdependent phenomenon, considerably affects the economic and commercial environment of a nation. It facilitates the formation of capital and helps businesses raise operating funds by providing a global platform for trading securities. The stock market promotes openness among businesses and creates many job opportunities by boosting investment and encouraging innovation. In addition, it gives people the tools they need to invest in themselves and their

wealth, which boosts the economy as a whole. Try to identify the traits and warning signs that bubbles were about to form by looking closely at the BSE Sensex index over the last 23 years. These findings could help investors and politicians make better decisions by serving as early warning signs of future bubbles. The research aims to examine patterns of bubble formation in the BSE Sensex index over the past 23 years.

Mian, S. N., et.al (2018) Stated that investors were now more wary of making rash investment decisions due to the surge of globalization and that new methods of accurately predicting and studying stock market movements have evolved as a consequence. This tendency is especially noticeable in developing nations. Reducing the dangers of rational bubble formation in investment is one such trend. Stock price inflation led to the formation of bubbles, which later burst. The duration of this occurrence is limited. While some investors may profit handsomely from this phenomenon, others may lose out when the bubble pops and all their investments are worthless. The goal of this research is to spot logical bubbles in the stock markets of South Asian developing nations. This research is important because it will help future investors better understand rational bubble formation when making investment decisions.

Jain, K. (2016) declared that the asset price bubble or financial factors significantly affect the value of any stock. Any market bubble, but notably one involving stocks, has the potential to artificially inflate the value of individual stocks or even the entire index, fooling investors into thinking they're getting a better deal than they are. Herd mentality and cognitive bias, informed by ideas in behavioral finance, were usually to blame when these bubbles burst. Based on empirical research into the S&P BSEBANKEX sectorial index during the start of the global crisis in 2008, this study has recently found indirect evidence of an asset price bubble. Quickly identifying unusual or abnormal deviations in asset prices over a short time frame without allowing enough time to disseminate the information systematically is of the utmost importance in investment finance.

Mukherjee, D. (2007) stated that the fact that the stock market is seeing a surge in activity and is becoming more significant by the day. Considering the present state of globalization and the interconnection of world markets. Participants came from a wide range of sociopolitical and economic backgrounds, and their stock exchanges reflected that: the NYSE, the HSE, the TSE, the RSE, and the KSE. This research makes use of the Indian Stock Market, which includes both the Bombay Stock Exchange (BSE) and the National Stock Exchange of India Limited (NSE). The time frame has been segmented into different eras to examine the relationship between the different exchanges, which has shown that the Indian markets have grown increasingly interdependent with their international counterparts and that its responses have been in line with those observed worldwide.

Lao, P., & Singh, H. (2011) Claimed that herding behavior casts doubt on the "efficient market hypothesis". Based on research, it appears that herd mentality is present in both the Chinese and Indian stock markets. The state of the market dictates the amount of herding. When trading volume is high and the market is falling in China, herding behavior is more pronounced. In contrast, the study reveals that it happens in India during periods of improving market conditions. During significant market fluctuations, herding tends to be more common in both markets. When compared to other stock markets, the Indian stock market showed a lower prevalence of herding behavior.

Ghosh, B., et.al (2021) Analyzed the increasing amount of research attempting to forecast market bubbles and crashes using the Log Periodic Power Law (LPPL). The fitment parameters were typically limited to very narrow ranges. The reformulated LPPL model is tested for its ability to capture large falls in the S&P BSE Sensex, an Indian heavyweight index, from 2000 to 2019. The claims made in this paper were also examined. During this period, a distinct LPPL signature was formed by 35 crashes ranging in size from medium to large. This proves that the LPPL method can successfully forecast the embedded risk of potentially unpredictable future events in the Indian stock market.

