STUDY ON PERFORMANCE OF PROMINENT STOCKS OF AUTOMOBILE AND BANKING SECTORS IN PRE-COVID AND DURING COVID PERIOD

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Abstract

There was a severe impact of outbreak of the pandemic of corona virus (COVID-19) on stock markets across the globe and Indian stock markets were no exception to this. With the outbreak of Covid, stock market indices fell sharply leading to drastic reduction in market capitalization of the listed companies. In fact, two lower circuit breakers were applied in India within a period of less than a month, a never before event in the history of Indian stock market. The scene at global front was no different. Though this trend was reversed after rapid vaccination and some control over the pandemic. This study is an endeavour to analyze the performance of prominent stocks in Pre-Covid and During Covid period in Indian stock market. The researchers have analysed prominent stocks of two vital sectors of the Indian economy i.e. Automobile Sector and Banking Sector in terms of their risk and return on comparative basis in pre-covid and during covid time periods. The study reveals that banking sector offered higher return in pre-Covid period while automobile Sector offered better return in during Covid period. In terms of risk also, banking sector had higher risk in pre-covid, and automobile sector had more risk in during Covid period. The study also indicates that there exists a statistically significant difference in the return and risk of most of the stocks in pre-covid and during covid periods.

Keywords: Risk, Return, Covid-19, Nifty50, Standard Deviation, Beta

Introduction

There is a severe impact on the lives of people over the world with the outbreak of the pandemic of corona virus (COVID-19). Not only the lives of people were ruined but it had shaken the world economies as well as the environment too. With this outbreak of the pandemic, there

might not be any sector of the country that had not been impacted. Its impact can be wondered with the slowdown of the activities, dropping of the GDP as well drastic fall in share markets with reduction of market capitalization of the listed companies.

In financial activities the basic idea that needs to be studied is risk/return relationship, whereas the COVID-19 has come as a big risk to the world. Although Covid-19 pandemic has posed a big challenge for various sectors, it has also presented an opportunity for certain sectors e.g. Pharmaceutical Sector and IT Sector etc. So, its impact on financial markets and various sectors needs to be analysed carefully. There are a number of factors on which the risk is based. These factors either can be common to all the number of listed shares or may be aligned to a specific number of selected shares. So, for an investor risk management is very important.

It is seen in the cycle of economics that it is not possible that all sectors perform in the same way in different periods of time. The recent volatility caused by the pandemic of corona in the stock market has changed the perspectives of the investors. That is why it has become necessary to analyse and understand sector wise as well stock specific return and risk before and during corona pandemic. A comparative examination of equities in terms of risk and return from three distinct sectors of the Indian economy is the subject of this research work.

Literature Review

The outbreak of pandemic of COVID-19 has impacted both advanced economies as well as emerging economies and its stock market and has given a lot of theoretical and empirical research for generalizing the security performances. Numerous advancements have happened in stock market theory and in how players now perceive investing theory. Before and during COVID-19, several researches have been conducted and the following are few important ones:

Adda (2016) studied the effect of the spread of infectious virus of a disease on the economic activity, such as those consequences that remain unintended with the spread of the virus of infection and how to efficiently use the resources in the meantime to curb the stretch of the infection. The outcomes of the study showed that economic condition was sensitive while the spreading of infection.

Lee and Bramasrene (2018) studied the relationship between prices of various stocks and variables of microeconomics in the time frame of short run and long run. They found the long term relationship between the variables of microeconomics like index, supply of money, inflation, interest rates, industrial production index as well as exchange rates and Korean stock market.

Ashraf (2020) studied the effect on stock market by Covid-19 pandemic and it was found that the stock market reacted negatively with the number of the cases of people infected. The researcher also analyzed the death rate form 64 countries and their impact on stock market. The study shows that by COVID-19 pandemic stock markets were reacted very quickly.

Hyun-Jung (2020) conducted research in the South Korean stock Market, which is a leading emerging economy. He study reveals that there was a significant decline in various economic indicators and stock prices after the outbreak of Covid-19 pandemic.

Objectives of study

- To analyse and compare the performance of stocks of automobile and banking sectors in terms of their returns before Covid and during Covid period
- To analyse and compare the performance of stocks of automobile and banking sectors in terms of their risk before Covid and during Covid period
- To compare the performance of the stocks across these two sectors before Covid and during Covid period

Research Methodology

The study deals with analysis and comparison of the performance of 10 important stocks each from two vital sectors of the Indian economy i.e. automobile sector and banking sector. NIFTY50 index has been used as benchmark index for the purpose of study.

Following is the list of stocks chosen for research:

Sl no.	Automobile Sector	Banking Sector
1.	"Maruti Suzuki India Ltd"	"HDFC Ltd"
2.	"Bajaj Auto Ltd"	"Kotak Mahindra Bank Ltd"
3.	"Mahindra & Mahindra"	"ICICI Ltd"
4.	"Hero MotoCorp Ltd"	"State Bank of India"
5.	"Eicher Motors Ltd"	"Axis Bank Ltd"
6.	"Bosch Ltd"	"Bandhan Bank Ltd"
7.	"Tata Motors Ltd"	"Yes Bank Ltd"
8.	"MRF Ltd"	"IndusInd Bank Ltd"
9.	"TVS Motors"	"IDBI Bank Ltd"
10.	"Ashok Leyland Ltd"	"Punjab National Bank"

Time Period of Study – Time period for the research is of 30 months. Time of 15 months is for pre covid period that ranges from 29th October 2018 to 29th January 2020, and an equal time period of 15 months has been taken during covid that ranges from 30th January 2020 to 30th April 2021.

