

High Leverage: Detrimental to stock price during pandemic/recession in India Date Period: January 01, 2020 to May 30, 2020

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ABSTRACT

The paper addresses effect of leverage on stock price during the global COVID-19 pandemic-an unprecedented economic disaster- on various companies in the NSE and BSE stock indexes based on outstanding loans of each company, and tries to derive a relationship between the amount of debt and change in price of the various stocks compared to the returns on the NSE indices. The DEBT to EBITDA and DEBT to Equity ratios of firms in NIFTY 50 and NIFTY Midcap 50 are used to check if 'The stock price of highly leveraged companies tend to underperform during time of pandemic as compared to the stock performance of companies with lower or no leverage'

KEY WORDS: NSE, NIFTY 50, NIFTY MIDCAP 50, Leverage, COVID-19

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I. INTRODUCTION

India is a developing economy with GDP close to \$2.94 trillion and it is world's 5th largest economy behind United States of America, China, Japan and Germany.

India has two national level stock exchanges namely Bombay Stock Exchange (BSE) and National Stock Exchange (NSE) and are 10th and 11th largest stock exchanges in the world respectively as of June 2020. BSE has 5,518 listed firms, whereas the rival NSE has about 1,799. In terms of market capitalization, they're both are comparable at about \$2.3 trillion individually.

The year 2019 was positive for equity markets and most of the major indices ended the year with strong gains. The Dow Jones ended up by ~22%, and India's National Stock Exchange Nifty 50 by ~12% for the year. The Year 2020 started with corona virus becoming a pandemic and impacting equity markets around the world

The coronavirus pandemic (COVID-19) has affected the world economy in various ways and the stock exchanges of India (NSE and BSE) both showed significant declines in their total index values between January 01, 2020 and May 30, 2020. This reports attempts to derive a relation between the highly leveraged companies and change in stock price between January 01, 2020 and May 30, 2020 during the coronavirus pandemic

II. HYPOTHESIS

The stock price of highly leveraged companies tend to underperform during time of pandemic as compared to the stock performance of companies with lower/no leverage

The global COVID-19 pandemic has caused significant losses to many businesses and economies and companies that are under a greater debt have chances of shutting down, this influences investors and shareholders to make special significant financial decisions that are unique to this situation.

In this report we are comparing the change in stock price of companies in various Indian market indexes to prove a relationship between the drop in price and Debt in books of companies and prove that the Stock Price of lower leveraged companies in India performed better during pandemic situations like COVID-19 than the relatively higher leveraged companies

III. DESCRIPTION

3.1 Overview of NIFTY 50 and NIFTY MIDCAP 50

National Stock Exchange (NSE) has benchmark indexes including two widely used indexes namely NIFTY 50 and NIFTY Midcap 50.

Nifty 50

The NIFTY 50 is a diversified 50 stock index accounting for 13 important sectors of the economy. It is used for a variety of purposes such as benchmarking fund portfolios, index based derivatives and index funds. The NIFTY 50 Index represents about 66.8% of the free float market capitalization of the stocks listed on NSE as on March 29, 2019.

The total traded value of NIFTY 50 index for the last six months ending March 2019 constitutes approximately 53.4% of the traded value of all stocks on the NSE.

Table 1 – Nifty 50 Sectorial Representation

Sector Representation	Sector Weight (%)
FINANCIAL SERVICES	33.33
IT	14.66
OIL & GAS	14.29
CONSUMER GOODS	13.41
AUTOMOBILE	5.54
TELECOM	3.59
PHARMA	3.35
CONSTRUCTION	2.89
METALS	2.7
CEMENT & CEMENT PRODUCTS	2.41
POWER	2.2
SERVICES	0.63
FERTILISERS & PESTICIDES	0.56
MEDIA & ENTERTAINMENT	0.42

Table 1 represents weights and sectorial representation of companies from NIFTY 50 index

Nifty Midcap 50

The primary objective of the NIFTY Midcap 50 Index is to capture the movement of the midcap segment of the market. NIFTY Midcap 50 includes top 50 companies based on full market capitalization from NIFTY Midcap 150 index and on which derivative contracts are available on the National Stock Exchange (NSE).

