Impact of The Hindenburg Research Report on Adani Group Stocks: An Event Study Approach

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Abstract

In January 2023, Hindenburg Research published a report accusing the Adani Group of financial irregularities and governance issues. These revelations triggered a global outcry and led to notable disruptions in the financial markets. The present study explores how the stock prices of ten publicly listed Adani Group companies responded to the report, aiming to understand the effect of such investigative disclosures on market behavior.

Applying the event study methodology, the research analyzes stock price behavior across three phases: the period leading up to the report (pre-event), the immediate aftermath (event), and the following recovery stage (post-event). Abnormal Returns (AR) and Cumulative Abnormal Returns (CAR) were calculated to determine deviations from normal market expectations. Data from the NSE and BSE formed the basis of the analysis, with statistical techniques employed to evaluate the significance of the patterns observed.

The results indicate a marked decline in stock prices immediately following the report's release, coupled with increased volatility. Though the losses were severe in certain instances—reflecting strong investor apprehension—there was evidence of modest recovery shortly thereafter, likely influenced by the Adani Group's strategic interventions and evolving market perceptions.

This study highlights the profound impact that allegations of corporate misconduct can have on stock market performance, stressing the importance of corporate transparency and sound governance practices. The insights presented here are particularly relevant for investors, regulators, and corporate leaders in managing similar financial shocks.

Keywords: Hindenburg Research Report, Event Study, Abnormal Return, Average Abnormal Return and Cumulative Abnormal Return.

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1. Introduction

Investor confidence is usually linked to strong corporate governance and financial transparency. When allegations of financial misconduct arise, they often lead to market instability and sharp fluctuations in stock price movements. In January 2023, Hindenburg Research[1] accused the Adani Group of serious financial irregularities, sparking global debate and market turmoil.

The Adani Group has established itself as a key player in India's infrastructure sector, with a strong presence in energy, logistics, agriculture, and real estate. Its operations have contributed significantly to the country's economic development and global positioning.

This study analyses stock price movements of 10 listed Adani Group companies using an event study approach. By examining three key periods—before, during, and after the report's release—the research measures how the market reacted through abnormal returns (AR) and cumulative abnormal returns (CAR). Using data from the NSE and BSE, along with statistical tools, we measure the immediate market shock and the extent of recovery in the following weeks

1.1. The Adani Group

Established in 1988, the Adani Group has grown into one of India's largest and most diversified conglomerates, with a strong presence in key sectors like renewable energy, ports, power generation, and agribusiness. Despite facing a tough year, the group's flagship company, Adani Enterprises, achieved a market capitalization of ₹2.85 trillion by December 2024.

The Adani Group's subsidiaries, include

- **Adani Green Energy**: A global leader in renewable energy, producing 7.3 GW of solar and wind power by 2024.[2]
- **Adani Ports and SEZ**: Operating India's largest private port network, with an impressive annual cargo throughput exceeding 300 million metric tonnes.[3]
- **Adani Total Gas**: A collaborative venture with Total Energies SE, delivering over 6.3 million standard cubic meters of gas daily.[3]

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[1] Hindenburg Research. (2023). *Adani Group: How The World's 3rd Richest Man Is Pulling The Largest Con In Corporate History.*

[2] Adani Group. (2024). *Business performance and sector-wise operations report.*

• **Adani Power**: The country's leading private thermal power producer, contributing more than 13,000 MW to India's electricity grid.[3]

1.2. Hindenburg Research: A Catalyst for Controversy

On January 24, 2023, Hindenburg Research, a U.S.-based financial investigative firm, published a report accusing the Adani Group of significant financial misconduct. The allegations included claims of stock price manipulation, accounting fraud, and unethical business practices. Among the claims were inflated financial figures, the use of 38 offshore shell companies, and an unprecedented rise in stock values — notably, a staggering 2,121% rise in Adani Total Gas shares over three years[3].

The report caused a massive stock market reaction. In just a few weeks, the Adani Group's total market capitalization dropped by nearly $150 billion[4]. This decline reduced the group's overall valuation from $236 billion to $127 billion[4] by February 2023, marking one of the most notable market downturn in its history.

1.3. Immediate Market Impact

The release of the Hindenburg Research report triggered a sudden and steep decline in the stock prices of Adani Group's listed companies:

- **Adani Enterprises** saw its stock price decline by 54%, closing at ₹1,565 by February 2, 2023.[5]
- **Adani Total Gas** experienced a 56% drop, settling at ₹1,707.[5]
- **Adani Power** recorded a 26% decline, while Adani Ports faced a 39% drop in its stock value.[5]
- **Adani Green Energy** stock price saw a 43% decline, closing at roughly ₹765 by February 2, 2023.[5]
- **Adani Transmission** shares plunged by 45%, settling at ₹1,397.
- **Adani Wilmar's** stock fell by 27%, closing around ₹404.[5]
- **Adani Cement (ACC Limited)** shares dropped by 21%, closing around ₹1,853.[5]
- **Ambuja Cements** stock faced a 24% decline, closing at ₹338.[5]
- **NDTV (New Delhi Television)** stock saw a 22% fall, closing at ₹190.[5]

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[3] Hindenburg Research. (2023). *Adani Group: How The World's 3rd Richest Man Is Pulling The Largest Con In Corporate History.*

[4] Business Standard. (2023, February 2). *Adani Group stocks lose over $100 billion in market value after Hindenburg report*

The steep drop in stock prices reflected a major loss of investor trust and amplified worries about the group's corporate governance. This reaction also demonstrated how sensitive the broader market is to concerns about governance and transparency.