Data Collection – Secondary data have been used for the purpose of study. Official websites of National Stock Exchange and YahooFinance have been used for collecting the necessary data.

Data Analysis - The below mentioned tools have been used for analysis of gathered data:

- ✓ Mean Return
- ✓ Standard Deviation
- ✓ Beta

Methodology for Calculation:

1. Mean Return: For this study, daily returns (percentage) were calculated by using adjusted close price of all the stocks with the help of following formula: "

$$\frac{(\text{Adj close price of stock in current day} - \text{Adj close price of stock in previus day})}{\text{Adj close price of stock in previous day}} * 100$$

Mean Return = Average (Returns for the considered period)"

2. Standard Deviation: Standard deviation is the measure of volatility, measuring how much prices deviate from the average price. Here Risk is measured in terms of Standard Deviation.

   The formula for standard deviation is "

$$SD = \sqrt{\frac{\sum (r_i - r_{avg})^2}{n-1}}$$

   SD = Standard deviation, n = no. of daily returns

   r_i = daily returns of the concerned stock, r_{avg}= mean return of the stock

   $\text{Varience} = \text{SD}^2$"

3. Beta: Beta measures "the sensitivity of price of a share to the change in the value of the stock market index". For its calculation, following formula is used

$$\text{Beta} = \frac{\text{Covarience}(\text{Stock's \% return}, \text{Index's \% return})}{\text{Varience}(\text{Index's \% return})}$$

Hypotheses:

Hypothesis 1: Returns Performance

Null Hypothesis, H_0: "There is no difference between stock returns before and during Covid periods"

Alternate Hypothesis, H_1: "There is significant difference between stock returns before and during Covid periods"

Statistical Test Used: Paired sample t test is used to test the above hypothesis.

Hypothesis 2: Risk Performance

Null Hypothesis, H_0: "There is no difference between variance of stocks before and during Covid periods"

Alternate Hypothesis, H_1: "There is significant difference between variance of stocks before and during Covid periods"

Statistical Test Used: F-test has been used to test this hypothesis.

Hypothesis 3: Comparison between Sectors

Null Hypothesis, H_0: "There is no difference between returns of stocks of different sectors before and during Covid periods"
Alternate Hypothesis, H_1: "There is significant difference between returns of stocks of different sectors before and during Covid periods"

Statistical Test Used: Two-way ANOVA has been used to test this hypothesis.

Observation and Analysis

Automobile Sector

Pre-Covid:

Average annual Nifty return for pre-Covid period is 14.39%

Table 1 - Table Indicating Performance of Automobile Stocks: Pre-Covid

Sl.no	Security Name	Mean Annual Return (%)	Annualized Standard Deviation	Beta
1	Maruti Suzuki	8.04	30.08	1.39
2	Bajaj Auto	19.41	21.97	0.84
3	Mahindra & Mahindra	-16.89	29.35	1.42
4	Hero MotoCorp	-0.27	31.83	1.24
5	Eicher Motors	12.84	37.88	1.50
6	Bosch	-15.49	27.68	1.00
7	Tata Motors	17.07	59.45	2.07
8	MRF	10.16	23.45	0.91

9	TVS	-8.42	35.21	1.48
10	Ashok Leyland	-10.43	41.16	1.81

Average Annual Return from this sector before covid = 1.6 %

Average Risk (Standard Deviation) from this sector before covid = 33.80

During Covid:

Average annual Nifty return for during Covid period is 22.07%

Table 2 - Table Indicating Performance of Automobile Stocks: During Covid

Sl.no	Security Name	Mean Annual Return (%)	Annualized Standard Deviation	Beta
1	Maruti Suzuki	5.28	44.69	1.07
2	Bajaj Auto	26.91	37.35	0.80
3	Mahindra & Mahindra	37.64	48.83	1.05
4	Hero MotoCorp	23.78	42.41	0.87
5	Eicher Motors	24.98	41.42	0.88
6	Bosch	7.59	45.18	0.98
7	Tata Motors	58.76	62.01	1.33
8	MRF	15.25	35.69	0.80
9	TVS	35.01	42.98	0.76
10	Ashok Leyland	48.18	64.65	1.13