Boobalan, C. (2014) Stated that by analyzing previous price movements, technical analysts can predict how financial markets will perform in the future. Absolute forecasting predictions were not produced by technical analysis. On the other hand, technical analysis can shed light on the "possible" future of prices for investors. Gaining profits as a charter person and determining when to buy and sell security were the primary goals of technical analysis, which is the study of future security price predictions. The term "technical analysis" refers to a subfield of financial market research that focuses on the dynamics of stock supply and demand. The intrinsic value of shares can be better understood, and it becomes clear if the shares are overvalued or undervalued. If an investor were to use the stock market indicators, they could find key market turning points. A thorough technical analysis of chosen companies is provided here, illuminating share price behavior, signals, and market price turning points.

Phillips, P. C., & Shi, S. P. (2018) stated that a financial asset bubble exhibited two main characteristics: expansion and collapse. One way to simulate bubble expansion is with a slightly explosive procedure. Adaptability in modeling is necessary because bubble implosion can manifest in a variety of ways depending on the type of collapse. The reliability of the date estimators is proven, and the new problems caused by endogeneity effects in reverse regression and alternative bubble implosion models were handled by the limit

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theory. An approach that is well-suited for real-world application is offered in real-time. The strategy for dating market recovery is simulated to examine its finite sample performance. The Nasdaq stock market was used as an example to demonstrate the new procedure for crisis detection and the PSY strategy for bubble monitoring.

Sharma, A. (2017) stated the causes and factors that, looking back, triggered speculative bubbles. The purpose of this study is to look for the telltale signs of speculative bubbles that have been around for a long time and look for them in economies that could have been about to form one. This section begins with a review of the three most prominent theories on bubble formation, which are the Positive Feedback Approach, the Greater Fool Theory, and the Self-Fulfilling Expectation Theory. The following section provides a comprehensive account of past bubbles, illuminating the causes, development, and eventual deflation of asset bubbles. The next step was to compare these past instances to identify the main causes and factors that contributed to bubble formation. Pooled regression is used to test the relationship between present price change, fundamentals, and past price behavior, based on the qualitative analysis of bubble formation.

Levine, S. S., et.al (2014) stated that When Market failures can profoundly impact modern society due to their crucial role. When market prices deviate from asset values due to collective trader errors, bubbles emerge, with unclear triggers for such group mistakes. Homogeneous markets exhibit excessive reliance on others' actions, leading traders to accept inflated prices without scrutiny. This tendency persists across culturally diverse locations, where uniform markets are more prone to speculative pricing errors. Consequently, when bubbles burst, these markets experience steeper declines. The study underscores the role of social context alongside individual and financial factors in driving price bubbles. It suggests that ethnic diversity fosters robust public discourse by introducing new perspectives and challenging established norms, thus enhancing decision-making processes.

Singh, B., & Pattanaik, S. (2010) stated that There need to reassess whether monetary policy should react more actively to asset price changes and preemptively prevent bubbles. Despite evidence of monetary policy affecting asset prices indirectly, a direct response to asset price fluctuations remains unsubstantiated. Asset price dynamics seem less influential on inflation paths, often driven by credit market shocks. To stabilize asset price cycles, policy shouldn't solely target asset prices; higher interest rates can dampen output, credit demand, and asset values. Integrating micro and macro-prudential measures within a robust macroeconomic framework could mitigate risks posed by asset bubbles, ensuring financial stability.

Caballero, R. J., & Krishnamurthy, A. (2006) stated that financial bubbles, including those in the real estate market, flourished in developing market economies. The private and public sectors of these economies fail to create sufficient financial instruments to meet the needs of their citizens as long-term savings, even though these economies have enormous growth potential. These developing nations' economies frequently see a flight of capital as investors seek out these developed-world assets. Because they allowed for the creation of domestic stores of value, bubbles helped to decrease capital outflows and increase investment. However, they aren't without their drawbacks, as they put the nation at risk of financial bubbles and reversals. It demonstrates that there is a high return on investment for liquidity needs, capital inflow sterilization, and structural policies that seek to create public debt markets "collateralized" by future revenues.