1.4. Regulatory and Legal Scrutiny

Hindenburg Research's allegations attracted significant attention from regulators. The Securities and Exchange Board of India (SEBI) launched an investigation into the Adani Group's financial activities. The particular focus was on offshore transactions and adherence with disclosure norms.[6]

By August 2024, SEBI came under scrutiny amid allegations of undisclosed investments linked to its chairperson. This added another layer of complexity to the ongoing situation.[6]

To heighten the uncertainty, Hindenburg Research announced plans for a follow-up report in March 2024, further prolonging the challenges faced by the Adani Group and keeping investors on edge about the conglomerate's future.

1.5. Business Resilience Amidst Turmoil

Despite facing major financial and regulatory challenges, the Adani Group showed remarkable resilience by making strategic decision and operational enhancements:

- **Adani Wilmar Exit**: In December 2024, Adani Enterprises announced plans to exit its joint venture in Adani Wilmar. This move, expected to generate over $2 billion, aligns with the group's strategy to focus on its core businesses.[4]
- **Debt Management**: The company used strategic measures to improve its financial position, effectively decreasing its net debt-to-EBITDA ratio. This was necessary to regain the confidence of the investors.[5]
- **New Projects**: Continued investments in renewable energy and green hydrogen projects highlighted the group's commitment to sustainable growth and long-term expansion.[6]

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[4] Business Standard. (2024, December). *Adani Enterprises to divest stake in Adani Wilmar, aims to raise $2 billion.*

[5] Economic Times. (2024, December). *Adani Group reduces debt-to-EBITDA ratio, boosting investor confidence.*

By the close of 2024, the Adani Group's total market capitalization reached ₹13.31 lakh crore. Thou this reflected a 6.2% drop for the year, it also represented a steady recovery from the significant losses faced earlier, showing the company’s ability to adapt and regain stability.[6]

2. Literature Review

Corporate fraud has widespread effects on financial markets, affecting investor trust, stock price volatility, and overall market integrity. Various studies have explored how the impact of fraud influence the stock prices, highlighting the immediate and long-term consequences for companies, investors, and market participation. This literature review examines key research on how the stock market reacts to corporate fraud, focusing on the impact of fraud revelations on stock price movements, investor behaviour, and regulatory compliances.

1. Discovery of fraud cause significant drop in stock prices. For instance Nirav Modi scam led PNB shares to drop 8.74% on as single day.[7]

2. Corporate fraud revelations reduce household participation in the stock market. The collapse of Arthur Andersen led to a 7% rise in households exiting the market, highlighting trust erosion.[8]

3. Analysis of eight corporate scandals and their effects on share prices, it was found fraudulent firms initially have higher valuations but face sharp declines once exposed. Further stock markets absorb fraud information efficiently, with insignificant abnormal returns post announcement.[9]

4. Positive correlation between accounting frauds and stock price crashes. Firms with opaque information environments, entrenched management, and powerful CEOs are more vulnerable.[10]

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[6] Bloomberg India. (2024, December). *Adani Group's market capitalization at ₹13.31 lakh crore: Signs of recovery amid challenges.*
[7] Sharma, D., & Verma, R. (2020). *Discovery of fraud causes significant drop in stock prices: A case study of Nirav Modi scam and PNB*.
[8] Giannetti, M., & Wang, T. Y. (2016). Corporate scandals and household stock market participation. *The Journal of Finance, 71*(6), 2591–2636.
[9] Goyal, G. D. (2013). Market reaction to corporate frauds in India. *Journal of Business and Management*, *15*(4), 1–9.
[10] Richardson, G., Obaydin, I., & Liu, C. (2022). The effect of accounting fraud on future stock price crash risk. *Economic Modelling, 117*, 106072.

5. Using a 21 day window analysed Hindenburg impact on Adani stocks and find significant abnormal returns post-event, suggesting market inefficiencies and investor sensitivity to such reports. [11]

6. Profits from corrected reports are reflected positively in stock prices, whereas losses, even as part of restructuring, are negatively perceived.[12]

7. An event study analyzing the impact of the Hindenburg Research report on the Adani Group revealed significant negative abnormal returns across the group's listed companies.[13]

3. Scope of the Study

Research Question:
1. What impact did the Hindenburg Research report have on the stock prices of Adani Group companies?
2. Did different sectors within the Adani Group exhibit varied market reactions?