Average Annual Return from this sector during covid = 28.34%

Average Risk (Standard Deviation) from this sector during covid = 46.52

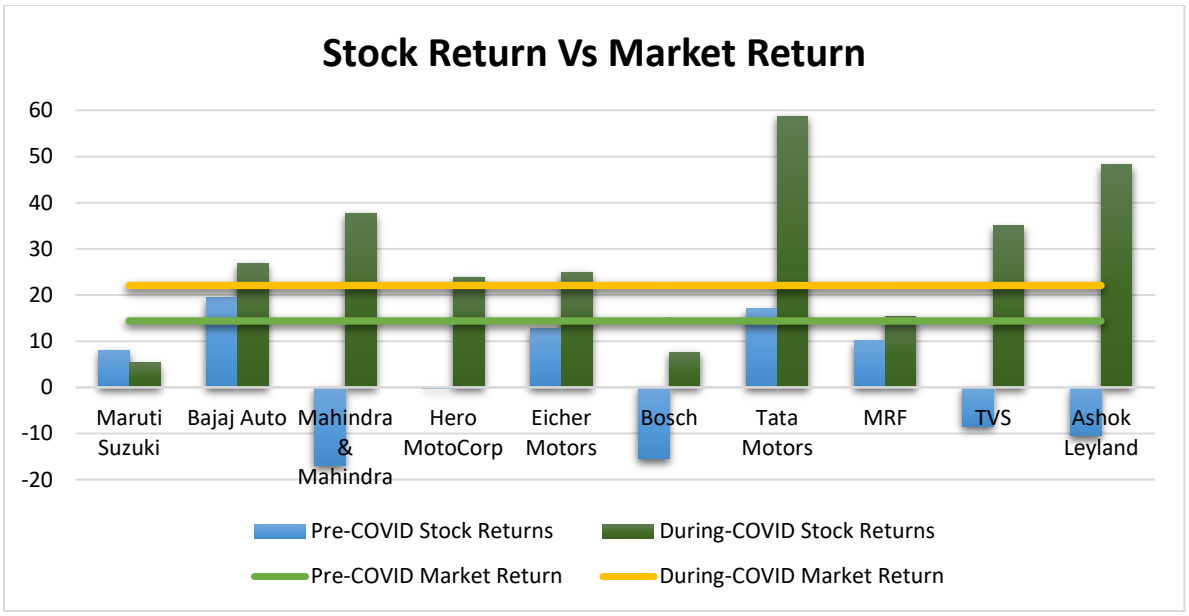

Chart 1 - Stock Vs Market Return (Automobile Sector): Pre-Covid Vs During Covid

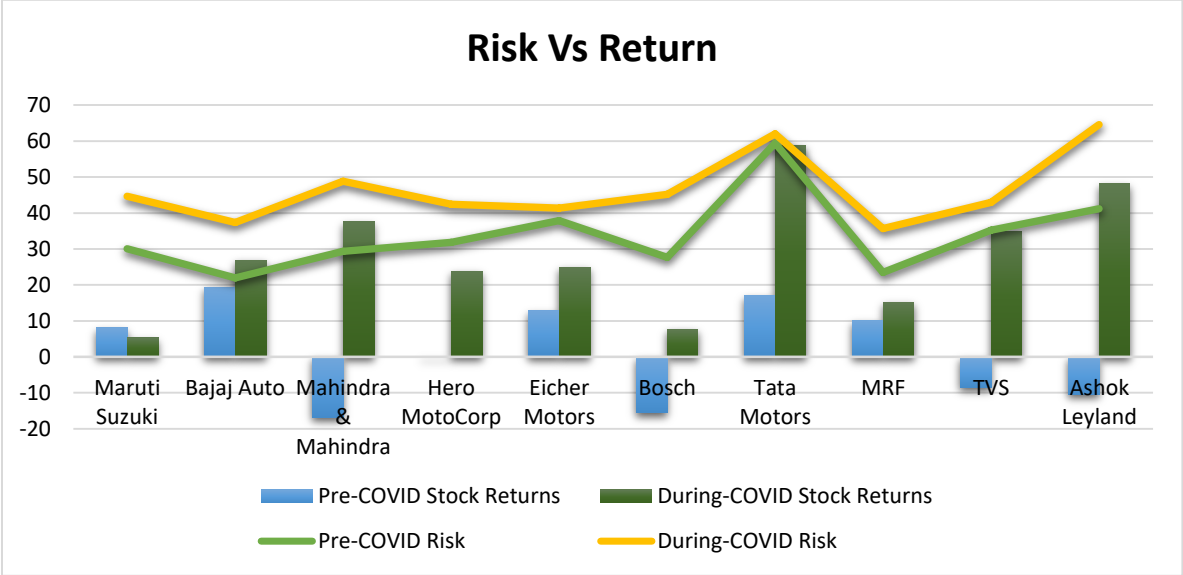

Chart 1 - Stock Risk and Return (Automobile Sector): Pre-Covid Vs During Covid

It is clear from Chart 1 that in pre covid period the lowest return in Automobile sector was given by the share of Mahindra and Mahindra whereas highest return was given by the stock of Bajaj Auto. When covid was going on, lowest return was given by share of Maruti Suzuki whereas the highest return was generated by Tata Motors.

Chart 2 indicates that in the time when there was no covid, the stock with highest risk was Tata Motors whereas lowest risk stock was Bajaj Auto. During covid times, the highest risk was shown by the stock of Ashok Leyland and lowest risk stock was MRF.

