Profiting from Perception: The Power of Unproven Allegations in Short Selling

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Profiting from Perception: The Power of Unproven Allegations in Short Selling

Abstract

Short selling is a financial strategy that enables traders to profit from declining stock prices. This study examines the role of unproven allegations in influencing stock market movements, with a focus on their impact on public perception and short-selling outcomes. Using an event study methodology, the research analyzes key cases, including the allegations against the Adani Group, to assess how market reactions evolve in response to repeated accusations. The study explores the intersection of financial speculation, corporate reputation, and regulatory oversight, contributing to the broader discourse on market efficiency and the ethical implications of short-selling strategies.

1. Introduction

Consider that you could profit from predicting that a stock's value will drop rather than rise. That's exactly what short selling allows investors to do—flip the traditional "buy low, sell high" strategy. But what if one also does actions that may lead to a drop in stock price? Short selling is a potent but frequently misunderstood financial strategy that allows traders to profit when stock prices decline.

The difference between the sell and buy price becomes the trader's profit. However, short selling is not without risk. If the stock price rises instead of falls, losses can be theoretically unlimited, making this strategy as thrilling as it is risky.

This practice has been at the heart of some of the most dramatic moments in financial history, from famous hedge fund maneuvers to market crises, hedge funds like Scion Capital, which shorted the U.S. housing market by betting against collateralized debt obligations (CDOs), is one of the most famous examples of successful short selling in financial history, as short sellers often play the role of contrarians, challenging market optimism. By betting against stocks that appear overvalued or companies with shaky fundamentals, short sellers can expose vulnerabilities and even help maintain market efficiency although their actions can stir controversy.

In January 2020, Muddy Waters, a prominent short-selling firm, released an anonymous 89-page report accusing Luckin Coffee, a Chinese coffee company, of inflating its sales figures. The report, based on detailed data collection, alleged that Luckin was fabricating significant portions of its revenue (Anonymous Report, 2020; Coley, 2020). Although Luckin initially denied the allegations, internal investigations eventually confirmed the fraudulent activities, which amounted to inflating revenues by approximately $300 million (SEC, 2020). As a result, Luckin Coffee's stock price collapsed, and NASDAQ delisted the company. The U.S. Securities and Exchange Commission (SEC) charged Luckin Coffee with accounting fraud, resulting in the company agreeing to pay a $180 million penalty (SEC, 2020). This case raised ethical concerns regarding the role of short-sellers like Muddy Waters in influencing stock prices by publicizing negative reports, despite their financial incentives (Yang, 2015).

Another such instance happened in January 2023, when Hindenburg Research, a short-selling firm, leveled serious accusations of financial misconduct against the Adani Group, one of India's largest conglomerates. This explosive report triggered a dramatic plunge in the market value of Adani Group companies. The controversy deepened when Hindenburg released a subsequent report that cast doubt on the effectiveness of the Securities and Exchange Board of India (SEBI), the country's primary financial regulator. This bold move not only questioned the integrity of a major corporate entity but also raised doubts regarding the robustness of India's financial regulatory framework. However, there is a key difference between the Muddy Waters report and the Hindenburg report as the Muddy Waters report led to action on Luckin Coffee by the SEC Which is the Regulator for the securities market but with Adani, Hindenburg released a second report questioning SEBI the Regulator for securities in India furthering allegations on Adani. To fully understand these allegations and their implications, it is essential to introduce the Adani Group.

1.1. The Adani Group

The Adani Group, founded in 1988 by Gautam Adani, is a major Indian conglomerate spanning energy, infrastructure, and logistics. Starting with commodity trading has become crucial to India's economic growth, particularly in energy and ports (Adani Group, 2023). The group has recently pivoted towards renewable energy, aligning with global sustainability trends (Gupta & Singh, 2021).

In 2023, Hindenburg Research accused Adani of financial misconduct, including stock manipulation and misuse of offshore entities. These allegations caused significant stock volatility and attracted global attention and regulatory scrutiny (Hindenburg Research, 2023).

1.2 The Hindenburg Research and its report.

On January 24, 2023, Hindenburg Research, a forensic financial research firm led by Nate Anderson, released a report on the Adani Group. The report alleged stock manipulation and accounting fraud by the group, causing a significant drop in the market value of Adani's listed companies. Hindenburg highlighted financial statement discrepancies, questionable transactions, and concerns about the group's debt levels despite reported profits. The report suggested that Adani artificially inflated stock prices, potentially misleading investors about the companies' true value. This had major repercussions for both the Adani Group and the broader Indian stock market.

1.2.1 *Key Allegations Made in the Hindenburg Report.*

The report accuses Adani Group of engaging in long-term stock manipulation and accounting fraud. They claim that Gautam Adani amassed significant wealth largely through inflating stock prices. Adani’s key listed companies are deemed overvalued with substantial downside risk, high debt, and liquidity pressures. Control over the conglomerate is concentrated among Adani family members, raising concerns about corporate governance. They also accuse Gautam Adani’s brother Vinod Adani of owning numerous shell entities and being involved in suspicious transactions to manipulate stock prices and launder money. It notes that despite being in the typical low-growth infrastructure sector, Adani's companies have valuation metrics similar to high-growth tech firms (Hindenburg Research, 2023)

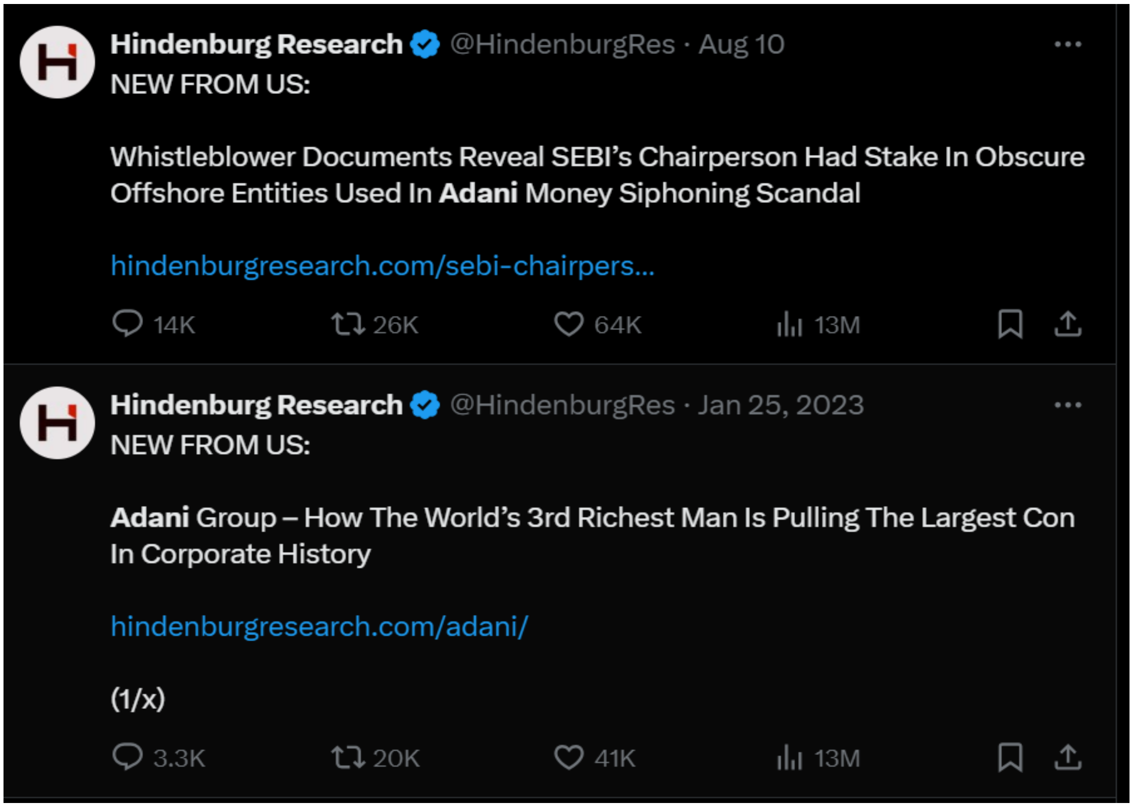

Figure 1: Social media impact through the announcement of reports.