Rakhmat, A. S., & Fahamsyah, M. H. (2023) Stated that During stock market bubbles, valuation dynamics were extremely volatile for a short period. A stock bubble occurs when the price of a company's shares rises above its underlying worth. Among the models used to determine if an asset is in a bubble, LPPLS takes into account the possibility that the asset's apparent price trend during the bubble period deviates from its true fundamental value. This study reviews the LPPLS as a model for calculating stock bubbles; it is qualitative and descriptive. Articles published in Scopus Indexed International Journal provide the secondary data used in this study. Based on the results, the LPPLS model can correctly identify, forecast, and compute historical events connected to bubbles, including the dot-com, subprime, and black Monday eras. One benefit of the LPPLS model is that it accurately constructs the end of bubble signals.

III. OBJECTIVE

- To determine what causes stock market bubbles and how to prevent them.
- To Investigate the prominent historical instances of stock market bubbles.
- To identify early warning signs of potential bubbles, including metrics like price-to-earnings ratios, market sentiment indicators, and trading volumes.

IV. HYPOTHESIS

H1 - There is a significant impact on what causes stock market bubbles and how to prevent them.
H0 - There is no significant impact on what causes stock market bubbles and how to prevent them.
H2 - There is a significant impact on the investigation of the prominent historical instances of stock market bubbles.
H0 - There is no significant impact on the investigation of the prominent historical instances of stock market bubbles.

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H3 - There is a significant impact of early warning signs of potential bubbles, including metrics like price-to-earnings ratios, market sentiment indicators, and trading volumes.
H0 - There is no significant impact of early warning signs of potential bubbles, including metrics like price-to-earnings ratios, market sentiment indicators, and trading volumes.

V. METHODOLOGY

5.1. Variables Of The Study:

- **Stock market bubbles**

When investors artificially inflate stock prices beyond what they are worth according to a predetermined valuation system, this phenomenon is known as a stock market bubble (Porter & Smith, 2003).

- **Shareholders**

Any individual, organization, or business that owns a minimum of one share of equity (the stock in a company) is considered a shareholder. These entities, often called stockholders, have a right to a portion of a company's earnings since they were part owners of the business (Smith, 2003).

- **Speculative bubbles**

A speculative bubble occurs when the value of an asset, like a stock, bond, house, commodity, or cryptocurrency, suddenly and dramatically increases. Excessive speculation drives prices well above their underlying value, which in turn fuels the bubble (Wang & Wen, 2012).

- **Capital stock**

The ownership of a company is referred to as capital stock. It is another way of saying that a company's stock is owned by a corporation (Lee & Chien, 2010).

- **Financial crisis**

When asset values plummet, companies and individuals are unable to pay their bills, and banks and other financial institutions face a lack of cash, a financial crisis occurs (Acharya & Richardson, 2009).

- **Study Area**

Authors in this study focused on certain regions The nifty 50 tracks the general direction of stock prices across a wide range of industries, including consumer products, energy, technology, and banking. To analyze the economic data, company earnings reports, government policies, and worldwide market trends that impact the index's movements.

- **Targeted Population**

The author of this paper sought to analyze the part played by the nifty 50 in the stock market bubble. The purpose of this research is to examine the market activity, valuation patterns, and possible roles played by these powerful Bombay Stock Exchange corporations in the formation of speculative bubbles. This approach enables a detailed examination of the potential deviations from these companies' fundamental values in stock prices, which can lead to market volatility and systemic hazards.

5.2. Sample of the Study

The study's population includes all companies that are listed on the nifty 50. The companies chosen for the sampling are among the most valuable in India's stock market. For this study, the author selected prominent corporations from the Nifty 50.

5.3. Sampling Technique

Simple Random Sampling

By employing this method of sampling, there is an absolute possibility of selecting one representative from every member of the population. This method of sampling requires the smallest amount of previous information from the general public and only calls for a single random selection, making it the least required of all the possible sampling procedures. It is possible to obtain data from statistics about a population through the use of random ordinary selection. Individuals from every corner of the globe are included on a comprehensive list.

- The ability to reach out to or access any individual in the population.
- The means to get information from a large number of people.

5.4. Collection of Data

The researchers set out to identify potential warning signs of stock market bubbles and find out what makes them tick. To compile this data, the author looked at the Nifty 50 index during the past five years. The purpose of the study was to identify indicators and trends linked to market bubbles by analyzing these yearly records.