Beta:

Pre-Covid:

Low Beta Stocks (Beta value < 1) – "Bajaj Auto, MRF"

High Beta Stocks (Beta value > 1) – "Maruti Suzuki, Mahindra & Mahindra, Hero MotoCorp, Eicher Motors, Tata Motors, TVS, and Ashok Leyland"

During Covid:

Low Beta Stocks (Beta value < 1) – "Bajaj Auto, Hero MotoCorp, Eicher Motors, Bosch, MRF, TVS"

High Beta Stocks (Beta value > 1) – "Maruti Suzuki, Mahindra & Mahindra, Tata Motors, and Ashok Leyland"

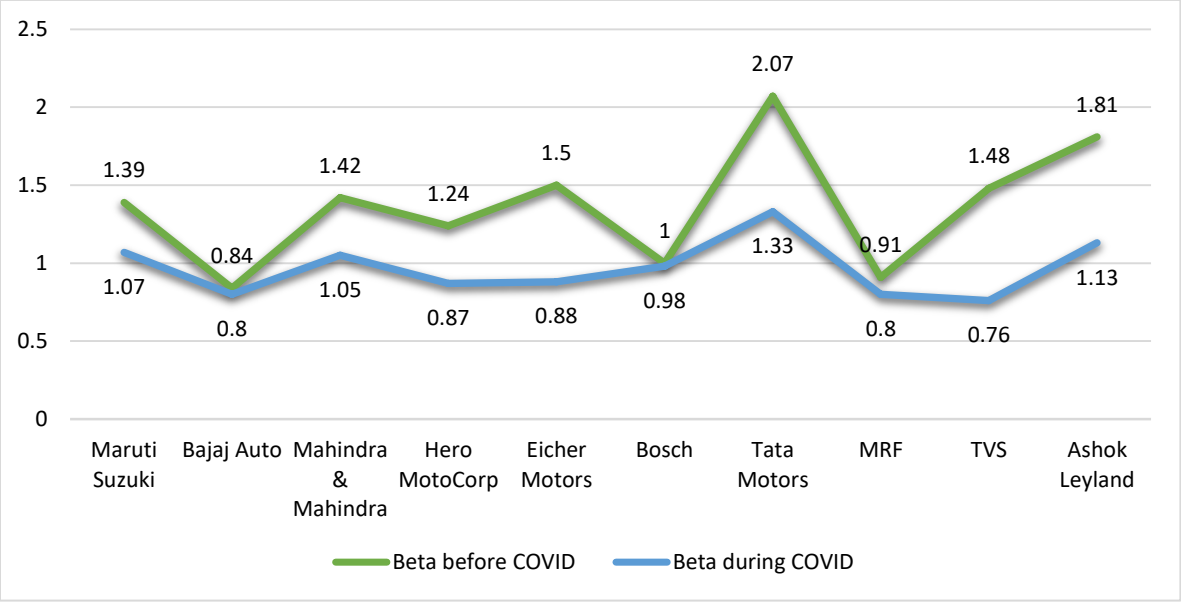

Chart 2 - Beta of Automobile Sector Stocks: Pre-Covid and During Covid

It is evident from chart 3 that in the pre covid period as well during covid period highest beta was of the stock of Tata Motors. The lowest beta in pre covid was of stock of Bajaj Auto whereas during covid the lowest beta was of TVS Ltd.

Hypothesis Testing:

Comparison of returns of Automobile stocks before and during Covid using Paired Sample t test

H_0 = "There is no difference between stock returns before and during COVID-19"
H_1= "There is significant difference between stock returns before and during COVID-19"

Result

t-Test: Paired Two Sample for Means (Source: Author's own computation)

	Before Covid	During Covid
Mean	0.00634739	0.11245331
Variance	0.00293945	0.00457897
Observations	10	10
Pearson Correlation	0.01554826	
Hypothesized Mean Difference	0	
df	9	
t Stat	-3.8993886	
P(T<=t) one-tail	0.00181139	
t Critical one-tail	1.83311293	
P(T<=t) two-tail	0.00362278	
t Critical two-tail	2.26215716	

P value < 0.05 (α) => Hence we do not accept the Null Hypothesis
i.e., There is difference between stock returns before and during COVID-19.

Hence, for Automobile sector it is established that there is a significant difference between returns on stock before and during COVID-19**.**

Comparison of risks of Automobile stocks before and during Covid using F Test

H_0 = "There is no difference between variance of stocks before and during COVID-19"
H_1= "There is difference between variance of stocks before and during COVID-19"

F-Test: Two-Sample for Variances (Source: Author's own computation)

	Pre-Covid	During Covid
Mean	2.12964473	2.93061961
Variance	0.4640776	0.36842119
Observations	10	10
df	9	9
F	1.25963872	
P(F<=f) one-tail	0.36828115	
F Critical one-tail	3.1788931	

F value ⊁ F Critical value: Therefore, we accept null hypothesis.
i.e., There is no significant difference between variance of stocks before and during COVID-19.

Hence, for Automobile sector it is found that there is no statistically significant difference between stock risks before and during COVID-19.