Hypothesis:
H0: The Hindenburg Research report had no impact on the stock prices of Adani Group companies.

The study examines the impact of Hindenberg disclosures on stock prices of Adani Group companies. The analysis encompasses all ten companies of the group that are being traded publicly. The methodology is the event study approach. The share prices for 15 days prior the disclosure were examined and compared to the one post event.

However, Hindenberg did follow up with the subsequent disclosures but those are not examined in this paper , which again caused a negative effect on the stock prices. Additionally, the research did not examine how the

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[11] N, M. L. (2023). *The Hindenburg Research Report: An Event Study on Stock Prices of Adani Group of Companies*. SJCC Management Research Review, 13(2), 1–17.
[12] Ahmad, S. R., Al-Matari, E. M., Ali, I., Baig, A., Garg, R., & Khan, I. A. (2022). The effect of accounting fraud on the reliability of the published profit after the completion of correction: The period after the submission of the correction report. *Academic Journal of Interdisciplinary Studies, 11*(2), 2243.
[13] Ghosh, P. (2023). *The Hindenburg Research Report: An Event Study on Stock Prices of Adani Group of Companies*. SJCC Management Research Review, 13(2), 1–17.

report influenced the financial position of the Adani Group as reflected in their balance sheets.

Additionally, while event studies often use larger windows to account for delayed market reactions, in this case, the immediate and severe price movements on the announcement day justified the focus on a narrow event window. This approach ensures that the results reflect the direct reaction to the Hindenburg Report, without contamination from unrelated developments.

Furthermore, on May 19, 2023, the Supreme Court extended SEBI's deadline to August 14, 2023, for completing its investigation into alleged stock price manipulation by the Adani Group. Future studies could examine the impact of the Supreme Court's decision on the Adani Group's stock performance and financial condition.[14]

4. Research Gap

While previous studies analyze corporate fraud announcements and their impact on stock prices, limited research focuses on the influence of activist short-seller reports in emerging markets like India. Existing literature highlights market inefficiencies, investor reactions, and the role of transparency but lacks insights into how conglomerates like Adani respond to external allegations and recover post-crisis.

This study fills the gap by using an event study methodology to assess the Hindenburg Report’s impact on Adani stocks, examining pre-event, event, and post-event movements. Unlike previous research on fraud disclosures, this research examines whether market recovery trends differ based on corporate responses and how investor sentiment reacts. It offers insights for investors and regulators in handling similar crises in future.

4.1. Research Methodology

Objectives:

➢ To analyze the impact of the Hindenburg Research Report on the share prices of Adani Group companies.

Methodology:

[14] Supreme Court of India. (2023, May 19). *Order in the matter of SEBI investigation on Adani Group*

The Event Study uses the Ordinary Least Squares (OLS) Market Model, where the firm's returns are regressed on the market returns. The model used is based on CAPM:

$$\textbf{CAPM Risk} = \alpha i + \beta i Rm,t$$

Where,
αi = Firm-specific intercept,
βi = Relationship between Stock and Market returns (Beta),
Rm,t = Market return at time t.

OLS is employed to estimate expected returns. It is important to recognize that CAPM assumptions (such as constant risk-free rates and perfect market conditions) have faced criticism. Modern event studies, as explained by MacKinlay (1996), increasingly recognize the limitations of strict CAPM usage.

This study examines the impact of the Hindenburg Research Report on the stock prices of ten Adani Group companies. To assess this effect, the Event Study Methodology has been applied, utilizing a 30-day event window—including 15 days before the event, the event day, and 15 days after. A longer estimation window (such as 120 or 250 days) was considered; however, to avoid the inclusion of unrelated market movements and to maintain focus on the direct impact of the Hindenburg Report, a shorter window was deliberately chosen. This helps to isolate the pure effect of the event, aligning with practices for highly significant market events. The OLS Market Model has been considered to calculate the daily returns of these stocks The event date is set as January 24, 2023, corresponding to the official release of the report.

This model is widely recognized as a standard approach for estimating returns. However, it has faced criticism due to its assumption of a constant risk-free interest rate. To analyse stock returns during the event window, closing prices from the BSE over trading days have been utilized. The data has been sourced from the BSE website.

Table 1: List of Adani Group of Companies Considered for Research

Company Name	**Market Capitalization (Rs. in Lakh)**
Adani Enterprises	39,28,558

Adani Transmission	30,95,771
Adani Total Gas	42,75,567
Adani Green Energy	30,47,678
Adani Power	10,62,201
Adani Ports	16,68,599
Adani Wilmar	7,34,123
ACC	33,82,100
Ambuja Cement	84,29,100

Source: The information has been retrieved from https://www.nseindia.com/search?q=ADANI

5. Analysis of Data:

T-test Result of Abnormal Return and Average Abnormal Return:

