Risk-Return Profile of Select Banking Securities and Its Impact on the Sensex – A Pre and During Covid analysis in India

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Abstract

The banking system plays an important role in the growth of each country's economy, and Indian banking sector is not exceptional. It is a known fact that the Covid-19 pandemic has changed the risk perspectives and preferences of the investors. Given the background, the study is undertaken to evaluate the risk-return profile of the Indian banking securities pre Covid-19& during Covid-19 period. Five banking companies 'securities have been selected based on their market capitalization as sample for the current study. By talking the monthly closing prices of the sample companies, we have calculated monthly returns. To achieve the objectives various statistical tools such as descriptive statistics, Beta-coefficient, correlation and regression analysis have been used. The investors constantly seek the highest possible return with lowest risk. Kotak Mahindra Bank is found to be a good investment opportunity for the investors in pre Covid period. Whereas, during Covid period, the investors' selection would depend upon which risk class the investor belongs. If the investor is risk-averse, he may select HDFC Bank, if investor is risk-neutral he may select SBI and if the investor is a risk-seeker, still he would select SBI security for investment. In pre-Covid period, banking stocks' performance had a positive impact on the SENSEX performance, whereas, during Covid period, it has been found to have a negative impact. This study focused on risk-return analysis of selected Indian banking companies' securities. The study would aid both the existing as well as potential investors by allowing them to make better and informed investment decisions.

Keywords: *Risk-Return Analysis; Banking, Sensex; Investors, Covid-19*; *Beta Coefficient.*

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Introduction:

The Indian capital market has become one of the most dynamic and efficient market in the world today. It offers a platform where trading of different financial instruments is done. The capital market basically has two segments: the primary market and the secondary market. Primary market, also known as new issues market is the market where the shares are first time offered to the public through Initial Public Offerings (IPOs) and Follow-on Public Offerings (FPOs). The secondary market, which is also known as stock market, is a market in which the already listed stocks are being traded.

The stock market is much volatile and as such the trading in the stock market involves risk. The market movement can be captured by observing the performance of the leading stock exchanges' indices like SENSEX, NIFTY. SENSEX i.e. sensitivity index of thirty blue chip companies stocks listed on Bombay Stock Exchange (BSE) is a leading indicator of the stock market. When sensex performs well then this indicates that the economy is doing well and vice versa. Sensex's performance depends on the performance of the stocks included in it. Sensex includes stocks from various major sectors of the

economy, such as automobile, pharmaceuticals, steel, banking etc. to name a few.

As per the latest (August, 2022) composition of sensex companies, out of thirty companies, six are banking companies, five are software companies, three are from power and energy, two each from finance, pharma, FMCG and automobile industry and one each are paints, telecommunication, financial institution, engineering, food beverages, steel, consumer durables and cement companies. So, the banking companies' performance largely determines the performance of Sensex.

Banking sector plays a pivotal role in the development of the economy of a nation by taking deposit from the surplus units and lending to the deficit units, through credit creation etc.

Literature review:

Chel -Ho Park and Scooth Irwin in their study in 2014 reviewed the impact of profitability on the technical analysis. To achieve this purpose, the report exhaustively reviews check, theoretical and empirical studies regarding technical trading strategies. They closely examining the survey research that looked into the opinion and experiences of market participant about technical analysis. Foreign exchange markets, and that about 30% to 40% of practitioners appear to believe that technical analysis is an important factor in determining price movement at shorter time horizons up to 6 months.

Rashinkar and Divya in 2014, tried to study the Market Risk Analysis of selected Banking Stock in India with a sample size of five nationalized banks in India. The banks include SBI, IDBI, Syndicate Bank, PNB, Bank of Baroda were taken for the study period was July 2013 to March 2014. They applied Beta Coefficient as tool for the analysis of how much the stock's prices moved compared to the market. The results of the study revealed that the beta coefficient of SBI, IDBI, and syndicate bank were negative which infers that

these stocks are moved against the market and less affected by market risk. It was also found that the betas of PNB & Bank of Baroda were more than one and it indicates that these stocks were exposed to high market risk.

Premachandran, 2016 conducted a study on Volatility and Return of Indian Banking sector index and also analyzed risk and return of 12 banks listed in Bank Nifty. The study period was 1st April 2015 to 31st March 2016. Daily return Standard Deviation and Beta were the analysis method utilized to quantify stock price volatility. The study finding showed that all the selected sample banks beta beta values were higher than one, with the exception of HDFC Bank that bank stock appear to be much more volatile than the market.