The above figure shows the amount of traction and attention these reports generated with both announcements receiving 13 million engagements. The report emphasized key listed companies of the Adani Group also showing factual data, which is already in the public domain. Hindenburg alleges that Adani insiders have pledged portions of their equity as loan collateral, increasing financial vulnerability. The report also points out the family-run nature of the Adani Group, with 8 out of 22 leadership positions held by family members (Hindenburg Research, 2023).The research firm questioned Vinod Adani's role in managing shell entities and sought clarification on his involvement in Adani companies. They also inquired about 13 websites created simultaneously, offering vague services, which Hindenburg found suspicious (Business Today, 2023).

Hindenburg Research
@HindenburgRes

Even if you ignore the findings of our investigation and take the financials of Adani Group at face value, its 7 key listed companies have 85% downside purely on a fundamental basis, owing to sky-high valuations. (5/x)

Name	Price/ Earnings	Industry Avg.	Implied Downside	Price/ Sales	Industry Avg.	Implied Downside	EV/ EBITDA	Industry Avg.	Implied Downside
Adani Green Energy	815x	24x	-97.10%	60.6x	1.1x	-98.13%	101x	12x	-88.33%
Adani Power	29x	24x	-18.17%	3.9x	1.1x	-70.66%	13x	12x	-10.42%
Adani Total Gas	831x	20x	-97.64%	139.3x	1.0x	-99.31%	303x	9x	-97.16%
Adani Transmission	312x	24x	-92.43%	27.3x	1.1x	-95.84%	69x	12x	-83.01%
Adani Enterprises	508x	12x	-97.68%	5.7x	0.5x	-91.33%	66x	8x	-88.16%
Adani Wilmar	90x	30x	-67.12%	1.3x	1.1x	-20.90%	37x	15x	-58.26%
Adani Ports	35x	2x	-93.26%	10.5x	0.9x	-91.65%	20x	2x	-88.07%

(Source: FactSet & Hindenburg analysis)

8:15 AM · Jan 25, 2023 · **678.9K** Views

Figure 2: Hindenburg Report Presenting information on key listed companies.

The Hindenburg report states that Adani Group's seven publicly listed companies are significantly overvalued, with a potential downside exceeding 85%.. The report highlights high leverage and negative free cash flow in several Adani entities, posing risks to creditors. It accuses the group of flouting Indian regulations on minimum public shareholding and insider trading prevention through stock parking in offshore entities

1.3 Adani Group Response to the Hindenburg Report.

The Adani Group responded to the allegations on 29th January 2023 with a 413-page document calling the document a malicious mix of selective misinformation and discrediting the allegations calling out ulterior motives and conflicts of interest. They accused Hindenburg of designing this to create a false market in securities, pointing out Hindenburg's disclaimer. "*We hold short* *positions in Adani Group Companies through U.S.-traded bonds and non-Indian-traded derivatives, along with other non-Indian-traded reference securities ",* (Hindenburg Research, 2023) accusing Hindenburg research of short selling to book massive financial gain through wrongful means at the cost of countless investors. They also accuse Hindenburg of deliberately hiding details about its short positions, the source of its funding, the individuals backing it, the potentially illegal synthetic structures used for these positions, and the profits gained from holding such positions in our securities (Adani Group, 2023). Adani claimed that Adani Portfolio companies have properly disclosed 65 of these matters in their annual reports, offering memorandums, financial statements, and stock exchange disclosures out of the 88 Questions posed by Hindenburg. Of the remaining 23 questions, 18 pertain to public shareholders and third parties, while the other 5 are unfounded allegations based on imaginary scenarios (Adani Group, 2023).

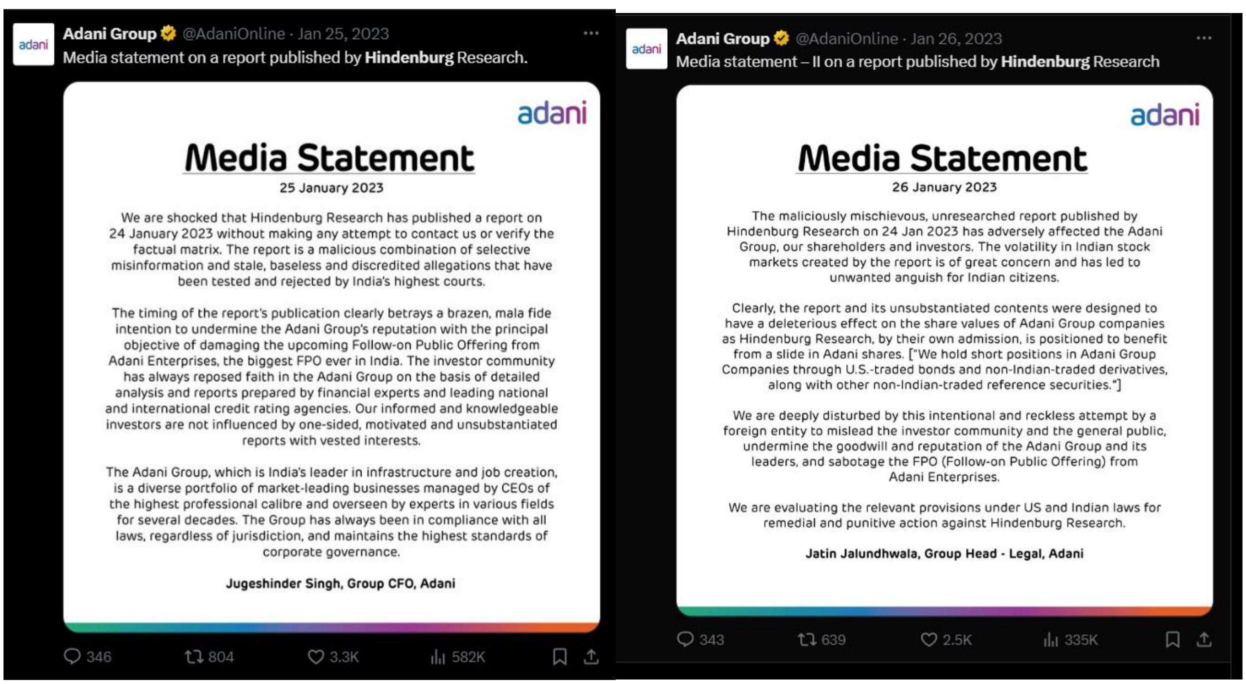

Figure 3: Adani Statements in response to the report.

The above figure shows the difference in engagement between the allegations and the response, with the report gaining significant attention on social media while the response getting around half a million of engagement compared to 13 million for the allegations.

1.4 The Second Hindenburg Report.

Following Hindenburg's initial report, Adani Group's companies lost $150 billion in market capitalization. Though still $35 billion below pre-report levels, they had shown recovery, aided by investments from Abu Dhabi's International Holding Company and GQG (Reuters, 2024).