5.5. Statistical Tools

- **Matplotlib**

The Matplotlib package is an extension to NumPy that allows users to create graphical plots (e.g., histograms, scatter plots, bar charts, etc.) for the Python programming language. It is compatible with several platforms. A good open-source substitute for MATLAB, it is thus. The Application Programming Interfaces (APIs) provided by Matplotlib allows developers to incorporate plots into graphical user interface applications. Complex data sets, like stock market patterns, are particularly well-suited for their visualization capabilities.

- **Python**

One common alternative for financial analysis is Python, a flexible programming language with strong capabilities and a reputation for user-friendliness. Trading algorithms, market data analysis, and financial prediction models are all built using Python in the stock market. Matplotlib and Seaborn allow for good visualization of stock patterns, while Pandas and NumPy make data processing and analysis easier. Python also enables automated trading methods and real-time data access through its connection with numerous APIs. In sum, many different financial market applications are supported by Python's vast ecosystem.

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5.6. Statistical Technique

➢ **Dickey-Fuller test**

The Augmented Dickey-Fuller test was performed using Python using data obtained from the National Stock Exchange for the previous five fiscal years. The time series data's stationarity was assessed using this statistical technique, which is essential for precise forecasting and analysis. To determine the trend behavior of the data by running the test to see if it shows a unit root. The analysis's findings provide insightful information about market patterns and possible predictability. Making decisions based on the fundamental patterns found in the stock market data is made easier with the aid of this method.

VI. ANALYSIS

➢ ***Historical background of stock market bubbles***

Speculative mania and subsequent stock market crashes are a feature of economic history. Another noteworthy bubble occurred during the Roaring Twenties in the US, caused by overconfidence and stock market speculation, which ultimately led to the Great Depression and the disastrous Wall Street Crash of 1929. Recent examples of bubbles that led to economic downturns include the dot-com bubble from the late 90s to the early 2000s and the asset price bubble in Japan in the late 80s. Market excitement is cyclical, and these past experiences teach us that must be careful not to get carried away with speculation.

1- Wall Street crash (1920s, United States)

Among the most momentous occasions in the annals of finance was the 1929 Wall Street Crash, sometimes called Black Tuesday. With the help of easy financing and hopeful predictions of the economy, the American stock market went through a period of unparalleled expansion and speculation during the Roaring Twenties. But stock prices fell sharply on October 29, 1929, setting off a domino effect of selling those drained billions of dollars in wealth. Millions of people suffered through the Great Depression, a ten-year economic slump that began with the collapse and ended with widespread unemployment and bank bankruptcies, as investor confidence was broken (Brooks, 1999). Revisions to banking and securities legislation were implemented to forestall future crises since the crisis brought to light the perils of financial market speculative bubbles and excessive leverage. It is a sobering reminder of the power of financial instability to shake up world economies and the unpredictability of market prices.

2- Japanese assets prices (the late 1980s, Japan)

In the late 1980s, Japan experienced a period of unprecedented economic euphoria and speculation known as the asset price bubble. Asset values inflated to unprecedented levels during the bubble, which was driven by fast credit expansion and skyrocketing land and stock prices. Land values in Tokyo reached unprecedented levels, leading to a general overvaluation of the city's real estate market. An investment frenzy that never seemed to end and banks' excessive lending practices were the main drivers of the bubble. The bubble, however, burst suddenly in the early 1990s, triggering a devastating economic slump called the "Lost Decade." The collapse of property and stock values left banks with large amounts of non-performing loans, which sent Japan's economy into a lengthy slump (Shiratsuka, et al 2001). Economists and financial authorities around the world might learn a lesson from this episode about the perils of speculative bubbles and the difficulties of controlling inflation in asset prices.