Table 2: T-statistics and P-value for abnormal return

Stocks	T - statistics	P- Value
ADANIENT	-0.127	0.450
ADANIPORTS	-0.788	0.218
ADANIGREEN	3.203	0.002
ADANIPOWER	3.928	0.000
ATGL	4.104	0.000
ADANIENSOL	3.311	0.001
ADANIWILMAR	1.810	0.040
ACC	-0.973	0.169
AMBUJACEM	-1.727	0.047
NDTV	1.549	0.066

Source: Data taken from NSE https://www.nseindia.com/search?q=ADANI

The analysis from the above table 2 stated the T-statistics and P-values for abnormal returns across Adani Group stocks reveals a mixed market reaction to the Hindenburg Report. Stocks such as Adani Enterprises (ADANIENT), Adani Ports (ADANIPORTS), ACC, and NDTV demonstrated statistically insignificant results (P-value > 0.05), suggesting no significant deviation from typical market trends. Ambuja Cements (AMBUJACEM) and Adani Wilmar (ADANIWILMAR) displayed moderate significance, suggesting a mild impact. In contrast, Adani Green (ADANIGREEN), Adani Power (ADANIPOWER), Adani Total Gas (ATGL), and Adani Energy Solutions (ADANIENSOL) exhibited highly significant positive abnormal returns (P-value < 0.01), highlighting strong investor reactions, particularly in the energy and power sectors. These findings suggest that while some Adani stocks remained relatively stable, others—especially in energy and power—experienced notable price movements, reflecting varying investor sentiment across different business segments.

Table 3: T-statistics and P-value for Cumulative abnormal return

Stocks	T - statistics	P- Value
ADANIENT	0.166	0.435
ADANIPORTS	-4.160	0.000
ADANIGREEN	3.469	0.001
ADANIPOWER	3.928	0.000
ATGL	4.293	0.000
ADANIENSOL	4.422	0.000
ADANIWILMAR	2.827	0.004
ACC	-0.973	0.169
AMBUJACEM	-4.936	0.000
NDTV	1.297	0.102

Source: Data taken from NSE
https://www.nseindia.com/search?q=ADANI

Table 3 illustrates the cumulative abnormal return (CAR) analysis, highlighting the varied effects on Adani Group stocks after the release of the Hindenburg Report. Adani Ports (ADANIPORTS) and Ambuja Cements (AMBUJACEM) recorded significantly negative CARs (P-value = 0.000), indicating prolonged investor concerns and sustained declines. In contrast, Adani Green (ADANIGREEN), Adani Power (ADANIPOWER), Adani Total Gas (ATGL), Adani Energy Solutions (ADANIENSOL), and Adani Wilmar (ADANIWILMAR) exhibited significantly positive CARs (P-value < 0.01), suggesting strong market recovery or strategic interventions. Adani Enterprises (ADANIENT) and NDTV showed statistically insignificant CARs, implying a neutral or less pronounced long-term impact. These results highlight sector-specific variations, where infrastructure-related stocks faced setbacks, while energy and power stocks rebounded, and reflecting differing investor sentiments.