On August 10, 2024, Hindenburg released another report alleging connections between SEBI Chairperson Madhabi Puri Buch and Adani Group through offshore investments. The report questioned SEBI's slow action against Adani and criticized recent regulatory amendments (Hindenburg Research, 2024). SEBI responded, advising investor caution and highlighting its thorough investigation of Adani Group, with 23 out of 24 investigations completed. SEBI defended its show cause notice to Hindenburg and assured due process in ongoing proceedings (SEBI, 2024). The new allegations led to a further 7% decline in Adani Group shares, costing investors $6.4 billion (Hindustan Times, 2024).

1.5 Media Impact and Short Selling

The media coverage and headlines have also generated a lot of negative attention for Adani due to portraying them as villains, "The headlines related to Adani are attracting significant negative attention, which may reduce investor interest in Indian stocks," Bloomberg reported Jian Shi Cortesi, a fund manager at GAM Investments in Zurich, which manages over $80 billion in assets. (Dhar, 2024) Emphasized on how headlines are affecting the Adani Group

“Adani Group lost $108 billion in a week: ‘Headlines generating negative attention' ” (Dhar, 2024) Hindustan Times,

“Fraud claims against Adani Group spark political row in India” (BBC, 2023)

“Adani Group: Can embattled India tycoon recover from $100bn loss?” (Shukla, 2023) BBC.

The above headlines are examples of how the event was covered, Hindenburg Research reportedly earned over $4 million from its short-selling position on Adani stocks, as disclosed in a statement by the firm, according to Bloomberg. (Dhar, 2024)

Hindenburg Research's short-selling strategy has been profitable in several cases, though specific profit figures are not provided in the given document. The impact on targeted companies is often significant, here are some examples of other high-Profile cases:

Nikola Corporation: After Hindenburg's report in September 2020, Nikola's shares "are down 99.5% since Hindenburg first disclosed its short position" (Fox & Glover, 2024).

Twitter: Hindenburg closed its short position just eight days after disclosure, "when shares had plunged to just over $35" from the original $54.20 offer price (Fox & Glover, 2024).

It's important to note that while Hindenburg's allegations often lead to significant short-term impacts on stock prices and company reputations, the long-term effects can vary. In the Adani Scenario Hindenburg research released another report with further allegations while the initial allegations were still under investigation hence unproven. This phenomenon has not been explored enough in literature, this led us to our Research Question:

"To what extent can repeated, unsubstantiated allegations against a company manipulate public perception, positioning the accuser as a hero and the accused as a villain, ultimately enabling the accuser to profit through short selling of the accused company's stock?"

This study offers two significant contributions: [1] We investigate how the credibility of an accuser evolves when they make repeated accusations without substantiating their initial claims. This shift in credibility is observed through the stock price reactions of the accused company's shares, providing insight into the market's perception of such allegations over time.[2]

We conduct an event study analysis to estimate the returns generated by stock price fluctuations following the accusations. This investigation explores how unproven allegations affect the stock performance of the accused, offering a quantitative perspective on the reputational and financial implications for both the accuser and the accused.

Together, these contributions provide a nuanced understanding of the reputational dynamics and financial consequences of repeated allegations in the context of short selling and market manipulation.

2. Literature Review.

To study the impact of Event 1: which is the initial report released on 25 January 2023, and the subsequent report, in Event 2: the report released on 10 August 2024, we perform event studies on these events. Event studies provide a timely and incisive means of gauging economic effects. They harness the collective wisdom of the market, which rapidly assimilates and reflects pertinent information, allowing for a more immediate and comprehensive assessment of an event's significance on firm value (Mackinlay, 1997).

2.1 Event Study Methodologies

Event studies, a cornerstone of empirical finance research, assess the impact of specific events on stock prices and firm value. Rooted in the Efficient Market Hypothesis (Fama, 1970), Foundational work by Fama et al. (1969) established modern event study techniques. Brown and Warner (1985) further refined these methods, addressing statistical challenges.

Recent studies have examined market reactions to earnings announcements (Ng, Rusticus, & Verdi, 2008) and negative information, such as frauds and scams. Sharma and Varma (2020) analyzed fraud announcements' effects on Indian bank stocks, while Dawar and Goyal (2013) investigated the Satyam scandal's impact. Bhasin (2013). highlighted the need for stricter enforcement against corporate fraud.

In the context of the Hindenburg report on the Adani Group, we find ourselves in a scenario involving both accusers and the accused. The Adani Group initially responded to these allegations by asserting that there was a "mala fide intention to undermine reputation and damage the upcoming Follow-On Public Offering (FPO)" (The Hindu, 2023). This situation presents a unique opportunity to apply event study methodology to assess the market's reaction to both the allegations and the subsequent responses within this high-profile corporate controversy.

2.2 Short Positions in the Stock Market and Shorting Stocks

Short selling plays a critical role in market efficiency and price discovery, aligning with the Efficient Market Hypothesis (Fama, 1970). Research consistently shows that high short interest predicts underperformance, indicating short sellers' ability to identify overvaluation (Asquith et al., 2005; Boehmer & Wu, 2013).

Short selling enhances market efficiency by correcting overpriced securities and preventing speculative bubbles (Diether, Lee, & Werner, 2009). While it can increase volatility, it ultimately improves efficiency by accelerating market reactions (Bris, Goetzmann, & Zhu, 2007).

During financial crises, short-selling bans have been imposed, but these can reduce liquidity and harm market quality (Beber & Pagano, 2013). Extreme short selling, particularly naked short selling, can contribute to market instability (Jones & Lamont, 2002).

Short selling influences corporate governance by highlighting firms with internal issues (Fang, Huang, & Karpoff, 2015). However, short sellers face risks such as short squeezes (Curtis & Fargher, 2014).

Concerns about manipulative short selling persist, as dissemination of false information can destabilize markets (Boehmer, Jones, & Zhang, 2008). Short selling tends to increase when stock prices deviate from intrinsic value, reflecting negative sentiment (Baker & Wurgler, 2006).

Recent behavioral studies highlight complexities in short selling. Investor irrationality can hinder price discovery, and risks related to stock loans can limit arbitrage opportunities (Engelberg et al., 2018). Inconsistent trading patterns among short sellers can undermine their effectiveness in improving price efficiency (Abreu & Brunnermeier, 2002).

Investor sentiment and herding behavior add further complexity, potentially exacerbating stock mispricing (Rupande et al., 2019) .While short sellers generally enhance price efficiency, manipulative practices can distort market dynamics and reduce price informativeness (Goldstein & Guembel, 2008).

In conclusion, while short selling is a powerful tool for improving market efficiency and facilitating price discovery, it carries inherent risks. The recent Adani Group-Hindenburg controversy is a stark example of how unchecked short selling practices, coupled with irrational market behaviors, can lead to significant market disruptions. Understanding and managing these complexities is crucial to maintaining market stability and preserving investor trust.

2.3 Corporate Reputation and Financial Performance

Corporate reputation is increasingly acknowledged as a vital asset that impacts a firm's financial performance. empirical research confirms that there is a positive relationship between reputation and financial performance, Reputation influences different facets of business operations and stakeholder interactions. (Walker, 2010; Roberts & Dowling, 2002)

Corporate Reputation refers to stakeholders' collective perceptions and beliefs about a company based on its past actions, communications, and overall performance. Barnett, Jermier, and Lafferty (2006) define corporate reputation as "a collective representation of a firm’s past actions and results that describes the firm’s ability to deliver valued outcomes to multiple stakeholders". This definition highlights corporate reputation as the cumulative perception of a company's performance, reliability, and capacity to meet stakeholder expectations.