Dr. Pramod Kumar Patjoshi in 2016, analyzed the risk and return evaluation for four selected bank stocks which are listed on BSE for a period of fifteen years. The study was conducted to analyze the relationship between the risk and returns of the bank stocks and Sensex. This study's used various statical tools like correlation, t-test & regression for data analysis. From the study they revealed that the Sensex had high returns when compared to the selected stocks. Some stocks had positive correlation and some stocks had negative correlation with the Sensex returns. They concluded that the banking stocks and the Sensex change in the same direction.

Dr. E. Rajesh 2019 An analysis of the risk and return for NSE Nifty banks stocks: This study main purpose was examining the banks stock movement in respect of Nifty 50 Index and learn the typical return and risk of each stock. This study's use various techniques of statistical tools: Mean, Standard Detection, Beta & Correlation. This study's conclusion showed that the average of daily returns for the NSE Nifty 50 Index for the study period was positive. However, all securities average returns are negative except ICICI bank.

Lobo and Bhat S. in 2021, they assessed the risk-return profile of the securities in the Indian Financial Services sector. India Info Line Finance Ltd. (IIFL Finance), according to the study, has offered the highest monthly returns

with a high beta value. Additionally, the tested hypothesis reveals that there exists a significant difference in the monthly return of the S &P BSC Finance Index and JSW Holding.

The dreaded pandemic has left its impact so wide and deep that the stock market in general and economy as a whole of every country are still struggling to come out to the normalcy. The risk-return pattern of most of the stocks have been changed during COVID period as compared to the pre-COVID period. The upswing in stock market volatility during pandemic is also very observable phenomena. In this regard, the study attempts to analyze the pre and during covid period's the risk-return profile of five banking securities included in the SENSEX and how these securities return impact the overall return of sensex.

The followings are the main objectives of the study:

1. To analysis the risk and return of select banking securitiesin pre and during Covid periods.
2. To compare risk and return of sample companies with SENSEX in pre and during Covid periods.
3. To examine the relationship between the SENSEX and banking securities return in pre and during Covid periods.
4. To identify the best investment alternative from the select banking securities in pre and during Covid periods.

Research design & methodology:

Top five sample banking companies have been selected based on their market capitalization and these five banking companies are also included in the sensex. The sample banking companies are given in the following table.

Table 1: List of Sample of Companies

Sl. No	Name of the Companies	Market Capitalization (Rs. In Cr.)
1	HDFC Bank	617499
2	Kotak Mahindra Bank ltd.	283464
3	ICICI Bank	266974
4	State Bank of India	260331
5	Axis Bank ltd.	176669

Source: Compiled by the authors

Data Collection & Period of Study

This Research is based on secondary data gathered from www.bseindia.com from January 2018 to February 2020 (pre Covid) & March 2020 to April 2022 (during covid).

Tools Used for Data Analysis

- Each month's closing price is used to compute the individual security return, which is calculated using the formula:

  Return of individual company = [(Current month's closing price – Previous month's closing Price)/Previous month's closingprice] *100

  The following formula is used calculate the market rate of return:

  Return on Market **(SENSEX)** = [(Current month's closing SENSEX value – Previous month's closing SENSEX value)/Previous month's closingSENSEX value] *100
- The standard deviation, i.e., one of the absolute measures of dispersion has been used as a proxy for risk.
- The return and risk based on SENSEX have been taken as the measurement of market return and market risk.
- The measure of individual stock's sensitivity to the market index movement is calculated using the following formula:

  Beta (β) = Covariance between individual security's return & market return / Variance of market return.

Beta is considered as the main measurement statistic of systematic risk. Beta is the stock's sensitivity to the market index movement. In simple words Beta shows how a stock's return changes with respect to movement in the stock index. Beta measures the stocks' risk in relation to the overall market movements.

- ✓ If **β > 1**, it means that the value of that security is changed in greater rate than the rate of change of stock index in the market. In this security investment become very risky, and such securities are called aggressive security.
- ✓ If **β < 1**, means that the value of that security is changed in lesser rate than the rate of stock index in the market. In this security investment is less risky and the securities are called defensive security.
- ✓ If **β = 1**, means that the rate of which the stock index is changes in the market. The rate of the securities equal risk in the market, and such securities are called neutral securities.
- ✓ If **β = 0**, it means there is no risk of the securities, and such securities are called risk-free securities.