Banking Sector

Pre Covid:

Average annual Nifty return for Pre Covid period is 14.39%

Table 3 - Table Showing Performance of Stocks of Banking Sector: Pre-Covid

Sl. no	Security Name	Mean Annual Return (%)	Annualized Standard Deviation	Beta
1	HDFC Ltd	22.33	19.14	0.99
2	Kotak Mahindra Bank Ltd	32.55	24.20	1.00
3	ICICI Ltd	38.26	26.89	1.33
4	State Bank of India	18.80	32.79	1.60
5	Axis Bank Ltd	25.34	26.29	1.29
6	Bandhan Bank Ltd	22.07	43.62	1.33
7	Yes Bank Ltd	-77.01	92.11	1.71
8	IndusInd Bank Ltd	-1.85	38.92	1.74
9	IDBI Bank Ltd	-33.03	48.92	1.31
10	Punjab National Bank	-5.35	39.33	1.65

Average Annual Return from this sector before covid = 4.21%

Average Risk (Standard Deviation) of this sector before covid = 39.22

During Covid:

Average annual Nifty return for During Covid period is 22.07%

Table 4 -Table Showing Performance of Stocks of Banking Sector: During Covid

Sl. no	Security Name	Mean Annual Return (%)	Annualized Standard Deviation	Beta
1	HDFC Ltd	23.16	40.18	1.09
2	Kotak Mahindra Bank Ltd	18.10	43.82	1.08
3	ICICI Ltd	26.42	51.98	1.45
4	State Bank of India	23.87	48.67	1.21
5	Axis Bank Ltd	17.38	60.17	1.54
6	Bandhan Bank Ltd	6.65	77.50	1.49
7	Yes Bank Ltd	-12.75	115.81	-0.08
8	IndusInd Bank Ltd	11.39	83.20	1.65
9	IDBI Bank Ltd	23.40	64.19	0.97
10	Punjab National Bank	-31.95	49.17	0.79

Average Annual Return from this sector during covid = 10.57%

Average Risk (Standard Deviation) from this sector during covid = 63.47

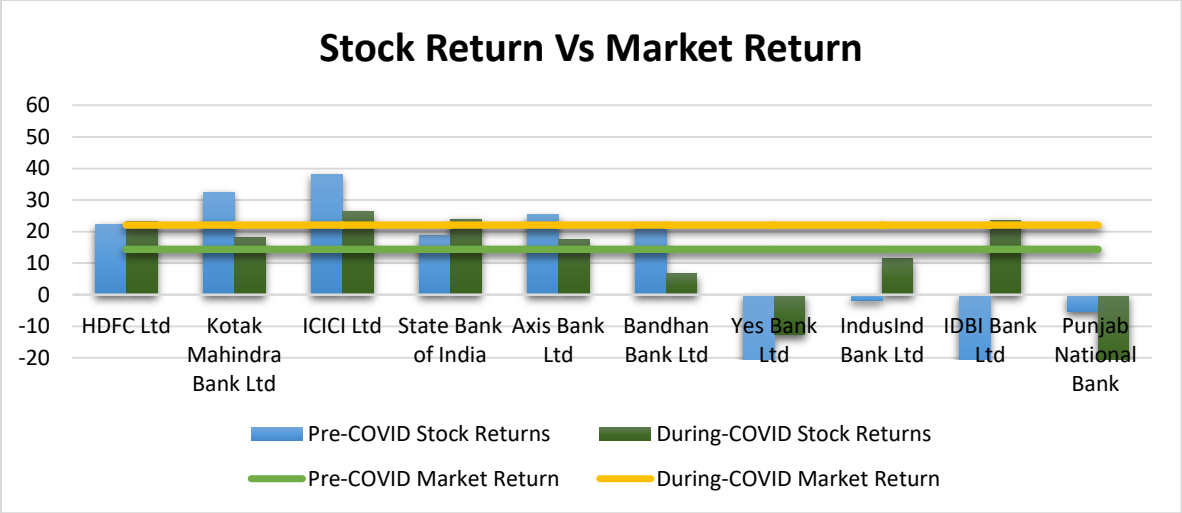

Chart 4- Stock Vs Market Return (Banking Sector): Pre-Covid Vs During Covid

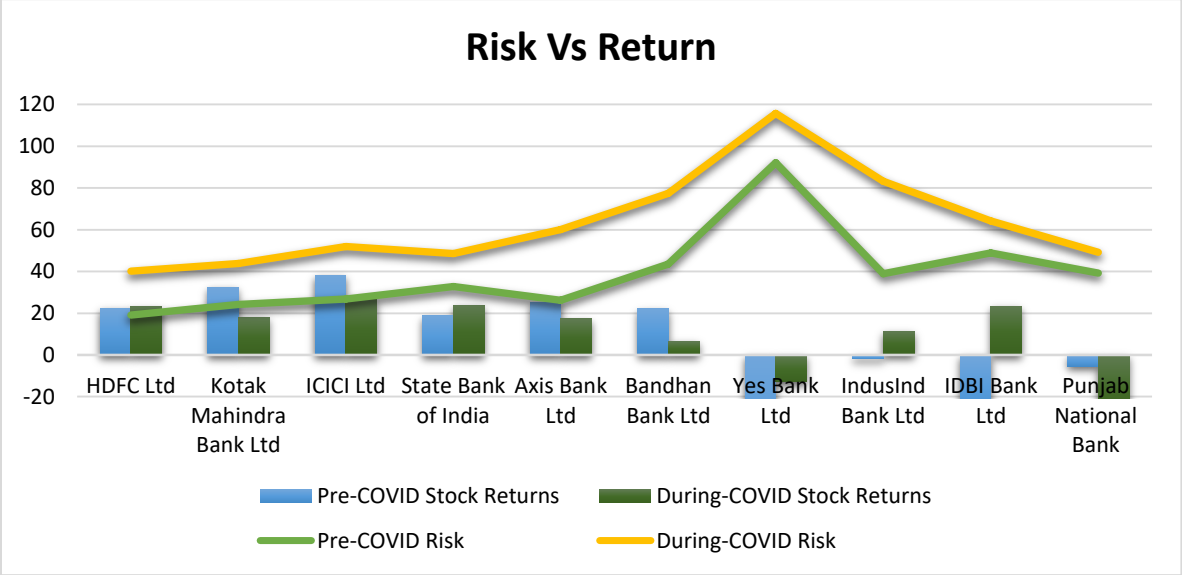

Chart 5 - Stock Risk and Return (Banking Sector): Pre-Covid Vs During Covid

It is evident from Chart 4 that lowest return in banking sector was given by Yes Bank whereas highest return was given by the stock of ICICI Bank Ltd. When Covid was going on, lowest return was given by share of Punjab National Bank Ltd. whereas highest return in this sector was given by ICICI Bank Ltd.