3. Methodology.

It is essential to understand the timeline of events and how they affect the stock prices, below is an overview of all the significant events, and how they affect stock prices. After the initial report by Hindenburg on 25 January 2024 and Adanis's response on 29 January 2024.

After the release of the report, shares of Adani Enterprises fell 59 percent during the period January 24, 2023, and February 22 (Business Today,2023) Below are the other events of importance related to this scenario:

1. On March 2, 2023, the Supreme Court of India directed SEBI to investigate the allegations made in the report to determine if stock price manipulation and other financial irregularities had occurred. The Supreme Court also established a panel to protect Indian investors after the Adani Group lost over $100 million in market valuation. (Supreme Court of India,2024)
2. On November 24, 2023, the Supreme Court reserved its judgment after hearing multiple pleas regarding the Hindenburg allegations against Adani. (Business Today,2023)
3. On January 3, 2024, the Supreme Court rejected a plea that sought an independent investigation by the CBI into the allegations against the Adani Group. (Reuters,2024)
4. In June, 2024 Securities and Exchange Board of India (SEBI) issued a show-cause notice to Hindenburg, alleging that Kingdon Capital Management, a New York-based hedge fund, had access to the Adani Report two months before its publication. SEBI's notice claimed that Kingdon shared 30% of its profits from Adani trades with Hindenburg. According to the notice, Kingdon has paid Hindenburg $4.1 million but still owes an additional $1.4 million, according to SEBI. (Mukherjee, 2024)
5. On August 10, 2024, Hindenburg Research posted a message on X stating, “Something big soon India.” That same day, they released a report alleging that SEBI Chief Madhavi Buch and her husband, Dhaval Buch, had investments in offshore firms owned by Vinod Ambani, Gautam Ambani's brother, dating back to 2015. The report claimed that the SEBI chief's connections raised concerns about transparency within the market regulator regarding its investigations into the Adani Group. (Hindustan Times ,2023)

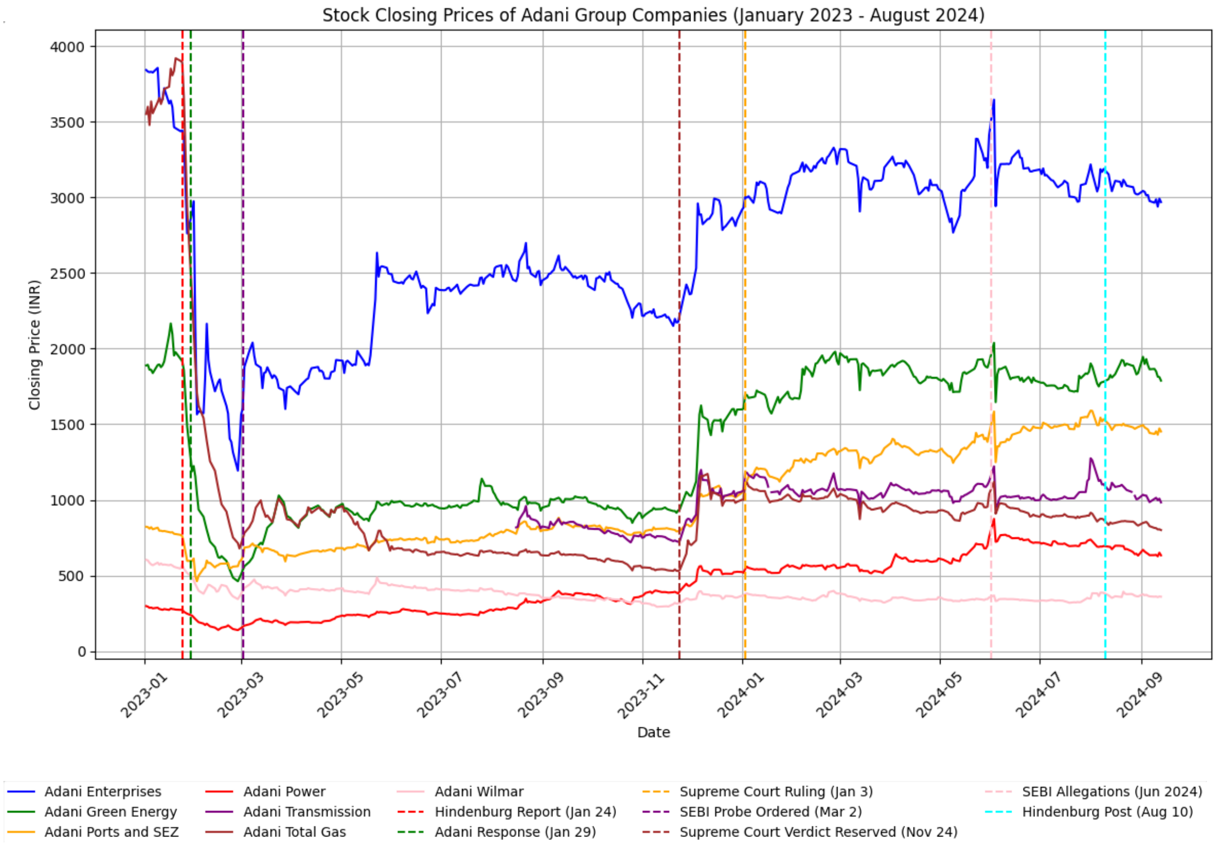

Figure 4: Timeline of events.

The above figure depicts a comprehensive timeline of events and showcases the impact of these events on stock prices. The above timeline gives an excellent summary of all the events that occurred along with the two major events where Hindenburg published its report are 24 January 2023 and 10 August 2024.

3.1 Event Study of both the events.

The analysis evaluates Adani companies' stock performance around a specific event using models like CAPM, examining market reactions and abnormal returns. Using yfinance, we obtained data for Adani stocks and NIFTY 50. Following MacKinlay (1997), a 250-day estimation window and 10-day event window are used to capture pre-event behavior and post-event reactions.

Calculate returns: We extracted the stock closing prices for both the stock and market index. Calculated using the percentage change.

$$Return=(P_t-P_{t-1})/P_{t-1}$$

where P_t is the closing price at time t and P_{t-1} is the price at the previous day's closing price.

CAPM model and ARs: CAPM is used to estimate expected returns based on market movements:

$$R_i=\alpha+\beta R_m+\epsilon$$

where Ri is the return of stock i , Rm is the market return, α is the intercept, and β represents sensitivity to market movements. These returns are calculated for both the stock and the market index, and the percentage changes are used to capture the day-to-day fluctuations. the Capital Asset Pricing Model (CAPM) is applied, which assumes a linear relation between stock returns and market returns.

$$R_{i,t}=\alpha_i+\beta_i R_{m,t}+\epsilon_t$$

$R_{i,t}$, is the stock return, $R_{m,t}$ is the market return, α_i is the intercept (stock-specific returns), β_i is the stock's sensitivity to market movements, and ϵ_t is the error term.

The model is fitted using Ordinary Least Squares (OLS) regression via the *statsmodels* library, with the estimated coefficients (α/alpha and β/beta) representing the stock's normal behavior.

Once the regression provides α and β, the expected returns for the stock during the event window are calculated based on market returns. This gives the normal return for the stock during the event period.

Abnormal returns (AR) are the difference between the actual stock return and the expected return:

$$AR_{i,t}=R_{i,t}-(\alpha_i+\beta_i R_{m,t})$$

Abnormal returns represent how much the stock deviates from its normal pattern due to the event .Cumulative Abnormal Returns (CAR) are the summation of abnormal returns over the event window. This shows the total effect of the event on the stock price over the period surrounding the event.

$$CAR_i=\sum_{t2}^{t1} AR_{i,t}$$

where t_1 and t_2 represent the start and end of the event window for both events.