- The correlation coefficient is used to figure out how two variables are related linearly. The measure of the correlation coefficient is computed by using the following formula:

$$r = \frac{\sum (x_i - \bar{x})(y_i - \bar{y})}{\sqrt{\sum (x_i - \bar{x})^2 \sum (y_i - \bar{y})^2}}$$

r = correlation coefficient
x_i = values of the x-variable in a sample
$\bar{x}$ = mean of the values of the x-variable
y_i = values of the y-variable in a sample
$\bar{y}$ = mean of the values of the y-variable

- One of the main objectives of the study is to know how the banking securities' return impacted the SENSEX return in pre-Covid and during Covid period.For this purpose, Sensex-return has been taken as dependent variable and bank-returns have been taken as independent variable.

$$SENSEX_t = a + \beta * BR_t + e_t$$

Where, $SENSEX_t$= Return from SENSEX for the month t

BR_t= Return from Banking Securities for the month t

a& b = Constant term and the coefficient of BR respectively

e_t= Error term.

The Ordinary Least Square (OLS) method is applied to estimate the α& β coefficients.

Data analysis & finding:

Below the table provides the calculated descriptive statistics of the monthly return of the sample securities-

Table 2: Descriptive Statistics of Returns of the sample Securities

Company Name	Maximum		Minimum		Mean		Standard Deviation	
	*P.C	**D.C	*P.C	**D.C	*P.C	**D.C	*P.C	**D.C
HDFC Bank	11.2552	21.7373	-7.9545	-26.8003	0.6284	1.0640	5.0200	9.4149
Kotak Mahindra Bank ltd.	15.4253	22.8774	-11.0359	-19.9611	2.0505	0.8341	5.0169	9.7713
ICICI Bank	16.4262	20.4433	-11.1962	-34.5832	2.0585	2.2750	7.7535	11.5741
State Bank of India	18.9249	38.3443	-17.5727	-34.9785	0.3343	2.9428	9.3255	14.5453
Axis Bank ltd.	18.0149	22.2786	-16.4985	-45.5615	1.1064	1.2137	7.6608	13.4464

Source: Own Computation

*P.C = Pre Covid-19 Period
**D.C = During Covid-19 Period

It is depicted in table above that, the pre Covid period January 2018 to February 2020, the entire sample has generated positive return. It is also observed that average monthly return of ICICI BANK is high accounting for 2.0585% whereas; Kotak Mahindra Bank produced the lowest monthly return of 0.8341%

In during Covid period March 2020 to April 2022, covid has impact in the mean return of the Kotak Mahindra Bank ltd because the average return has decreased during the covid period as compared to pre covid period.

In very small increased in the return, it means Covid has no impact in the average return of the Axis Bank ltd.

The Standard Deviation assess the likelihood of risk that the investment will diverge from its average return. The lower SD of an investment, it is considered to be more stable and less volatile. The higher SD suggests more fluctuation from the average return and more volatile. The SD of Kotak Mahindra Bank ltdis the lowest (5.0169). As a result, investing in Kotak Mahindra Bank ltdcarries a lower risk than investing in all the other sample companies. It is also notice that HDFC Bankhigher risk among all the companies as the SD of the company has recorded the highest (10.2528) during the previous Covid period.

The Standard Deviation has much increased in during Covid period as compare to pre Covid period, it measures that the risk will also increase. Volatility of the fluctuation in the price during covid period is more compare to pre covid period. It means that covid has great impact on the volatility of all companies.