Table 2 – Nifty Midcap 50 Sectorial Representation

Sector Representation	Sector Weight (%)
FINANCIAL SERVICES	21.79
AUTOMOBILE	14.9
CONSUMER GOODS	14.03
INDUSTRIAL MANUFACTURING	10.12
OIL & GAS	9.1
IT	7.53
POWER	5.37
PHARMA	5.04
HEALTHCARE SERVICES	3.88
METALS	3.15
CEMENT & CEMENT PRODUCTS	2.42
CONSTRUCTION	1.54
MEDIA & ENTERTAINMENT	1.13

Table 2 represents weights and sectoral representation of companies from NIFTY Midcap 50 index

3.2 Overview of Leverage and Leverage Ratios

Leverage

Companies use their own capital and Debt to finance their business. The company's own capital would include Equity and Reserves generated over the years and they need Debt to expand the business. Certain amount of Debt on the balance sheet is good if it increases shareholder value by generating more revenue for the shareholders after paying interest and servicing debt.

Companies use short term and long term debt to run and grow their business. This strategy of using debt is called Leverage

Leverage ratios are financial ratios used indicate the level of debt against balance sheet, income statement or cash flow statement

These ratios provide an indication of how the company's assets and business operations are financed (using debt or equity).

Most commonly used Leverage ratios

- Debt to Equity Ratio = Total Debt / Total Equity
- Debt to EBITDA Ratio = Total Debt / Earnings Before Interest Taxes Depreciation and Amortization
- Debt to Asset Ratio = Total Debt / Total Assets
- Debt to Capital Ratio = Total Debt / (Total Debt + Total Equity)
- Asset to Equity Ratio = Total Assets / Total Equity

IV. METHODOLOGY

We have used companies in the NIFTY 50 and NIFTY MIDCAP 50 indexes for our research

We have used two commonly used Leverage Ratios for our analysis

1. Debt to Equity
2. Debt to EBITDA

Debt to Equity - is a ratio to measure the degree to which a company is financing its operations through debt versus the owners own funds. This ratio indicates the stability of a company and its ability to raise additional capital to grow.

Debt to Equity Ratio = Total Debt* / Total Shareholder Equity**

* Total Debt include Short Term Debt + Long Term Debt + other fixed Payments

**Total Shareholder Equity Includes Equity + Reserves/retained earnings

Debt to Equity ratio higher than 2 is considered risky by industry analysts

Debt to EBITDA -is a ratio that measures income generated and available to pay debt. The ratio includes earnings before covering for interest, taxes, depreciation, and amortization expenses.

Debt to EBITDA = Total Debt* / Earnings before Interest, Taxes, Depreciation & Amortization (EBITDA)**

* Total Debt includes Short Term Debt + Long Term Debt + other fixed Payments

**EBITDA includes Earnings before Interest, Taxes, Depreciation and Amortization

A high ratio could indicate that a company has a heavy debt load.

Debt to EBITDA ratio higher than 3 is considered risky by industry analysts

Steps for NIFTY 50 comparison with index stocks

Step 1 - Identified the NIFTY 50 index value as on close of January 01, 2020 and May 30, 2020 and find the actual returns and percentage returns between the two dates



Nifty 50 Index returns chart since 1996

NIFTY 50 Index on January 01, 2020
12182.50

NIFTY 50 Index on May30, 2020
9490.10

Nifty 50 Index Return between January 01, 2020 and May 30, 2020
-2692.40

Nifty 50 Index Return Percentage between January 01, 2020 and May 30, 2020
-22.10 %

Step 2 - Identify companies in NIFTY 50 and for each company get the following details

- 1) Total Debt
- 2) Total Equity
- 3) EBITDA for previous year
- 4) Stock Price on January 01, 2020
- 5) Stock Price on May 30,2020
- 6) Calculate Debt to Equity Ratio
- 7) Calculate Debt to EBITDA Ratio