Table 4: t-test result of Expected, Abnormal & Cumulative Abnormal

Dates	Event Window	Adani Enterprises			Adani Ports			Adani Green			Adani power			ATGL		
		ER	AR	CAR	ER	AR	CAR	ER	AR	CAR	ER	AR	CAR	ER	AR	CAR
03-01-2023	T_{-15}	-0.002	-0.002	-0.002	-0.003	-0.002	-0.002	0.025	-0.009	-0.009	0.019	-0.002	-0.002	0.032	-0.007	-0.007
04-01-2023	T_{-14}	0.003	0.008	0.006	0.002	0.010	0.008	0.013	0.006	-0.003	0.019	0.010	0.008	0.027	0.014	0.007
05-01-2023	T_{-13}	0.000	0.003	0.009	-0.002	-0.002	0.006	0.020	-0.002	-0.006	0.019	-0.002	0.007	0.030	-0.006	0.001
06-01-2023	T_{-12}	0.002	0.008	0.017	0.000	0.007	0.013	0.016	0.003	-0.003	0.019	0.001	0.007	0.029	0.009	0.010
09-01-2023	T_{-11}	-0.006	-0.018	-0.002	-0.008	-0.019	-0.006	0.036	-0.020	-0.023	0.020	-0.026	-0.019	0.036	-0.023	-0.013
10-01-2023	T_{-10}	0.003	0.009	0.008	0.001	0.010	0.004	0.013	0.009	-0.014	0.019	0.009	-0.009	0.027	0.010	-0.003
11-01-2023	T_{-9}	-0.001	-0.003	0.005	-0.002	-0.003	0.000	0.022	-0.004	-0.018	0.019	-0.008	-0.017	0.031	0.001	-0.002
12-01-2023	T_{-8}	0.000	0.000	0.005	-0.002	0.002	0.002	0.021	-0.002	-0.020	0.019	-0.003	-0.021	0.031	0.007	0.005
13-01-2023	T_{-7}	-0.003	-0.007	-0.001	-0.005	-0.009	-0.007	0.028	-0.008	-0.028	0.020	-0.010	-0.031	0.033	-0.006	-0.001
16-01-2023	T_{-6}	0.000	0.004	0.002	-0.001	0.000	-0.006	0.019	-0.002	-0.029	0.019	-0.005	-0.035	0.030	0.009	0.009
17-01-2023	T_{-5}	-0.004	-0.009	-0.007	-0.006	-0.011	-0.017	0.031	-0.017	-0.047	0.020	-0.011	-0.046	0.035	-0.008	0.000
18-01-2023	T_{-4}	-0.003	-0.009	-0.015	-0.005	-0.005	-0.022	0.029	-0.006	-0.053	0.020	-0.008	-0.054	0.034	-0.009	-0.009
19-01-2023	T_{-3}	0.000	0.040	0.025	-0.001	0.006	-0.015	0.020	0.007	-0.045	0.019	0.011	-0.043	0.030	0.009	0.000
20-01-2023	T_{-2}	0.001	0.008	0.033	-0.001	0.004	-0.011	0.018	-0.001	-0.047	0.019	0.007	-0.036	0.030	0.004	0.004
23-01-2023	T_{-1}	-0.003	-0.001	0.032	-0.005	-0.010	-0.021	0.028	-0.011	-0.057	0.020	-0.006	-0.043	0.033	-0.010	-0.006
24-01-2023	T_{0}	-0.001	-0.003	0.029	-0.003	0.000	-0.021	0.023	-0.009	-0.066	0.019	-0.005	-0.048	0.031	-0.009	-0.015
25-01-2023	T_{1}	0.003	0.018	0.047	0.002	0.023	0.002	0.011	0.021	-0.045	0.018	0.019	-0.029	0.027	0.018	0.003
27-01-2023	T_{2}	0.005	0.032	0.079	0.004	0.036	0.039	0.007	0.060	0.015	0.018	0.060	0.031	0.025	0.069	0.072
30-01-2023	T_{3}	-0.002	-0.034	0.045	-0.004	-0.040	-0.001	0.025	0.119	0.134	0.020	0.050	0.081	0.032	0.168	0.240
31-01-2023	T_{4}	-0.001	-0.030	0.015	-0.003	-0.006	-0.007	0.023	0.047	0.181	0.019	0.052	0.132	0.032	0.091	0.331
01-02-2023	T_{5}	0.000	-0.004	0.011	-0.002	-0.020	-0.027	0.020	-0.040	0.141	0.019	0.025	0.157	0.030	0.083	0.415
02-02-2023	T_{6}	-0.001	-0.091	-0.080	-0.002	-0.029	-0.056	0.022	0.111	0.252	0.019	0.053	0.210	0.031	0.111	0.526
03-02-2023	T_{7}	-0.006	0.037	-0.043	-0.008	-0.006	-0.062	0.036	0.097	0.349	0.020	0.039	0.249	0.037	0.039	0.565
06-02-2023	T_{8}	0.001	0.013	-0.030	-0.001	0.007	-0.056	0.018	0.058	0.407	0.019	0.058	0.306	0.029	0.058	0.622
07-02-2023	T_{9}	0.000	0.004	-0.027	-0.002	-0.006	-0.061	0.020	0.055	0.462	0.019	0.055	0.361	0.030	0.055	0.677
08-02-2023	T_{10}	-0.004	-0.044	-0.071	-0.006	-0.028	-0.089	0.031	0.008	0.470	0.020	-0.008	0.353	0.035	0.044	0.722
09-02-2023	T_{11}	-0.002	-0.003	-0.074	-0.003	0.019	-0.070	0.024	0.041	0.511	0.019	0.051	0.404	0.032	0.051	0.773
10-02-2023	T_{12}	0.000	0.091	0.017	-0.002	0.017	-0.053	0.021	0.044	0.555	0.019	0.054	0.459	0.031	0.055	0.828
13-02-2023	T_{13}	0.001	0.003	0.020	-0.001	-0.002	-0.055	0.018	0.057	0.612	0.019	0.057	0.516	0.030	0.057	0.885
14-02-2023	T_{14}	-0.004	-0.019	0.001	-0.006	-0.004	-0.059	0.031	0.044	0.656	0.020	0.044	0.560	0.035	0.044	0.929
15-02-2023	T_{15}	-0.003	-0.022	-0.021	-0.005	-0.010	-0.068	0.027	0.048	0.704	0.020	0.048	0.607	0.033	0.048	0.977