Graph 5 indicates that most risky share before covid as well as during covid in banking sector was Yes Bank whereas least risky stock was HDFC Bank Ltd. before covid as well as in time when covid was going on.

Beta:

Pre-Covid:

Low Beta Stocks (Beta value < 1) – "HDFC Ltd"

High Beta Stocks (Beta value > 1) – "Kotak Mahindra Bank, ICICI Ltd, SBI, Axis Bank Ltd, Bandhan Bank Ltd, Yes Bank Ltd, IndusInd Bank Ltd, IDBI Bank Ltd, Punjab National Bank Ltd"

During Covid:

Low Beta Stocks (Beta value < 1) – "Yes Bank Ltd, IDBI Bank Ltd, Punjab National Bank Ltd"

High Beta Stocks (Beta value > 1) – "HDFC Ltd, Kotak Mahindra Bank, ICICI Ltd, SBI, Axis Bank Ltd, Bandhan Bank Ltd, IndusInd Bank Ltd"

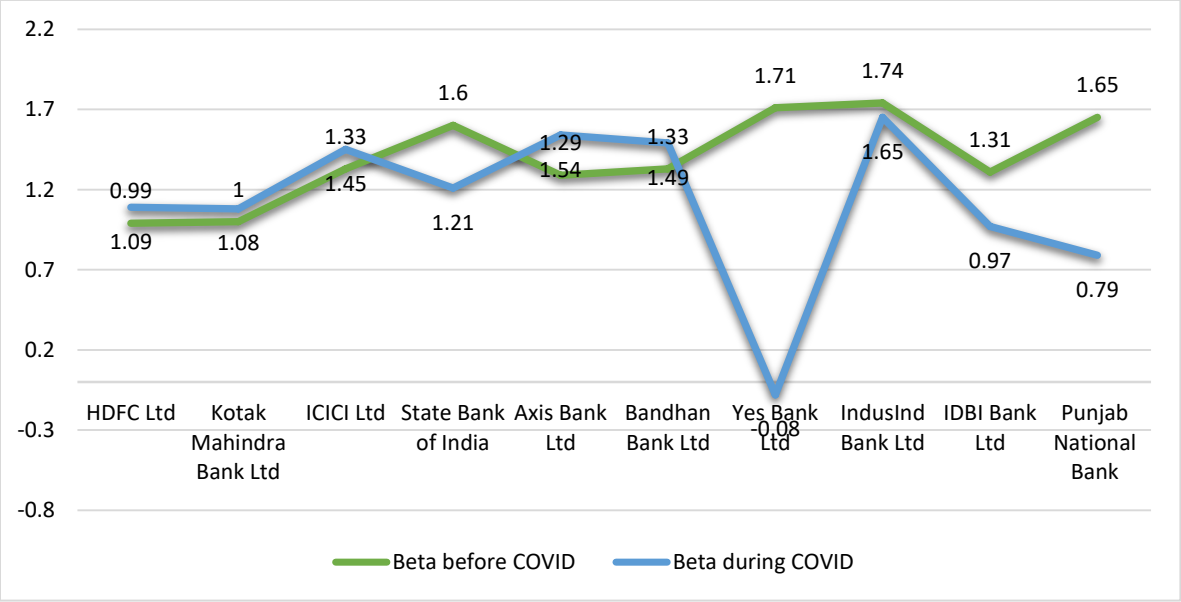

Chart 6 - Beta of Banking Sector Stocks: Pre-Covid and During Covid

It is evident from the above chart that IndusInd Bank has highest Beta in before Covid period and also in during Covid period. HDFC Ltd has lowest beta in pre-Covid period and Yes Bank Ltd in during Covid period

Hypothesis Testing:

Comparison of returns of Banking stocks before and during Covid using Paired Sample t test

H_0 = "There is no difference between stock returns before and during COVID-19"
H_1= "There is significant difference between stock returns before and during COVID-19"

t-Test: Paired Two Sample for Means (Source: Author's own computation)

	Before Covid	During Covid
Mean	0.01671172	0.04193066
Variance	0.01991109	0.00563786
Observations	10	10
Pearson Correlation	0.50641383	
Hypothesized Mean Difference	0	
df	9	
t Stat	-0.655138	
P(T<=t) one-tail	0.26438318	
t Critical one-tail	1.83311293	
P(T<=t) two-tail	0.52876637	
t Critical two-tail	2.26215716	

P value $\not<$ 0.05 (α) => Hence, we accept Null Hypothesis.
i.e., There is no significant difference between returns on stocks before and during COVID-19