Short Selling Profit/Loss.: Abnormal returns (AR) represent the deviation of a stock's actual return from its expected return, calculated using a market model. Since short sellers aim to profit from such deviations (especially negative AR), we use AR to estimate short selling profits.

$$Profit/Loss=-Short\ Position\times Abnormal\ Return\ (AR)$$

Assumptions & Considerations:

The method doesn't include transaction or borrowing costs typically associated with short selling (e.g., borrowing fees, interest), The method assumes the short seller can borrow and sell any quantity of the stock without liquidity constraints.

4 Findings.

The event study analysis for the Adani Group companies surrounding the Hindenburg Report release on January 24, 2023, reveals significant market reactions across the board. The examination period spans from January 10 to February 8, 2023, capturing both pre-event trends and post-event effects.

4.1 Event 1: Analysis for Adani Companies Post-Hindenburg Report

The analysis of Abnormal Returns (AR) for Adani companies reveals significant negative impacts, particularly in the days following the Hindenburg Report. For example, Adani Enterprises (ADANIENT.NS) experienced a sharp decline of -28.14% on February 1, while Adani Green (ADANIGREEN.NS) saw a drop of -20.13% on January 30. These substantial negative ARs indicate that the Hindenburg Report had a profound effect on stock prices, exceeding normal market fluctuations.

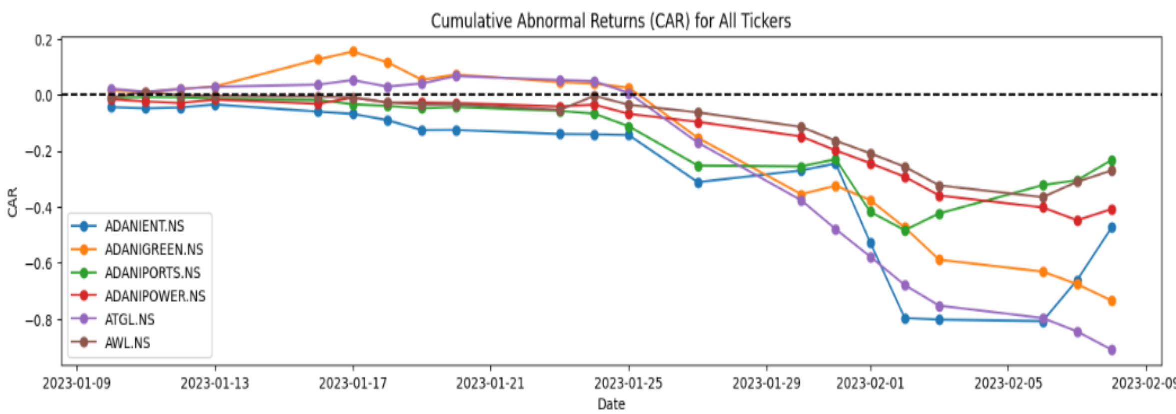

Figure 5: CAR for Adani listed entities for event 1

Cumulative Abnormal Returns (CAR) further illustrate this downward trend post-event. By February 8, the CAR figures were as follows: Adani Enterprises at -47.28%, Adani Green at -73.39%, Adani Ports at -23.24%, Adani Power at -40.73%, Adani Gas at -90.91%, and Adani Wilmar at -26.97%. These values reflect the accumulated effects of the event over time, suggesting that the negative consequences of the Hindenburg Report not only persisted but intensified in the days following its release. The Average Abnormal Returns (AAR) across all

Adani stocks showed negative values, indicating a collective adverse reaction to the event. The t-statistics for AAR were statistically significant for Adani Green, Adani Power, and Adani Total Gas (with absolute values exceeding 1.96), confirming that these returns were not random but directly related to the event. Cumulative Average Abnormal Returns (CAAR) for the group of Adani stocks exhibited a pronounced negative trend, with Adani Total Gas experiencing the most severe impact at -90.91%, followed by Adani Green at -73.39%. The t-statistics for CAAR were highly significant across all stocks, ranging from -16.93 to -67.38, indicating that the cumulative impact of the event was meaningful and not coincidental.

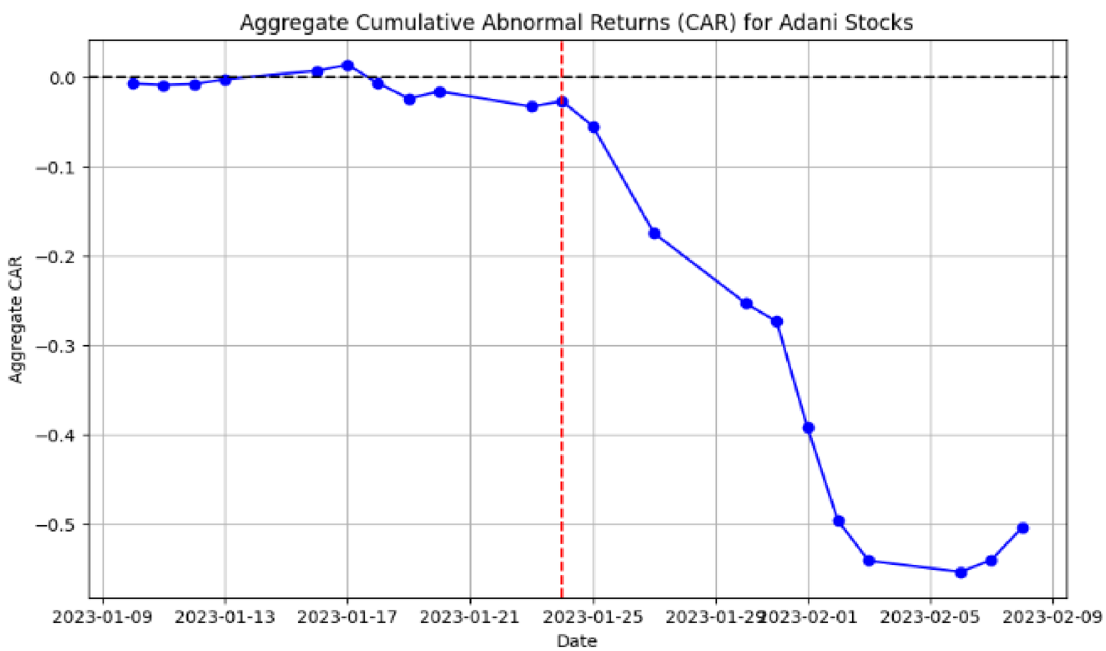

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Figure 6: Aggregate CAR for all Adani stocks in the study for Event 1

The aggregated results show a day-by-day breakdown of CAR for each Adani stock, alongside an Aggregate CAR across all stocks. On February 8, the Aggregate CAR stood at -50.42%, providing a comprehensive overview of how the entire group of Adani companies was affected by the Hindenburg Report.

The overall impact on the Adani Group was substantial and directly related to the event. this event study analysis reveals a significant, negative market reaction to the Hindenburg Report across all examined Adani Group companies. The impact intensified in the days following the report's release, with some companies experiencing more severe effects than others.

4.2 Event 2: Hindenburg's Second Report – Adani and SEBI

Nearly 18 months after releasing their first report, titled *"The Largest Con in Corporate History,"* Hindenburg issued a second report, The event study results for the Adani Group stocks from July 29, 2024, to August 26, 2024, 10 trading days before and after the event show varying degrees of abnormal returns (AR) and cumulative abnormal returns (CAR) across Adani Enterprises, Adani Green, Adani Ports, and Adani Power.