3- Dot com bubble (late 1990s - early 2000s, Global)

Speculation and record-breaking growth characterize the dot-com bubble that occurred in the late 90s and early 2000s, mostly in internet-based businesses. Investors flooded dot-com firms with lofty growth predictions, driven by the fast rise of the internet and new technology. These companies sometimes disregarded conventional valuation indicators such as revenue and earnings in favor of more extreme growth forecasts. Companies' Initial Public Offerings (IPOs) were hotly anticipated, sending stock values soaring based on hopes for future profits rather than actual financial situations (Morris, & Alam, 2008). However, problems started to show up in the early 2000s when numerous dot-com enterprises were unable to fulfill their profitability promises. The result was a precipitous decline in tech stock prices, which ultimately caused the bubble to burst. Numerous layoffs, reduced investment, and a review of tech companies' business strategies followed. An important lesson from the dot-com bubble is the need for sustainable business procedures in the tech sector and the dangers of excessive speculation.

6.1. Result of the Augmented Dicky-Fuller Test

Python was used to execute the Augmented Dicky-Fuller test using data gathered from the National Stock Exchange over the last five fiscal years. Based on your Nifty 50 closing values, the Augmented Dickey-Fuller (ADF) test yielded the following results:

- **ADF Statistic**: -0.01783444708292581
- **p-value**: 0.9570321031351011
- **Critical Values**:
  - 1%: -3.4356689751083374
  - 5%: -2.8638888336592387
  - 10%: -2.5680205519744055

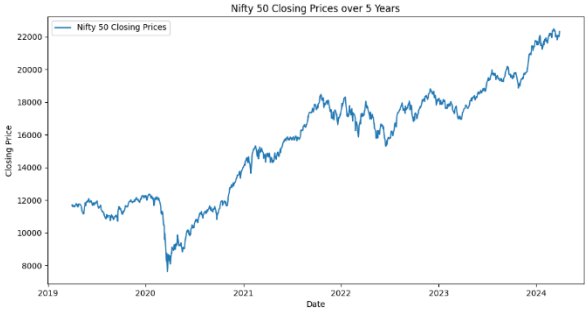

Figure 1: Visualisation of Dicky-Fuller Test

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➢ **Interpretation**

1- **ADF Statistic**: The test statistic value is -0.01783444708292581. This value is compared against the critical values to determine if can reject the null hypothesis.

2- **p-value**: The p-value is 0.9570321031351011, which is much greater than the common significance levels (0.01, 0.05, 0.10). A high p-value indicates that fails to reject the null hypothesis.

3- **Critical Values**: The critical values at 1%, 5%, and 10% significance levels are -3.4356689751083374, -2.8638888336592387, and -2.5680205519744055, respectively.

The null hypothesis for the ADF test is that the time series has a unit root, which implies it is non-stationary. Given that:

- The ADF Statistic (-0.01783444708292581) is greater (less negative) than all the critical values at 1%, 5%, and 10%.
- The p-value (0.9570321031351011) is significantly higher than 0.05.

The study failed to reject the null hypothesis. This means that the Nifty 50 closing values over the past 5 years are non-stationary.

➢ **Implications**

The lack of a long-term mean and the fact that the series' statistical features evolve with time are hallmarks of a non-stationary time series. This may indicate the presence of patterns, cycles, or other structures in the financial markets, which may be caused by changes in policy, market mood, or economic events. While non-stationarity does not prove the existence of a bubble on its own, it does raise the possibility that prices are trending without undergoing a mean-reverting process, which is a hallmark of bubbles.

VII. CONCLUSION

Investor actions, speculative trading, and outside economic forces all interact intricately to cause stock market bubbles, which are defined by fast and unsustainable price increases in stocks. Excessive optimism, irrational enthusiasm, and market speculation are common culprits that can lead to asset valuations that are inflated beyond what they are. When these bubbles burst, they cause extensive economic harm and investment losses, and they frequently cause significant financial instability. The impacts of these bubbles are far-reaching. To spot indications of overvaluation and excessive risk-taking, bubbles can be identified by analyzing market patterns, valuation indicators, and investor emotions. A culture of careful investment, more market openness, and regulatory action are all necessary to avoid bubbles. Important steps towards reducing bubble risks include better financial education and the application of technology to track market movements. Financial market stability and integrity can be better protected if these problems are understood and addressed.

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