Step 3 – Grouping the companies based on leverage

- a) Group the companies based on Leverage. One group where Debt to Equity is greater than or equal to 2 or Debt to EBITDA is greater than or equal to 3 (Group 1). Another group where Debt to Equity is less than 2 and Debt to EBITDA is less than 3 (Group 2)
- b) Identify the stock price on January 01, 2020 and May 30, 2020 for all these stocks
- c) Identify the average return for this grouped companies

Table 3– Companies in NIFTY 50 index with high leverage (Group 1)

Company Name	Sector	Debt to EBITDA	Debt to Total Equity	Price on 1st January	Price on 30 th May	% Change
HDFC Bank	Banks	10.77	7.03	1,278.60	903.65	-29.33%
Housing Development Fin. Corp.	Finance	7.26	3.36	2,433.95	1,623.70	-33.29%
ICICI Bank	Banks	14.10	7.80	536.75	326.85	-39.11%
Kotak Mahindra Bank Limited	Banks	10.20	5.04	1,674.05	1,229.45	-26.56%
Bharti Airtel	Telecom - Services	3.96	1.92	453.30	562.75	24.15%
Larsen and Toubro	Construction Project	5.23	2.15	1,309.95	905.50	-30.88%
Axis Bank	Banks	16.45	10.49	748.70	390.95	-47.78%
State Bank of India	Banks	18.07	14.30	334.45	158.20	-52.70%
Bajaj Finance	Finance	6.98	3.28	4,231.30	1,947.70	-53.97%
NTPC Limited	Power	6.35	1.48	121.55	95.70	-21.27%
Power Grid Corporation of India	Power	4.78	2.19	195.50	157.25	-19.57%
Mahindra & Mahindra	Auto	4.14	1.56	536.60	440.40	-17.93%
Bajaj Finserv	Finance	7.03	4.06	9,378.45	4,285.95	-54.30%
Bharat Petroleum Corporation	Petroleum Products	5.28	1.69	491.65	326.45	-33.60%

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Indusind Bank	Banks	10.60	9.05	1,484.30	384.25	-74.11%
UPL	Pesticides	4.32	1.52	588.25	391.10	-33.51%
Adani Ports & Special Economic Zone	Transportation	3.84	1.18	377.65	331.80	-12.14%
Tata Steel	Ferrous Metals	4.97	1.41	467.80	293.90	-37.17%
Grasim Industries	Cement	3.79	1.31	742.50	576.50	-22.36%
Hindalco Industries	Non - Ferrous Metals	3.60	0.97	214.30	138.40	-35.42%
JSW Steel	Ferrous Metals	4.46	1.51	268.10	184.15	-31.31%
Tata Motors	Auto	3.29	1.83	184.45	87.00	-52.83%

Table 3 lists companies in NIFTY 50 index with high leverage. These companies are part of GROUP 1. **Group 1 consists of Companies where Debt to EBITDA ratio is greater than or equal to 3 or Debt to Equity ratio is greater than or equal to 2.** These are companies with high leverage. **Companies in Group 1 averaged - 33.21% return January 01, 2020 and May 30, 2020**

Table 4 – Companies in NIFTY 50 index with low or no leverage (Group 2)