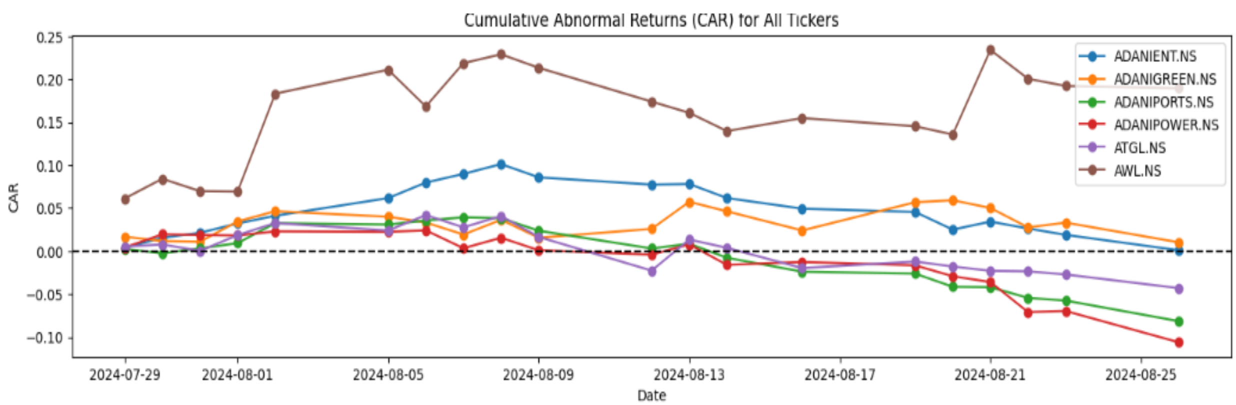

Figure 7: CAR for Adani listed entities for Event 2

For Adani Enterprises positive abnormal returns were observed before August 9, 2024, leading to a peak CAR of 10.1%. However, negative AR began on August 9, resulting in a CAR drop to 0.1% by August 26. Short selling profits peaked on days with negative ARs, Adani Green showed a more stable pattern, with a positive CAR of 5.7% on August 13, peaking at 10.2% by August 26. Despite some days with negative ARs, such as August 9, the stock generally showed gains, with short selling less favorable compared to the other stocks. Adani Ports experienced significant volatility. Despite initial gains, the stock saw sustained negative abnormal returns from August 9 onward, leading to a sharp decline in CAR from 3.8% to -8.1% by August 26. Short selling was profitable, especially on days of large negative ARs, such as August 26 ($239.30).

Finally, Adani Power saw a rapid decline in CAR from 2.4% on August 6 to -10.5% by August 26. While the stock had a few positive AR days, such as July 30 and August 8, negative returns dominated the latter half of the period, providing several opportunities for short selling profits, notably on August 14 and 26.

The average abnormal returns (AAR) and cumulative AAR (CAAR) for these stocks reflect a mix of positive and negative performance, with Adani Green performing the best in terms of CAAR (0.0102, t-statistic 2.59), while Adani Power had the weakest performance with a CAAR of -0.1059 (t-statistic -32.60).

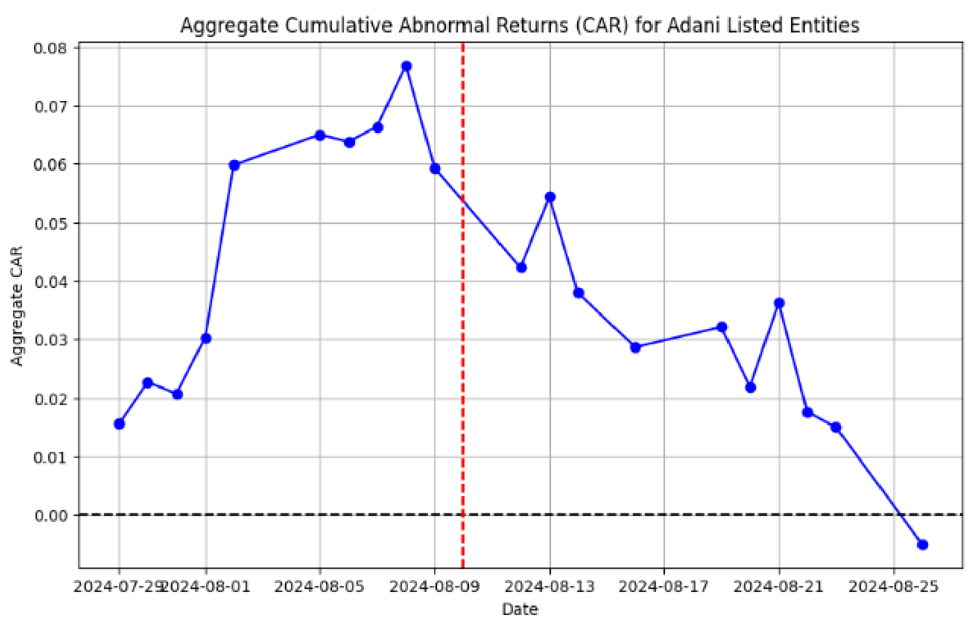

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Figure 8: Aggregate CAR for all Adani stocks in the study for Event 2

Companies such as Adani Enterprises and Adani Green exhibited neutral to slightly positive reactions, while Adani Ports and Adani Power continued to show negative performance, albeit at a reduced magnitude compared to the first phase. This comparison highlights how market reactions varied significantly between the two events. The initial Hindenburg report triggered stronger negative responses across the board, while the subsequent report elicited a more varied or neutral response among the Adani Group companies.

5 Discussions.

The Hindenburg Report release had a severe negative impact on all Adani Group companies. All companies experienced significant negative Abnormal Returns (AR) and Cumulative Abnormal Returns (CAR). Adani Enterprises and Adani Green were hit hardest, with CARs of -75.08% and -49.06% respectively by the fifth day of the release of the report, short selling would have been highly profitable, with potential gains ranging from $2,218 to $6,819 per share across different companies. This later event showed mixed and generally milder effects, some companies (Adani Enterprises, Adani Green, Adani Wilmar) had positive CARs by the fifth day, indicating recovery or positive impact, Others (Adani Ports, Adani Power, Adani Total Gas) still showed negative but less severe CARs,

5.1 Impact on credibility of the accuser over time

From the above sections, we can deduce that while the market has settled following the initial disruption, it remains susceptible to corrections and short-selling influences. Notably, despite even larger allegations this time, the Hindenburg Report did not have the same dramatic effect on the market. In response to these developments, the Supreme Court of India has taken a firm stance on short selling and market manipulation, particularly in light of the Adani Group-

Hindenburg controversy. The court has emphasized the need for stronger regulations to prevent short sellers from unfairly profiting through the dissemination of negative information (SEBI response to Supreme Court, 2023). The judgment highlighted that unchecked short selling could incite unwarranted panic, causing stock price drops that do not accurately reflect a company's fundamentals. This controversy has illuminated several critical issues:

1. **Corporate Governance**: The incident raised significant questions regarding the quality and transparency of corporate governance practices within large business groups.
2. **Financial Integrity**: It underscored the necessity for stringent auditing and reporting standards in corporate India.
3. **Influence of Short Sellers**: This episode highlighted how short sellers and their research can dramatically affect market dynamics and investor sentiment.
4. **Regulatory Efficacy**: By questioning SEBI's role, this controversy sparked a debate about the effectiveness of financial regulators in overseeing compliance among powerful corporate entities.
5. **Market Sentiment**: The swift market reaction demonstrated how quickly investor confidence can erode in response to credible allegations of wrongdoing.