Return of pre-event data

Source: Data taken from NSE

https://www.nseindia.com/search?q=ADANI

Table 5: t-test result of Expected, Abnormal & Cumulative Abnormal

Dates	Event Window	Adaniensol			Adaniwilmar			ACC			Ambujacem			NDTV		
		ER	AR	CAR	ER	AR	CAR	ER	AR	CAR	ER	AR	CAR	ER	AR	CAR
03-01-2023	T_{-15}	0.026	-0.007	-0.007	0.009	-0.006	-0.006	-0.003	-0.002	-0.002	-0.006	-0.004	-0.004	0.008	-0.006	-0.006
04-01-2023	T_{-14}	0.020	0.011	0.004	0.010	0.012	0.006	-0.004	0.008	0.005	-0.003	0.008	0.004	0.002	0.001	-0.005
05-01-2023	T_{-13}	0.024	-0.002	0.002	0.010	-0.005	0.001	-0.004	0.004	0.009	-0.005	0.003	0.007	0.006	-0.004	-0.008
06-01-2023	T_{-12}	0.021	0.013	0.015	0.010	0.008	0.008	-0.004	0.009	0.018	-0.004	0.005	0.012	0.004	0.001	-0.007
09-01-2023	T_{-11}	0.033	-0.019	-0.004	0.008	-0.029	-0.021	-0.002	-0.019	0.000	-0.010	-0.020	-0.008	0.014	-0.031	-0.038
10-01-2023	T_{-10}	0.020	0.010	0.007	0.010	0.010	-0.012	-0.004	0.008	0.008	-0.003	0.007	-0.001	0.002	-0.001	-0.038
11-01-2023	T_{-9}	0.025	0.001	0.008	0.009	-0.022	-0.034	-0.003	-0.003	0.005	-0.006	-0.002	-0.002	0.007	0.000	-0.038
12-01-2023	T_{-8}	0.024	0.003	0.010	0.010	-0.004	-0.038	-0.004	0.000	0.005	-0.005	-0.001	-0.004	0.006	0.001	-0.037
13-01-2023	T_{-7}	0.028	-0.007	0.003	0.009	-0.008	-0.046	-0.003	-0.009	-0.004	-0.008	-0.007	-0.011	0.010	-0.005	-0.042
16-01-2023	T_{-6}	0.023	0.005	0.008	0.010	0.000	-0.046	-0.004	0.000	-0.005	-0.005	-0.001	-0.012	0.005	-0.010	-0.052
17-01-2023	T_{-5}	0.030	-0.006	0.002	0.008	-0.008	-0.054	-0.003	-0.009	-0.014	-0.009	-0.009	-0.022	0.011	-0.015	-0.068
18-01-2023	T_{-4}	0.029	-0.004	-0.002	0.009	-0.009	-0.063	-0.003	-0.007	-0.021	-0.008	-0.007	-0.029	0.010	-0.006	-0.074
19-01-2023	T_{-3}	0.024	0.015	0.013	0.010	0.012	-0.051	-0.004	0.006	-0.014	-0.005	0.006	-0.023	0.006	0.004	-0.070
20-01-2023	T_{-2}	0.023	0.013	0.026	0.010	0.002	-0.049	-0.004	0.004	-0.011	-0.005	0.003	-0.020	0.005	-0.001	-0.071
23-01-2023	T_{-1}	0.028	-0.008	0.018	0.009	-0.009	-0.058	-0.003	-0.002	-0.013	-0.007	-0.006	-0.025	0.010	-0.020	-0.091
24-01-2023	T_0	0.025	-0.002	0.016	0.009	-0.004	-0.062	-0.003	-0.003	-0.016	-0.006	-0.002	-0.027	0.007	-0.010	-0.101
25-01-2023	T_1	0.019	0.028	0.044	0.011	0.013	-0.049	-0.005	0.017	0.002	-0.002	0.016	-0.011	0.001	0.018	-0.083
27-01-2023	T_2	0.017	0.062	0.107	0.011	0.052	0.003	-0.005	0.011	0.013	-0.001	0.022	0.011	-0.001	0.054	-0.029
30-01-2023	T_3	0.027	0.132	0.239	0.009	0.050	0.053	-0.003	-0.023	-0.011	-0.007	-0.051	-0.040	0.008	0.050	0.021
31-01-2023	T_4	0.026	0.004	0.243	0.009	0.052	0.105	-0.003	-0.012	-0.022	-0.006	-0.017	-0.058	0.007	0.034	0.055
01-02-2023	T_5	0.024	-0.017	0.226	0.010	-0.015	0.090	-0.004	-0.013	-0.035	-0.005	-0.017	-0.075	0.006	-0.039	0.016
02-02-2023	T_6	0.025	0.091	0.317	0.009	0.053	0.143	-0.003	-0.081	-0.116	-0.006	-0.059	-0.133	0.007	0.053	0.069
03-02-2023	T_7	0.033	0.097	0.415	0.008	0.039	0.181	-0.002	-0.016	-0.132	-0.010	-0.012	-0.145	0.014	0.039	0.107
06-02-2023	T_8	0.023	0.116	0.531	0.010	0.058	0.239	-0.004	0.004	-0.128	-0.004	0.012	-0.133	0.005	0.057	0.165
07-02-2023	T_9	0.024	0.055	0.586	0.010	0.055	0.294	-0.004	0.002	-0.126	-0.005	-0.010	-0.143	0.006	-0.029	0.136
08-02-2023	T_{10}	0.030	-0.024	0.562	0.008	-0.050	0.244	-0.003	-0.017	-0.143	-0.008	-0.033	-0.176	0.011	-0.009	0.127
09-02-2023	T_{11}	0.026	0.023	0.585	0.009	-0.049	0.195	-0.003	0.001	-0.142	-0.006	0.016	-0.160	0.008	-0.002	0.125
10-02-2023	T_{12}	0.024	0.055	0.639	0.010	0.013	0.208	-0.004	0.010	-0.132	-0.005	0.011	-0.149	0.006	0.027	0.152
13-02-2023	T_{13}	0.023	0.057	0.697	0.010	0.030	0.239	-0.004	0.005	-0.127	-0.004	-0.003	-0.152	0.005	0.002	0.155
14-02-2023	T_{14}	0.030	0.099	0.795	0.008	0.044	0.283	-0.003	0.010	-0.117	-0.009	-0.013	-0.165	0.011	0.042	0.197
15-02-2023	T_{15}	0.028	-0.005	0.790	0.009	0.017	0.300	-0.003	0.020	-0.097	-0.007	-0.005	-0.170	0.009	0.029	0.226

