

# **CASE STUDY ON HINDENBURG REPORT USING HYPOTHESIS**

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**Our Reply To Adani: Fraud Cannot Be Obfuscated By Nationalism Or A Bloated Response That Ignores Every Key Allegation We Raised**

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# TRUST ADANI OR NOT?

# INTRODUCTION

- On 24th jan 2023 ,Hindenburg accused the Adani Group of stock manipulation, improper use of tax havens and even raised concerns about high debt at 7 major group companies.
- After a report publish adani group of companies had to bear the loss of 65 million dollar within a week.

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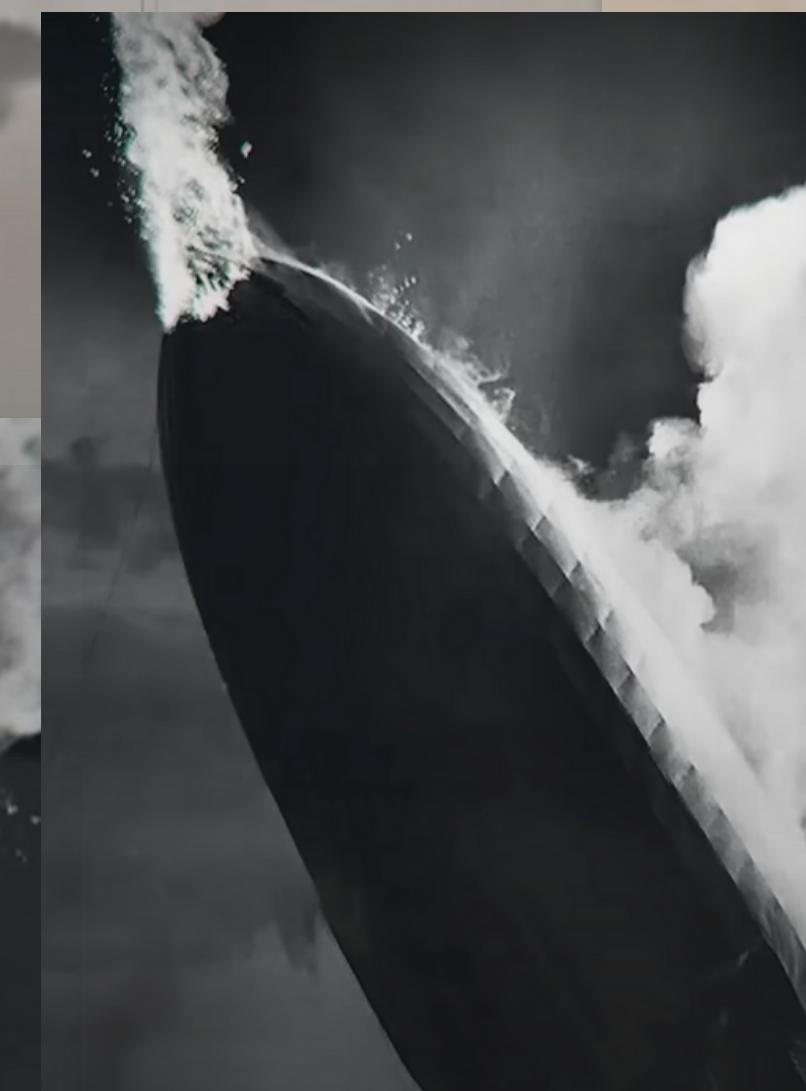
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# HINDENBURG

- Hindenberg co. is an investment research firm with a focus on activist short-selling founded by Nathan Anderson in year 2017.
- By Profession Nathan is financial analayst.And his company Hindenburg reserach carries out finanical research .
- The name hindenberg, is came from a airship name hindenburg.In 1937, hindenberg airship caught on fire by accidentally and many people die in this accident.This is a famous disaster.

1937



- Anderson compare the stock market disaster with 1937 hindenburg disaster saying that all of them are man-made disasters.
- And the purpose of his company is to prevent hinderburg-type disasters from happening in the stock markets again.other then this they claim as activist company with purpose of carrying out short-selling.
- So, what is short selling ?

# WHAT IS LONG SELLING ?



- Normally, we invest in stock with the expectation that, the stock price of the company would go up, and then we will make a profit.

# WHAT IS SHORT SELLING ?



- while Short-selling,you invest with the expectation that the stock price of the company will fall, and then you will make a profit.
- For eg, you sell shares at Rs.100 price and buy back at price of Rs.70 .

- Normally, when you invest in the stock of a company, hoping that its value would increase, suppose you invest 1,000 in Apple's stock, the most loss you could suffer is the value of the stock falling to zero.
  - You lose your 1,000.
  - Your maximum loss can be 1,000 only.
- 
- But while short-selling, you will bet on the value of the stock falling.
  - But if it increases instead, it can increase infinitely.
  - It can go up by 100%, 200% or even 1,000%.
- 
- If you have invested 1,000 in short selling, you can incur losses to the tune of 10000 or even 100,000, if the value keeps increasing.
- 
- So, Short-selling is riskier than investing normally in the stock market.