Company Name	Sector	Debt to EBITDA	Debt to Total Equity	Price on 1st January	Price on 30thMay	% Change
Reliance Industries	Petroleum Products	2.91	0.66	1,509.60	1,472.25	-2.47%
Infosys Limited	Software	0.19	0.07	736.85	707.40	-4.00%
Tata Consultancy Services	Software	0.15	0.08	2,167.60	2,004.30	-7.53%
ITC	Consumer Non Durables	0.00	0.00	238.10	190.65	-19.93%
Hindustan Unilever	Consumer Non Durables	0.00	0.00	1,936.55	2,009.95	3.79%
Asian Paints Limited	Consumer Non Durables	0.07	0.03	1,793.20	1,643.60	-8.34%
Maruti Suzuki India Limited	Auto	0.02	0.00	7,311.70	5,468.35	-25.21%
Nestle India	Consumer Non Durables	0.02	0.03	14,779.05	16,989.15	14.95%
HCL Technologies	Software	0.42	0.15	571.95	542.65	-5.12%
Sun Pharmaceutical Industries	Pharmaceuticals	0.99	0.17	434.30	459.10	5.71%
Dr Reddys Laboratories	Pharmaceuticals	0.57	0.11	2,879.40	3,887.75	35.02%
Titan Company	Consumer Durables	1.36	0.53	1,154.75	899.45	-22.11%
UltraTech Cement Limited	Cement	2.15	0.55	4,065.00	3,809.20	-6.29%
Britannia Industries	Consumer Non Durables	0.71	0.34	3,039.65	3,323.25	9.33%
Bajaj Auto Limited	Auto	0.02	0.01	3,376.70	1,993.75	-40.96%
Tech Mahindra	Software	0.54	0.17	762.10	529.70	-30.49%
Coal India	Minerals/Minin g	0.06	0.05	211.95	133.90	-36.82%
Cipla	Pharmaceuticals	0.79	0.18	475.90	628.35	32.03%

Oil & Natural Gas Corporation	Oil	1.41	0.47	127.45	78.85	-38.13%
Hero MotoCorp	Auto	0.09	0.03	2,432.55	2,298.10	-5.53%
Wipro	Software	0.52	0.14	247.70	199.35	-19.52%
Shree Cement	Cement	0.58	0.18	20,310.50	20,260.80	-0.24%
Indian Oil Corporation	Petroleum Products	2.54	0.78	125.95	77.70	-38.31%
Eicher Motors	Auto	0.05	0.02	22,075.80	16,236.50	-26.45%
GAIL (India)	Gas	0.11	0.02	121.20	89.10	-26.49%
Vedanta	Non - Ferrous Metals	2.15	0.91	154.60	89.95	-41.82%
Bharti Infratel	Telecom - Equipment & Accessories	0.91	0.34	254.45	223.85	-12.03%
Zee Entertainment Enterprises	Media & Entertainment	0.26	0.08	288.65	180.70	-37.40%

Table 4 lists companies in NIFTY 50 index with low or no leverage. These companies are part of Group 2. **Group 2 consists of Companies where Debt to EBIDTA ratio is less than 3 or Debt to Equity ratio is less than 2.** These are companies with high leverage. **Companies in Group 2 averaged -12.66% return between January 01, 2020 and May 30, 2020.**

Step 4 – Compare returns with NIFTY50 index return

NIFTY 50 Index gave negative 22.10% return between January01, 2020 and May30, 2020

In comparison during the same time period:

Group 1 gave negative 33.10 % return

Group 2 gave negative 12.66% return

Steps for NIFTY MIDCAP 50 comparison with index stocks

Step 1 - Identified the NIFTY 50 index value as on close of January 01, 2020 and May30, 2020 and find the actual returns and percentage returns between the two dates



Nifty Midcap 50 Index returns chart since 2004

NIFTY MIDCAP 50 Index on January 01, 2020
4711.55

NIFTY MIDCAP 50 Index on May 30, 2020
3663.20

Index Return is the return on NIFTY MIDCAP 50 between January 01, 2020 and May 30, 2020
-1048.35

Index Return Percentage between January 01, 2020 and May 30, 2020
-22.25%

Step 2- Identify companies in NIFTY 50 and for each company get the following details

- 1) Total Debt
- 2) Total Equity
- 3) EBITDA for previous year
- 4) Stock Price on January 01, 2020
- 5) Stock Price on May 01, 2020
- 6) Calculate Debt to Equity Ratio
- 7) Calculate Debt to EBITDA Ratio

Step 3 – Grouping companies based on leverage

- a) Group the companies based on Leverage. One group where Debt to Equity is greater than or equal to 2 or Debt to EBITDA is greater than or equal to 3. Another group where Debt to Equity is less than 2 and Debt to EBITDA is less than 3
- b) Identify the stock price on January 01, 2020 and on May 30, 2020 for all these stocks
- c) Identify the average return for this grouped companies