This multifaceted controversy serves as a stark reminder of the delicate balance between corporate power, regulatory oversight, and market forces in today's financial ecosystem. It emphasizes the need for robust checks and balances to ensure market integrity and protect investor interests in an increasingly complex and interconnected global economy. In light of these issues, SEBI has been urged to enhance investor protection and increase market oversight (Policy Circle, 2024). The regulator has mandated greater transparency in disclosing short positions and company financials, especially during significant short-selling events (Bar and Bench, 2024). These measures aim to ensure accurate market information and prevent manipulative practices. The Supreme Court has reinforced SEBI's role in monitoring short-selling activities, ensuring compliance, and addressing manipulation allegations .It has also called for independent investigations into claims of stock manipulation, as evidenced in the Adani Group case (CNBC, 2023).This comprehensive approach underscores the importance of maintaining fair trading environments and protecting retail investors from undue market volatility while holding firms engaged in unethical practices accountable through legal and regulatory consequences. Additionally, it is essential to understand that SEBI defines short selling as selling a stock that the seller does not own at the time of the transaction. In a December 2007 circular, SEBI permitted both retail and institutional investors to engage in short selling under strict regulatory conditions. Securities within the Futures and Options (F&O) segment are eligible for this practice, with SEBI periodically updating the list of approved stocks. Naked short selling—where securities are sold without being owned or borrowed—is prohibited; all investors must deliver securities at settlement. Institutional investors are required to square off their transactions within the same trading day and must explicitly declare short sales when placing orders, while retail investors can make this disclosure by the end of the trading day (Singh, 2023).Together, these elements illustrate a complex interplay between investor sentiment, regulatory frameworks, and corporate governance that shapes today's financial landscape.

5.2 Investigating Short selling in both events

5.2.1 Event 1: Abnormal Volume Surge

In the first event, several stocks experienced a significant surge in abnormal volume, indicating heightened market interest or speculative activity. For instance, Adani Enterprises witnessed an abnormal volume spike of 685.99%**,** signaling a massive increase in trading activity. This surge could be linked to speculative trading, which presents an opportunity for short sellers to exploit potential overvaluation or impending price volatility. Similarly, Adani Green saw an abnormal volume increase of 224.06%**,** which could indicate market overreaction, making it an attractive target for short sellers anticipating a price correction. Adani Ports also experienced a substantial increase in abnormal volume by 426.96%**,** further suggesting speculative activity that short sellers might capitalize on. Other stocks like Adani Total Gas and Adani Wilmar also showed increases in abnormal volume, albeit more moderate, with 57.24% and 132.13% respectively, indicating some level of market speculation that could draw the attention of short sellers.

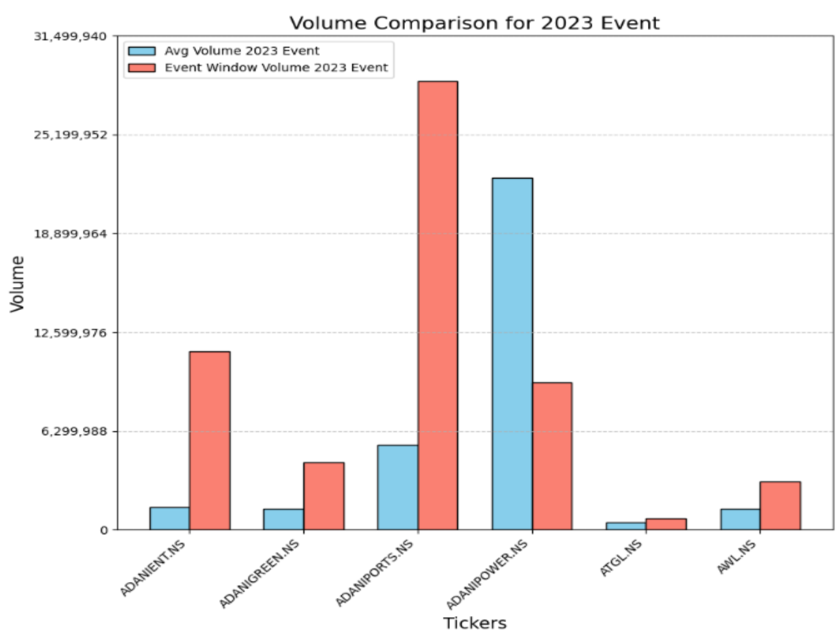

Figure 9: Average Volume Estimation period vs Event Period Event 1

Company Name	Date	AR	CAR	Short Selling Profit/Loss ($)
Adani Enterprises	2023-01-27	-0.168377	-0.266900	1683.765065
	2023-01-30	0.041997	-0.224902	-419.973303
	2023-01-31	0.024577	-0.200325	-245.774418
	2023-02-01	-0.281390	-0.481714	2813.895678
	2023-02-02	-0.269120	-0.750834	2691.199415
Adani Green	2023-01-27	-0.176925	-0.169737	1769.252868
	2023-01-30	-0.201822	-0.371559	2018.221396
	2023-01-31	0.029919	-0.341641	-299.186814
	2023-02-01	-0.050970	-0.392611	509.701060
	2023-02-02	-0.097955	-0.490565	979.548158
Adani Ports	2023-01-27	-0.140151	-0.242299	1401.512252
	2023-01-30	-0.003036	-0.245334	30.357750
	2023-01-31	0.025581	-0.219754	-255.806621
	2023-02-01	-0.187768	-0.407521	1877.677585
	2023-02-02	-0.065166	-0.472688	651.664825
Adani Power	2023-01-27	-0.028837	-0.080095	288.369268
	2023-01-30	-0.052042	-0.132137	520.415764
	2023-01-31	-0.049689	-0.181826	496.891865
	2023-02-01	-0.045459	-0.227285	454.590384
	2023-02-02	-0.048303	-0.275588	483.031867
Adani Total gas	2023-01-27	-0.175163	-0.191934	1751.627603
	2023-01-30	-0.206280	-0.398215	2062.800868
	2023-01-31	-0.103277	-0.501492	1032.772914
	2023-02-01	-0.097693	-0.599185	976.927322
	2023-02-02	-0.101462	-0.700647	1014.623031
Adani Wilmar	2023-01-27	-0.027856	-0.055022	278.561374
	2023-01-30	-0.051654	-0.106677	516.542284
	2023-01-31	-0.049358	-0.156035	493.580753
	2023-02-01	-0.045037	-0.201071	450.366662
	2023-02-02	-0.047957	-0.249029	479.572755

Table I: AR, CAR, Short selling profit or loss for five trading days after the event 1

Across the six companies, the Adani Group saw sharp declines in AR and increasing short-selling profits, especially in Adani Enterprises, Adani Green, and Adani Total Gas. The largest short-selling gains were generally observed on January 30 and February 1, with some days showing marginal movements in Adani Ports and Adani Power.

5.2.2 Event 2: Decline in Abnormal Volume

In contrast, the second event reveals a marked decline in abnormal volume across most of the same stocks, suggesting reduced trading interest and market activity. Adani Enterprises saw a sharp drop of -59.43%, signalling decreased market enthusiasm, which may indicate that short sellers have already acted, and fewer opportunities remain for future trades. Adani Green also experienced a significant drop of -48.59% in abnormal volume, suggesting that any speculative bubbles or overvaluation may have already been corrected, leading short sellers to wind down their positions. Adani Ports exhibited an even more drastic drop of -72.31%, pointing to a plummet in market interest, possibly after short sellers had profited from prior price movements. Adani Power showed a more moderate decline in abnormal volume by -17.78%, signalling a quieter market environment with fewer opportunities for price distortions. Adani total gas remained relatively stable with a 1.12% abnormal volume, indicating little change in trading activity, while Adani Wilmar limited showed a robust increase of 194.23%, continuing to attract market interest, which could present further opportunities for short sellers.