**Does Hindenburg Done Short  
Selling on Adani Share:**

# DATA:

1	Date	Close Price
2	24-Jan-23	1913.55
3	25-Jan-23	1855.45
4	27-Jan-23	1484.5
5	30-Jan-23	1187.7
6	31-Jan-23	1224.05
7	1-Feb-23	1153.35
8	2-Feb-23	1038.05
9	3-Feb-23	934.25
10	6-Feb-23	887.55
11	7-Feb-23	843.2
12	8-Feb-23	801.75
13	9-Feb-23	761.95
14	10-Feb-23	723.9
15	13-Feb-23	687.75
16	14-Feb-23	653.4
17	15-Feb-23	620.75
18	16-Feb-23	616.45
19	17-Feb-23	628.9
20	20-Feb-23	597.5
21	21-Feb-23	567.65

21	21-Feb-23	567.65
22	22-Feb-23	539.3
23	23-Feb-23	512.35
24	24-Feb-23	486.75
25	27-Feb-23	462.45
26	28-Feb-23	485.55
27	1-Mar-23	509.8
28	2-Mar-23	535.25
29	3-Mar-23	562
30	6-Mar-23	590.1
31	8-Mar-23	619.6
32	9-Mar-23	650.55
33	10-Mar-23	683.05
34	13-Mar-23	717.2
35	14-Mar-23	706.1
36	15-Mar-23	740.95
37	16-Mar-23	777.95
38	17-Mar-23	816.8
39	20-Mar-23	848.75
40	21-Mar-23	891.15
41	22-Mar-23	935.7

42	23-Mar-23	982.45
43	24-Mar-23	1030
44	27-Mar-23	984.7
45	28-Mar-23	935.5
46	29-Mar-23	893.9
47	31-Mar-23	881.85
48	3-Apr-23	837.85
49	5-Apr-23	814.35
50	6-Apr-23	855.05
51	10-Apr-23	897.8
52	11-Apr-23	942.65
53	12-Apr-23	942.8
54	13-Apr-23	940.9
55	17-Apr-23	962.45
56	18-Apr-23	952.25
57	19-Apr-23	935.75
58	20-Apr-23	933.3
59	21-Apr-23	915.95
60	24-Apr-23	886.45
61	25-Apr-23	930.3
62	26-Apr-23	924.65

# Hypothesis

- Characteristics under study
  - $H_0$ : There is no significant changes in short selling
  - $H_1$ : There is significant changes in short selling
- The null and alternative hypothesis are:  
 $H_0: \sigma^2 = \sigma_0^2$   
 $H_1: \sigma^2 < \sigma_0^2$
- Confidence interval:95%
- alpha:0.05

Chi-Square Test Formula:

$$\chi^2 = \frac{(n - 1) \cdot s^2}{\sigma^2}$$

R-Output:

```
> varTest(x = data$log10, alternative = "less", sigma.squared = 1, conf.level = 0.95)
$statistic
chi-squared
0.3802951

$parameters
df
60

$p.value
[1] 7.398656e-55
```

## Conclusion:

- We have enough evidence from data to conclude that short selling has been done.

# ALLEGATIONS



# Hypothesis testing on stocks manipulate by adani :

**Assumption:** Here, The stock price of adani 2021 and stock price of adani 2022 are normally distributed and Population variances are known and independent samples.

Assuming :

- Population 1: adani 2022 stocks
- Population 2: adani 2021 stocks

The null and alternative hypothesis are:

$$H_0: \mu_1 - \mu_2 = 0$$

$$H_1 : \mu_1 - \mu_2 > 0$$

	A	B	C	D
3	Month	Close Price	Month	Close Price
4	Jan-22	1878.75	21-Jan	1003.75
5	Feb-22	1839.1	21-Feb	1168.05
6	Mar-22	1913.4	21-Mar	1104.3
7	Apr-22	2887.3	21-Apr	1019
8	May-22	1898.8	21-May	1267.25
9	Jun-22	1929	21-Jun	1116.9
10	Jul-22	2168.45	21-Jul	888.2
11	Aug-22	2436.7	21-Aug	1066.85
12	Sep-22	2259.55	21-Sep	1147.25
13	Oct-22	2103.1	21-Oct	1146.35
14	Nov-22	2109.35	21-Nov	1291.2
15	Dec-22	1932.1	21-Dec	1327.75
16				
17				
18	mean:	2112.97		1128.90
19	var:	91925.64		16133.97
20				

- Confidence interval:99%

- alpha:0.01

- Stat-test: 2-sample t-test

$$t = \frac{(\bar{x}_1 - \bar{x}_2) - (\mu_1 - \mu_2)}{\sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}}}$$

## R-Output:

```
> t.test(x= data$Close.Price1, y= data$Close.Price, alternative = "greater"
e1 = 0.99)
```

welch Two sample t-test

```
data: data$Close.Price1 and data$Close.Price
t = 10.37, df = 14.746, p-value = 0.5
alternative hypothesis: true difference in means is greater than 0
99 percent confidence interval:
 736.6002      Inf
sample estimates:
mean of x mean of y
2112.967 1128.904
```

# Conclusion :

- p-value (0.5) > alpha(0.01)
- so,we fail to reject null hypothesis.
- We have enough evidence from data to conclude that stock manipulation has not taken place.

# WHY TRUST ADANI?

- **Strong financial performance:** Adani Group has seen significant financial success and growth in various industries such as energy, logistics, and infrastructure. This can be seen as a positive factor that instills trust in their business practices.
- **Employment generation:** Adani Group has created thousands of jobs in India, which can be seen as a positive factor that contributes to the country's economy and development.
- **Track record:** Adani Group has been in business for over three decades, and during this time, they have successfully executed multiple large-scale infrastructure projects across various industries such as ports, logistics, energy, and agribusiness.

# WHY TRUST ADANI?

- **Diversified portfolio:** Adani Group has a diverse portfolio that spans across multiple industries, which has helped them to reduce their reliance on any single business segment and manage risks effectively.
- **Innovation:** Adani Group has demonstrated a willingness to adopt new technologies and business models to stay ahead of the curve. For instance, they are investing heavily in renewable energy, which is expected to play a critical role in the future of the global energy mix.

# Conclusion :

- The main aim of our presentation is not about trusting adani company or Hindenburg report. The main motive of our presentation, with proper analytical skill we can make money from stocks as hindenburg company done by short selling .

# REFERENCES:

BSEIndia



**THANK YOU.....**