Table 5 – Companies in NIFTY Midcap 50 index with high leverage (Group 3)

Company Name	Industry	Debt to EBITDA	Debt to Total Equity	Price on 1 st January	Price on 30 th May	% Change
Adani Power	Power	7.76	(25.82)	63.90	36.00	-43.66%
Apollo Tyres	Automobile	3.35	0.66	74.85	85.25	13.89%
Bank of India	Financial Services	19.85	13.02	70.45	32.05	-54.51%
CESC	Power	3.12	1.27	746.80	573.15	-23.25%
Canara Bank	Financial Services	18.29	16.86	221.65	83.30	-62.42%
Cholamandalam Investment	Financial Services	8.74	6.71	503.15	233.90	-53.51%
Federal Bank	Financial Services	13.37	10.64	88.75	42.80	-51.77%
GMR Infrastructure	Construction	8.68	(38.38)	20.90	17.80	-14.83%
IDFC First Bank	Financial Services	17.46	7.70	45.90	20.10	-56.21%
Jindal Steel & Power	Metals	3.89	0.95	166.40	119.10	-28.43%
LIC Housing Finance	Financial Services	10.00	10.38	431.80	244.65	-43.34%
M & M Financial Services	Financial Services	9.19	5.48	323.30	136.60	-57.75%
Manappuram Finance	Financial Services	5.56	3.87	177.25	120.15	-32.21%
Muthoot Finance	Financial Services	5.08	2.85	760.60	848.80	11.60%
RBL Bank	Financial Services	12.46	9.21	707.70	426.40	-39.75%
REC	Financial Services	10.04	7.10	143.95	87.90	-38.94%
SAIL	Metals	6.86	1.23	42.90	30.20	-29.60%
TVS Motor	Automobile	3.99	2.82	468.80	333.10	-28.95%
Tata Power Co.	Power	5.43	2.46	57.60	36.90	-35.94%
Union Bank of India	Financial Services	22.52	16.23	54.55	23.40	-57.10%

Table 5 lists companies in NIFTY Midcap 50 index with high leverage. These companies are part of GROUP 3. **Group 3** consists of Companies in NIFTY Midcap 50 where Debt to EBITDA ratio is greater than or equal to 3 or Debt to Equity ratio is greater than or equal to 2. These are companies with high leverage. **Companies in Group 3 averaged -31% return**

Table 6 – Companies in NIFTY 50 index with low or no leverage (Group 4)

Company Name	Industry	Debt to EBITDA	Debt to Total Equity	Price on 1 st January	Price on 30 th May	% Change
Amara Raja Batteries	Automobile	0.06	0.02	720.90	614.40	-14.77%
Apollo Hospitals Enterprise	Healthcare Services	2.29	1.15	1,426.35	1,337.05	-6.26%
Balkrishna Industries	Automobile	0.50	0.14	987.25	1,105.65	11.99%
Bata India	Consumer Goods	0.24	0.11	1,745.30	1,300.05	-25.51%
Bharat Electronics	Industrial Manufacturing	0.00	0.00	100.15	69.65	-30.45%
Bharat Forge	Industrial Manufacturing	2.25	0.70	485.15	306.95	-36.73%
Bharat Heavy Electricals	Industrial Manufacturing	2.14	0.16	43.50	26.85	-38.28%
Castrol India	Oil & Gas	0.00	0.00	129.00	113.90	-11.71%
Cummins India	Industrial Manufacturing	0.32	0.08	552.15	359.70	-34.85%
Escorts	Automobile	0.06	0.02	606.20	890.65	46.92%
Exide Industries	Automobile	0.13	0.03	186.00	158.70	-14.68%
Glenmark Pharmaceuticals	Pharma	2.01	0.60	345.70	343.20	-0.72%
Hexaware Technologies	IT	0.14	0.05	336.10	248.95	-25.93%
Indraprastha Gas	Oil & Gas	0.00	0.00	425.25	470.75	10.70%
Info Edge (India)	IT	(4.26)	0.04	2,565.60	2,570.90	0.21%
Jubilant Foodworks	Consumer Good	1.77	1.49	1,664.60	1,689.80	1.51%
MRF	Automobile	0.91	0.23	66,709.05	58,466.20	-12.36%
Mahanagar Gas	Oil & Gas	0.04	0.02	1,066.10	924.70	-13.26%
Max Financial Services	Financial Services	0.01	0.00	542.20	466.10	-14.04%
MindTree	IT	0.49	0.18	811.75	896.50	10.44%
NBCC (India)	Construction	0.00	0.00	34.70	17.20	-50.43%
National Aluminium Co.	Metals	0.07	0.01	43.20	29.35	-32.06%
Oil India	Oil & Gas	1.64	0.37	151.90	83.60	-44.96%
SRF	Industrial Manufacturing	2.09	0.68	3,439.55	3,409.40	-0.88%
Sun TV Network	Media & Entertainment	0.00	0.00	439.55	389.90	-11.30%
Tata Consumer Products	Consumer Goods	1.23	0.11	323.45	371.15	14.75%
The Ramco Cements	Cement & Cement Products	1.77	0.45	753.40	616.80	-18.13%
Torrent Pharmaceuticals	Pharma	1.92	0.91	1,843.70	2,357.95	27.89%
Torrent Power	Power	2.09	0.85	285.55	305.35	6.93%
Voltas	Consumer Good	0.26	0.05	653.30	486.80	-25.49%