In both Event 1 (spanning January-February 2023) and Event 2 (spanning August 2024), short selling activity across Adani Group companies shows distinct trends. However, Event 1 presents a far more favorable environment for short sellers compared to Event 2. Event 1 was highly profitable for short sellers. Stocks like Adani Enterprises generated substantial short-selling gains, such as $1683.77 on January 27, 2023, and even greater profits of $2813.90 on February 1, 2023, and **$**2691.20 on February 2, 2023. Similarly**,** Adani Green produced significant short-selling profits, with gains of $2018.22 on January 30, 2023.

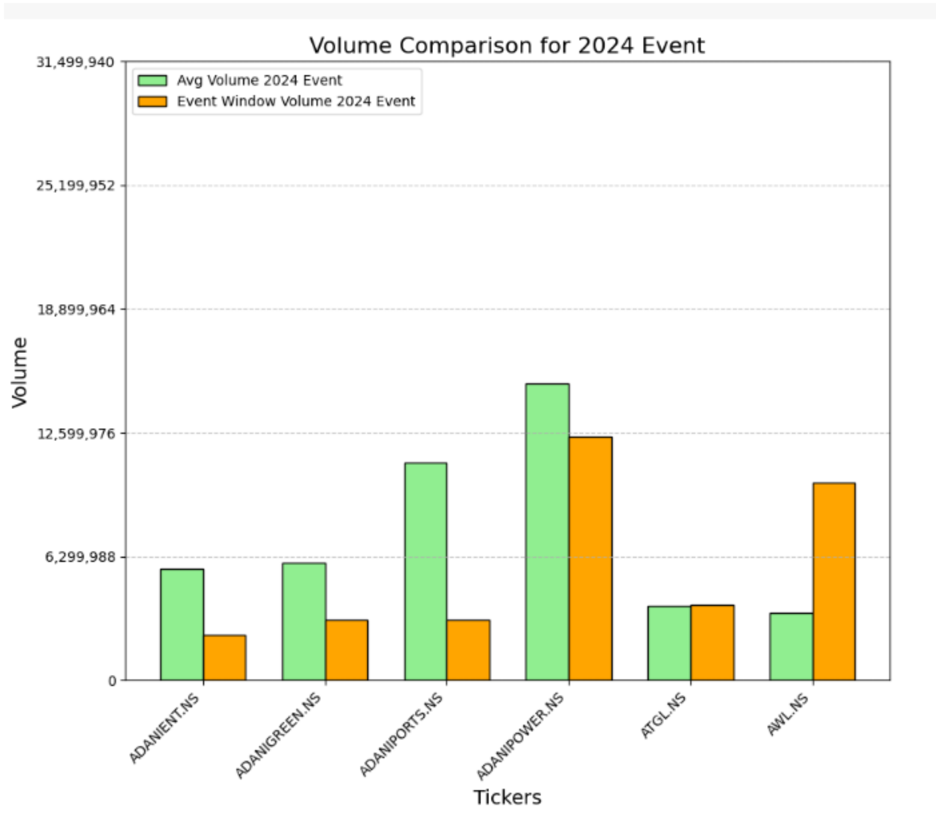

Figure 10: Average Volume Estimation period vs Event Period Event 2

Event 1 was characterized by a broad and sustained market correction, likely driven by negative sentiment or external factors that sharply devalued Adani stocks. This prolonged price decline is ideal for short sellers, as stock prices continued to fall over multiple days.

In Event 2, the market experienced more mixed activity, with sporadic negative AR days and more stable CAR values, limiting the duration of profitable short-selling opportunities. For example, Adani Total Gas during Event 2 saw smaller AR drops and CAR values that either stabilized or slightly improved after initial declines.

Company Name	Date	AR	CAR	Short Selling Profit/Loss ($)
Adani Enterprises	2024-08-12	-0.008441	0.077347	84.408458
	2024-08-13	0.000690	-0.078037	6.896701
	2024-08-14	-0.016322	0.061715	163.218818
	2024-08-16	-0.012336	0.049379	123.359105
	2024-08-19	-0.003853	0.045526	38.531863
Adani Green	2024-08-12	0.010325	0.025893	-103.252627
	2024-08-13	0.031447	0.057340	-314.471137
	2024-08-14	-0.011095	0.046246	110.945653
	2024-08-16	-0.022214	0.024031	222.143841
	2024-08-19	0.032784	0.056815	-327.838793
Adani Ports	2024-08-12	-0.020651	0.003049	206.509854
	2024-08-13	0.005528	0.008577	-55.276572
	2024-08-14	-0.016313	-0.007736	163.128487
	2024-08-16	-0.016191	-0.023927	161.911432
	2024-08-19	-0.002211	-0.026139	22.110780
Adani Power	2024-08-12	-0.005053	-0.004047	50.529910
	2024-08-13	0.011840	0.007792	-118.396196
	2024-08-14	-0.023763	-0.015971	237.629569
	2024-08-16	0.003351	-0.012620	-33.512813
	2024-08-19	-0.003929	-0.016549	39.293929
Adani Total gas	2024-08-12	-0.039168	-0.022677	391.675888
	2024-08-13	0.036107	-0.013431	-361.073844
	2024-08-14	-0.009622	0.003809	96.221348
	2024-08-16	-0.023544	-0.019736	235.442312
	2024-08-19	0.007606	-0.012130	-76.057202
Adani Wilmar	2024-08-12	-0.039327	0.173828	393.270427
	2024-08-13	-0.013033	0.160795	130.327749
	2024-08-14	-0.021234	0.139561	212.34314
	2024-08-16	0.015164	0.154725	-151.638477
	2024-08-19	-0.009549	0.145176	95.492795

Table II: AR, CAR, Short selling profit or loss for five trading days after the event 2

The recent events surrounding the Adani Group and the Hindenburg Report have highlighted significant issues in market behavior and regulatory oversight.The first event represents a period of crisis-driven market dynamics, characterized by substantial price declines and large profits from short selling, primarily fueled by the damaging allegations presented in the Hindenburg Report. In contrast, the second event depicts a more stable market environment, marked by smaller abnormal return (AR) changes and moderate short-selling gains.

Event 1 offered a much more favorable environment for short sellers compared to Event 2, with steeper and sustained declines in stock prices, larger negative AR and CAR values, and significantly higher short-selling profits. In contrast, Event 2, while still providing opportunities for short sellers, was milder in its market fluctuations and less rewarding overall. This shows how the accuser has lost credibility in the eyes of investors as in the second event despite even severe allegations we don't see any massive selloffs as in the event 1.

6 Conclusion

Short sellers likely capitalized on negative momentum, as reflected in the profitability estimates derived from short-selling strategies. The judicial and regulatory responses further emphasize the necessity for stringent oversight on short-selling practices to prevent market manipulation and protect retail investors from undue volatility. This case highlights the delicate balance between allowing market corrections through short selling and ensuring that these mechanisms are not misused for unethical financial gain. Ultimately, the findings underscore the profound influence of public reports, market sentiment, and regulatory actions on stock performance, particularly in the face of high-profile corporate controversies like that of Adani Group.

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