Return of post-event data

Source: Data taken from NSE

https://www.nseindia.com/search?q=ADANI

Based on the above tables 4 & 5, we observe the following things:

The dataset captures the stock performance of Adani Group companies around the release of the Hindenburg Report on January 24, 2023. In the pre-event window (T-15 to T-1), stocks showed moderate volatility with fluctuating abnormal returns (AR), and cumulative abnormal returns (CAR) remained relatively stable, indicating no major market shock. However, on the event day (T0), most Adani stocks recorded negative abnormal returns, with Adani Enterprises showing an AR of -0.003 and Adani Green, Adani Power, and Adani Total Gas (ATGL) also faced declines. Interestingly, Adani Ports & SEZ maintains a neutral Average Return (AR) of 0.000, its Cumulative Abnormal Return (CAR) continued to decrease.

In the post-event period (T1 to T5), most stocks attempted to recover, with Adani Enterprises' AR rising to 0.032 on T2, followed by a sharp decline of -0.034 on T3, indicating high volatility. Adani Green showed resilience, with its AR surging to 0.119 on T3, suggesting positive investor sentiment toward renewable energy. From T6 to T15, volatility continues, leading to prolonged negative returns for Adani Enterprises and Adani Ports. However, ATGL saw a significant cumulative recovery, with its CAR reaching 0.722 by T10, marking the strongest rebound among Adani stocks. Sector-wise, core infrastructure stocks such as Adani Ports, Adani Power, and Adani Enterprises witnessed prolonged negative ARs due to concerns over project financing. On the other hand, renewable energy and gas segments, particularly Adani Green and ATGL, showed strong resilience as it also reflected in their increasing CAR values. Cement subsidiaries such as ACC and Ambuja Cements experienced mixed trends, indicating partial insulation from the immediate impact from stock market.

Overall, the data confirms that the Hindenburg Report triggered an immediate negative response, followed by heightened volatility in subsequent days. Some Adani Group stocks, especially those in renewable energy and gas, rebounded swiftly. However, the core infrastructure businesses continued to experience prolonged market uncertainty. The long-term sentiment toward Adani Enterprises and Adani Ports remained uncertain due to ongoing regulatory and financial concerns.

Table 6: Impact of Hindenburg Research Report on Share Prices of Adani Group of Companies

Name of the Company	Share Price on 24th Jan 2023 (t_0)	Share Price on 2nd Feb 2023 (t_6)	Increase / Decrease (%)
Adani Enterprises	₹3442.00	₹1565.25	-54.52%
Adani Ports & SEZs	₹761.20	₹462.45	-39.24%

Adani Green Energy	₹1916.80	₹1039.85	-45.70%
Adani Power	₹274.65	₹202.05	-26.43%
Adani Total Gas (ATGL)	₹3891.75	₹1707.70	-56.11%
Adani Energy Solutions	₹2762.15	₹1551.15	-43.83%
Adani Wilmar	₹572.65	₹421.00	-26.48%
ACC	₹2335.70	₹1841.25	-21.16%
Ambuja Cements	₹498.95	₹352.55	-29.34%
NDTV	--	--	--

Source: Data taken from NSE
https://www.nseindia.com/search?q=ADANI

Table 6 above highlights the drop in share prices of Adani Group companies before and after the Hindenburg Research Report on January 24, 2023 (t_0). The stock prices were then re-recorded on February 2, 2023 (t_6), showing a significant drop across all companies within the group (Table 5).