Hence, for banking sector it is found that there does not exist any significant difference between stock returns before and during COVID-19**.**

Comparison of risks of Banking stocks before and during Covid using F Test

H_0 = "There is no difference between variance of stocks before and during COVID-19"
H_1= "There is significant difference between variances of stocks before and during COVID-19"

F-Test Two-Sample for Variances (Source: Author's own computation)

	During Covid	Pre-Covid
Mean	3.99812558	2.47068944
Variance	2.12601745	1.71954986
Observations	10	10
df	9	9
F	1.23638023	
P(F<=f) one-tail	0.37854718	
F Critical one-tail	3.1788931	

F value ⋡ F Critical value: Therefore, we accept null hypothesis.
i.e., There is no significant difference between variance of stocks before and during COVID-19

Hence, for banking sector it is found that there is no difference between stock risks before and during COVID-19.

Sector wise Analysis

Comparison of Sectors in Pre-Covid and During Covid Period:

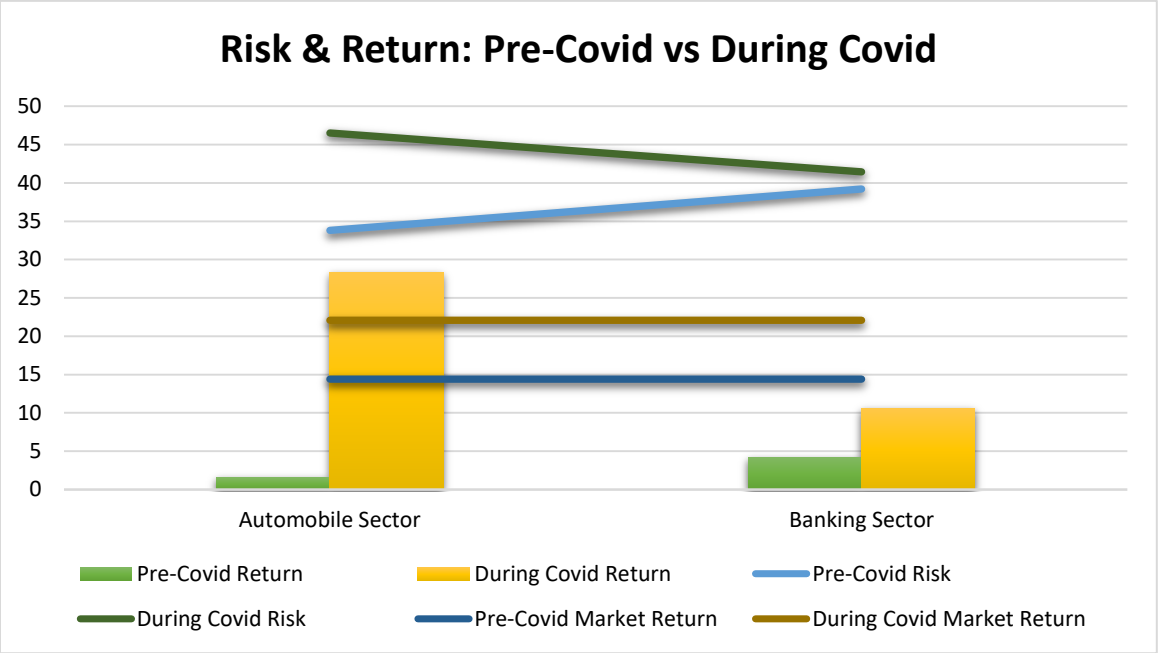

Chart 7 - Risk and Return of Sectors: Pre-Covid Vs During Covid

It is clear from Chart 7 that in pre-covid period banking sector generated better returns vis-a-vis automobile sector. On the other hand, during covid period, automobile sector generated better return than banking sector.

Hypothesis Testing

Comparison of returns of stocks across all sectors before and during covid using Two Factor ANOVA with Replication

H0 = "There is no difference between returns of stocks of automobile and banking sectors before and during COVID-19"

H1= "There is significant difference between returns of automobile and banking sectors before and during COVID-19"

Anova: Two-Factor With Replication (Source:
Author's own computation)

SUMMARY	Pre-Covid	During Covid	Total
Automobile Sector			
Count	10	10	20
Sum	0.0634739	1.12453311	1.18800701
Average	0.00634739	0.11245331	0.05940035
Variance	0.00293945	0.00457897	0.00652411
Banking Sector			
Count	10	10	20
Sum	0.16711717	0.41930655	0.58642373
Average	0.01671172	0.04193066	0.02932119
Variance	0.01991109	0.00563786	0.0122695
Total			
Count	20	20	
Sum	0.23059107	1.54383967	
Average	0.01152955	0.07719198	
Variance	0.01085221	0.00614835	

(Source: Authors own computation)

ANOVA

Source of Variation	SS	df	MS	F	P-value	F crit
Sample	0.00904756	1	0.00904756	1.09443997	0.30246323	4.11316528
Columns	0.04311555	1	0.04311555	5.21548032	0.02839028	4.11316528
Interaction	0.01635676	1	0.01635676	1.97859863	0.16811248	4.11316528
Within	0.29760628	36	0.00826684			
Total	0.36612615	39				

For Samples, i.e, between sectors, P value > 0.05: Therefore there is no significant difference between returns on stocks of different sectors.