Table 3: Risk and return of sample securities in comparison with SENSEX

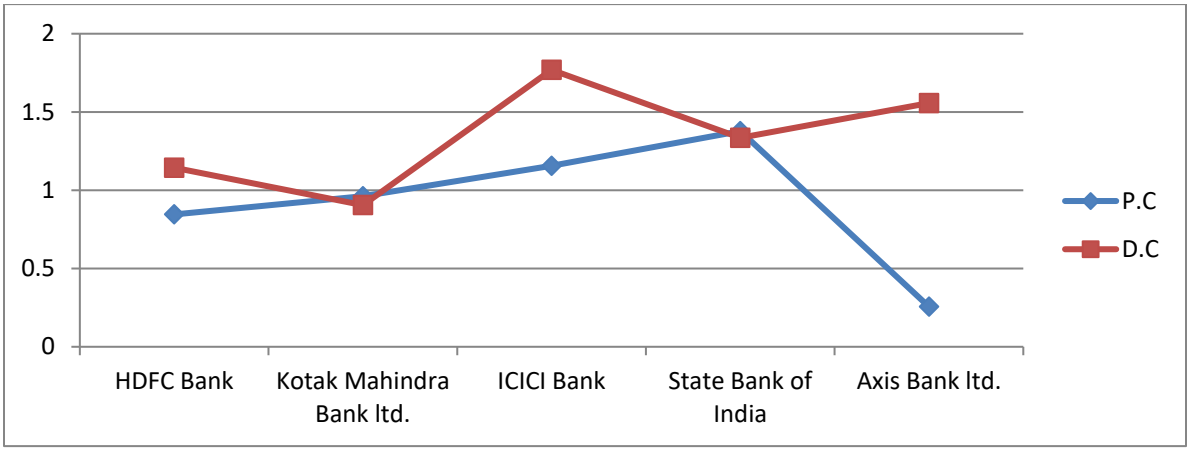
Particulars	HDFC Bank		Kotak Mahindra Bank		ICICI Bank		SBI		Axis Bank ltd		SENSEX	
	P.C	D.C	P.C	D.C	P.C	D.C	P.C	D.C	P.C	D.C	P.C	D.C
Mean	0.6284	1.0640	2.05 05	0.8341	2.0585	2.2750	0.3343	2.9428	1.1064	1.2137	0.5290	1.8011
Co Variance	13.5340	57.8464	15.3829	45.3310	18.4909	57.2958	22.0411	66.8764	20.6780	77.9882	_	_
Variance	25.2009	88.6396	46.0617	95.4773	60.1172	88.6396	86.9651	211.5659	58.6874	180.8046	15.9983	50.0998
Beta (β)	0.8459	1.1436	0.9615	0.9048	1.1558	1.7692	1.3777	1.3348	0.2559	1.5566	1.0000	1.0000

Source: Own Computation

From the above table it is found that, security of HDFC Bank, Kotak Mahindra Bank, ICICI Bank and Axis Bank their returns are better than market-return (SENSEX). So, it can be said that, these securities over performed than the market return. It is also notice that SBI security's return is less than market return, it means SBI's security has under-performed than the market return in pre Covid period.

In during Covid period securities of ICICI Bank and SBI bank's returns are more as compare to market return, so these securities have over performed. Whereas, HDFC Bank, Kotak Mahindra Bank and Axis Bank have underperformed due to less return as compare to market return.

Figure 1: Beta-Coefficient of Pre-Covid (P.C) & During Covid (D.C)



Source: Own Compilation

Pre Covid: From the above table 3 and figure 1, it is observed that the volatility of two bank (ICICI & SBI) is high as compare market movement, so such securities are aggressive in nature and volatility of three banks (HDFC, Kotak & ICICI) are less as compare market movement, so these securities are defensive in nature.

During Covid: From the above table and graph, it is also observed that the volatility of four banks (HDFC Bank, ICICI Bank, SBI & Axis Bank ltd) are high as compare to market movements, so such securities are aggressive security and volatility of one bank (Kotak) is less as compare market movement, so that security may be regarded as defensive security.

Table 4: Correlation between SENSEX return and individual companies' return

INDEX/COMPANY NAME	HDFC		KOTAK		ICICI		SBI		AXIS	
	P.C	D.C	P.C	D.C	P.C	D.C	P.C	D.C	P.C	D.C
SENSEX	0.7009	0.8941	0.6389	0.6816	0.6201	0.8204	0.6146	0.6755	0.7018	0.8521

Source: Own Computation

From the above table it is clear that, in pre Covid period the average monthly return of the SENSEX index is positively correlated with the monthly return of all sample banking securities. The monthly return of the SENSEX index is

highly correlated with Axis bank (0.7018). On the other hand, SENSEX has registered a lower correlation with SBI (0.6146).

Whereas, during the Covid period the averages monthly return of the SENSEX index is positively correlated with the monthly return of all banking securities also their relation is better than as compare to pre Covid period, highly correlated with HDFC Bank (0.8941) and on the other hand SENSEX has registered a lower correlation with SBI (0.6755).