5.1. Key Observations (Table 6):

1. Adani Total Gas (ATGL) experienced a significant decline, plummeting by 56.11% and losing more than half its value in just nine days. This is due to its high valuation and less liquidity, making it more vulnerable to panic selling.
2. Adani Enterprises, the leading company, experienced a significant drop of 54.52%, indicating substantial investor skepticism and intense selling pressure. This also impacted the company's ability to raise funds through its follow-on public offer (FPO), which was later withdrawn.
3. Adani Green Energy dropped by 45.70%, and Adani Energy Solutions declined by 43.83%, as investors were concerned over high debt levels and corporate governance issues, which were highlighted in the report.
4. Adani Ports & SEZs (-39.24%) saw heavy corrections, but it was less affected compared to other companies. This is likely because it has stronger cash flows and strategic importance in India's logistics sector.
5. Adani Power and Adani Wilmar saw significant drops of 26.43% and 26.48%, respectively, likely influenced by market sentiment and investor concerns.

6. ACC (-21.16%) and Ambuja Cements (-29.34%) were also affected, even though they are less leveraged compared to other Adani companies. However, their connection to the Adani Group still led to a price drop.
7. NDTV's data is unavailable, but it is expected to have followed a similar trend, as it was recently acquired by the Adani Group and likely faced sell-offs due to overall negative sentiment.

5.2. Broader Market Impact:

- The Adani Group's total market capitalization declined by more than ₹10 trillion ($120 billion) in just a few days.[15]
- This led to concerns about India's financial system, especially regarding public sector banks (SBI, PNB) and institutions like LIC, which had exposure to Adani stocks.[8]
- Global investors, like BlackRock, Vanguard, and Norwegian wealth funds, started checking their positions in Adani companies.[8]
- The sharp decline in Adani stocks contributed to increased volatility in the Indian stock market (NSE & BSE), impacting investor confidence.[8]

The Hindenburg Report's allegations about stock manipulation and corporate governance issues triggered a massive sell-off in Adani stocks. Investors reacted strongly, particularly in overvalued and heavily leveraged companies like Adani Total Gas, Adani Enterprises, and Adani Green Energy. While some stocks have since recovered, the event highlighted the risks of high debt and governance concerns in large conglomerates.

6. Result and Discussion

It must also be noted that a similar event study examining the Hindenburg Report's impact on Adani Group companies has already been published in Asia-Pacific Journal of Management Research and Innovation (2023). Therefore, while this paper reinforces prior findings, its contribution to academic novelty is limited.

The event study conducted to assess the impact of the Hindenburg Research report on Adani Group's listed companies revealed significant declines in stock prices within the event window. A total of 10 Adani Group companies were analysed to measure the short- and long-term effects of the report on their stock performance.

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[15] Hindenburg Research. (2023). *Adani Group: How the world's 3rd richest man is pulling the largest con in corporate history*.

Among the group's companies, Adani Total Gas faced the most substantial decline, with its stock price dropping by approximately around 83% by the end of February 2023. Adani Enterprises, the leading company of the group, experienced a sharp decline in its stock value, dropping 54% by February 2, 2023, and an additional 23% by February 27, 2023. This trend highlights investor concerns regarding the company's corporate governance and financial stability.

Adani Green Energy and Adani Transmission also faced heavy sell-offs, leading to substantial market capitalization erosion. The data suggests that while infrastructure-focused stocks, such as Adani Ports and SEZ, were impacted, they demonstrated relative resilience compared to other companies in the group. However, the broader investor sentiment remained predominantly negative across all Adani stocks.

Adani Power, Adani Wilmar, and ACC Ltd. recorded smaller losses. ACC Ltd. experiencing the lowest decline at 21.169%, followed by Adani Power at 26.43% and Adani Wilmar at 26.48% (Table 6). This indicates that while all Adani Group stocks were affected, certain sectors displayed relatively better investor confidence.

Adani Cement, which includes Ambuja Cements, witnessed a decline, but the losses were less severe compared to Adani Total Gas and Adani Enterprises. The relatively smaller price drop in certain companies can be attributed to their diversified operations and relatively lower exposure to direct financial scrutiny as highlighted in the report.

Overall, the results suggest that the Hindenburg Research report had a significant negative impact on the stock prices of Adani Group companies, causing to a widespread decline in investor trust. The extent of the decline differed across companies, with sectors such as energy, gas, and transmission facing the highest losses, while cement and power stocks were relatively had lower impact. The research highlights how corporate governance concerns can influence stock market performance, affecting both short-term trading volatility and long-term investor perception.

7. Conclusion

The study provides evidence of the significant adverse impact of the Hindenburg Report on the stock performance of the Adani Group. The event study analysis reveals that the report caused a sharp decline in stock prices across all 10 listed Adani companies, with some facing huge losses exceeding 80%. This reaction highlights the importance of investor sentiment, media influence, and regulatory in financial markets.

Despite the stock price decline, the Adani Group has initiated measures such as debt reduction, increased disclosures, and engagement with global investors to restore credibility. However, the long-term recovery of stock prices depends on sustained corporate reforms, investor trust, and regulatory clarity. Future research could explore the post-investigation effects, long-term market perception of Adani stocks, and similar market reactions to corporate allegations in other major conglomerates. This version provides more depth, strategic insights, and a clearer direction for future action.

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