Table 6 lists companies in NIFTY Midcap 50 index with low or no leverage. These companies are part of GROUP 4. **Group 4** consists of Companies in NIFTY Midcap 50 where Debt to EBITDA ratio is less than 3 or Debt to Equity ratio is less than 2. These are companies with low leverage. **Companies in Group 4 averaged -11.99% return**

Step 4 - Compare with NIFTY MIDCAP 50 index return

NIFTY 50 Index gave negative 22.25% return between January 01, 2020 and May 30, 2020

In comparison during the same time period:

Group 3 gave negative 31.00 % return

Group 4 gave negative 11.99% return

V. EVALUATION AND FUTURE SCOPE

Evaluation:

NIFTY50 and NIFTY MIDCAP50 have both fallen sharply by over 22% during the pandemic.

Stock price of Companies with lower debt in Large Cap have performed better in stock market in India compared to the NIFTY50 Index. Stocks as part of NIFTY 50 with lower debt have fallen by 12.66% compared to Nifty 50 fall of 22.10%

Stock price of companies with lower debt in Mid Cap space has also performed better in stock market in India compare to the NIFTY MIDCAP 50 index. Stocks as part of MIDCAP space with lower debt have fallen by 11.99% compared to NIFTY MIDCAP 50 fall 22.25% of during the same time period

Stock price of Companies with higher debt in Large Cap have performed worse in stock market in India compared to the NIFTY50 Index. Stocks as part of NIFTY 50 with higher debt have fallen by 33.21% compared to Nifty 50 fall of 22.10%

Stock price of companies with higher debt in Mid Cap space has also performed worse in stock market in India compare to the NIFTY MIDCAP 50 index. Stocks as part of MIDCAP space with higher debt have fallen by 31.00% compared to NIFTY MIDCAP 50 fall 22.25% of during the same time period

From the information mentioned above, we can observe that the companies with the higher Debt to EBITDA or Debt to Equity ratio (higher leveraged companies) have a greater drop in their stock price thus showing a certain form of negative relation between investor trust and amount of leverage of companies irrespective of the size of the company.

Outcome:

As seen from the greater fall in stock price of companies with greater leverage against the overall Index return and also return on Lower leveraged companies, we can say that the data supports the hypothesis that 'The stock price of highly leveraged companies tend to underperform during time of pandemic as compared to the stock performance of companies with lower or no leverage'

Future Scope:

- 1) Capital-intensive industries like the financial and manufacturing industries often have higher ratios and in future scope can be eliminated from this data set and a different data set comprising of capital intensive industry can be tested
- 2) Other Risk or Leverage Ratios can be used to test the hypothesis that the highly leveraged company stock tends to perform worst during time of pandemic

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