For Columns, i.e, between pre-covid and during covid period, P value < 0.05: Therefore, there is significant difference between pre-covid and during covid period in terms of returns.

For Interaction, P value > 0.05: Therefore, we can conclude that there is no significant difference in interaction between different sectors and different time periods.

Hence, between all the sectors it is determined that there is significant difference between stock returns before and during COVID-19.

Findings

The study has many expected as well as surprising outcomes. Here are the key findings of the research:

1) It is observed that, in sector wise comparison, banking sector generated better returns when compared to automobile sector before covid period. On the contrary, during covid, automobile sector generated better return than banking sector. In terms of risk, banking sector had higher risk in pre-covid and automobile sector had higher risk in during Covid period.

2) In automobile sector, lowest return was given by the share of Mahindra & Mahindra whereas highest return was given by the stock of Bajaj Auto in pre covid period. When

covid was going on, lowest return was given by the stock of Maruti Suzuki whereas the highest return was yielded by share of Tata Motors. In the time when there was no covid, the stock with highest risk was Tata Motors whereas lowest risk stock was Bajaj Auto. During covid times, the highest risk was shown by the stock of Ashok Leyland and lowest risk stock was MRF. For automobile sector, it is established that there is significant difference between stock returns before and during Covid period but there is no statistically significant difference between stock risks before and during Covid periods.

3) In banking sector, lowest return was given by the share of Yes Bank whereas highest return was generated by the stock of ICICI Bank. When Covid was going on, lowest return was given by the share of Punjab National Bank whereas highest return in this sector was given by the stock of ICICI Bank. Before Covid most risky share was Yes Bank whereas the least risky stock was HDFC Bank. Same was the case in the time when covid was going on. For banking sector, it is established that there is no statistically significant difference between stock returns as well as their risks before and during covid periods.

4) In terms of their beta factors, some stocks in both the sectors have beta less than one (defensive stocks), while others have beta values more than one (aggressive stocks).

References

WHO. Coronavirus Disease (COVID-19) Outbreak Situation. 2020. Available online: https://www.who.int/emergencies/ diseases/novel-coronavirus (accessed on 24 December 2020).

Subramanyam, P., and Kalyan, N. B. (2018). A study of risk and return analysis of selected securities in India. International Journal of Engineering Technologies and Management Research, 5(4), 79-86.

Azimili, A. (2020). The impact of COVID-19 on the degree of dependence and structure of risk-return relationship: A quintile regression approach. Finance Research Letters.

Ahuja, Juhi. (2012). Indian Capital Market: An Overview with its Growth. VSRD International Journal of Business & Management Research. 2 (7), 386-399.

Ozili, P., & Arun, T. (2020). Spillover of COVID-19: Impact on the global economy. Munich Personal RePEc Archive. MPRA paper no. 99850.

R Ravi. (2020). Impact of COVID-19 on Indian stock market. BW Businessworld. New Delhi, India: ABP Group. http://www.businessworld.in/article/Impact-Of-COVID-19-On-The-Indian-Stock-Markets/11-05-2020-191755/.

Raja Ram, A. (2020). COVID-19 and stock market crash. Outlook Money. New Delhi, India: Outlook.

Hyun-Jung, B. (2020). S. Korea's economy faces tipping point as COVID-19 pandemic persists. The jakarta post Seoul, South Korea: The Korea Herald/Asian Networks.

Ashraf, B., 2020. Stock markets reaction to COVID-19: cases or fatalities?'. Research in International Business and Finance 54, 101249.

Alam, M. N., Alam, M. S., &Chavali, K. (2020). Stock Market Response during COVID-19 Lockdown Period in India: An Event Study. The Journal of Asian Finance, Economics and Business, 7(7), 131-137. https://doi.org/10.13106/jafeb.2020. vol7.no7.131 https://doi.org/10.13106/jafeb.2020.vol7.no7.131

M.H, Nikhitha., and Dr. Satyendra, P, Singh. A Study on Risk and Return Analysis of Prominent Stocks of Automobile and Pharmaceutical Sectors in India. Journal of Applied Management-Jidnyasa. Volume 12. Issue 2. 2020

Adda, J. (2016). Economic activity and the spread of viral diseases: Evidence from high frequency data. The Quarterly Journal of Economics, 131(2), 891-941. DOI: doi.org/10.1093/qje/qjw005 https://doi.org/10.1093/qje/qjw005

Rashmi Chaudhary, Priti Bakhshi and Hemendra Gupta (2020). The performance of the Indian stock market during COVID-19. Investment Management and Financial Innovations, 17(3), 133-147. doi:10.21511/imfi.17(3).2020.11

Lee, J. W., &Brahmasrene, T. (2018). An Exploration of Dynamical Relationships between Macroeconomic Variables and Stock Prices in Korea. Journal of Asian Finance, Economics and Business, 5(3), 7-17.

Retrieved from https://www.valueresearchonline.com/stocks/selector/sector/1/automobile/?custom-cols=ret1d%2Cpl52w%2Cph52w%2Cmcap%2Centval

Retrieved from https://www.valueresearchonline.com/stocks/selector/sector/8/financial/?industry=10&custom-cols=ret1d%2Cpl52w%2Cph52w%2Cmcap%2Centval

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