Table 5: The summery result of OLS Regression

Dependent Variable			SENSEX	
Method			OLS	
Variable	Coefficient		P-Value	
	P.C	**D.C**	**P.C**	**D.C**
Intercept	0.3101	0.6877	0.2979	0.0425
Bank return	0.2459	-0.0952	0.0000	0.0010
R-square			0.2755	0.0738
F-statistic			48.6834	11.2852
Significance F			0.0000	0.0010

Source: Own Computation

The above table represent the summery result of the regression analysis. In pre Covid the intercept is found to be 0.3101, it means if the explanatory variable i.e., BR is taken to be nil, then SENSEX return will be 0.3101. But the probability value of the coefficient (0.2979) is not statistically significant at 5% level of significance (as the p-value>0.05).

During the Covidperiod the intercept is 0.6877, it means if the explanatory variable i.e., BR is taken to be nil, then SENSEX return will be 0.6877. The probability value of the coefficient (0.0425) is found to be statistically significant at 5% level of significance (as the p-value<0.05)**.**

The coefficient of independent variable bank-return shows a **positive impact in pre Covid period** on the SENSEX return, the coefficient of the SENSEX is found to be 0.2459 with a p-value of 0.0000, which is statistically significance even at 1% level of significance (since p value<0.01).

The coefficient of independent variable bank-return shows a **negative impact in during Covid period** on the SENSEX return, the coefficient of the SENSEX is found to be -0.0952 with a p-value of 0.0010, which is statistically significant (since p value<0.05).

In pre Covid, the R-square value i.e., the coefficient of determination is found to be 0.2755, it indicates 27.55% variation of dependent variable (SENSEX) is cause due to the variation of independent variable (Bank Return).

During Covid period the R-square value i.e., the coefficient of determination is found to be 0.0738, which indicate that as much as 7.38% variation of dependent variable (SENSEX) is cause due to the variation of independent variable (Bank Return).

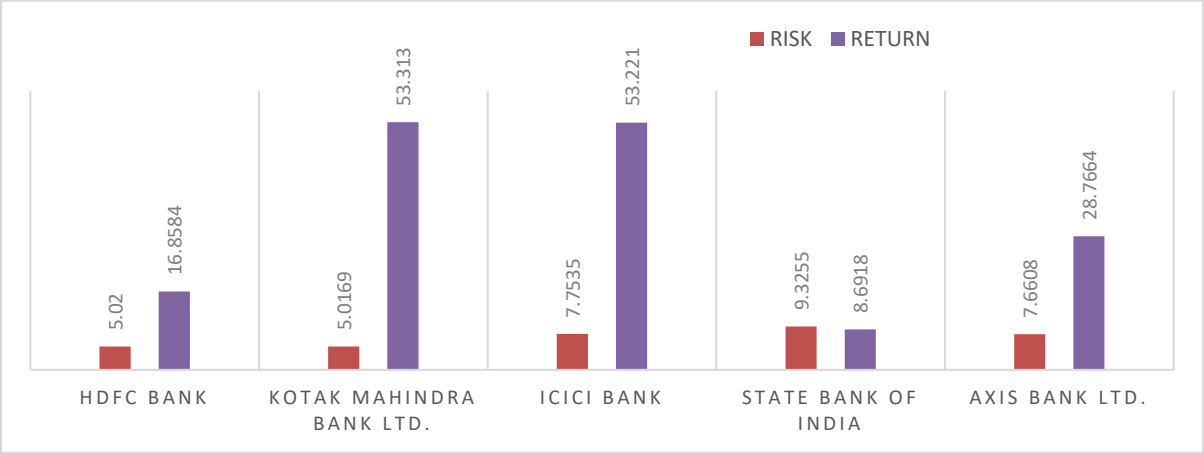
The P-value of F-statistic shows weather the overall model is statically significant or not. Here the P-values of F-statistic for both the period (pre & during Covid) shows that the models are statistically significant, because the P-values in both the cases are less than 0.05, so this implies that both the models are significant at 5% level.

Table 6: Risk and Return analysis of the sample securities pre Covid-19 & during Covid-19 period

NAME OF THE COMPANIES	**RISK**		**RETURN**	
	P.C	**D.C**	**P.C**	**D.C**
HDFC Bank	5.0200	9.4149	16.8584	27.6640
Kotak Mahindra Bank ltd.	5.0169	9.7713	53.313	21.6866
ICICI Bank	7.7535	11.5741	53.221	59.1500
State Bank of India	9.3255	14.5453	8.6918	76.5128
Axis Bank ltd.	7.6608	13.4464	28.7664	31.5562

Source: Own Computation

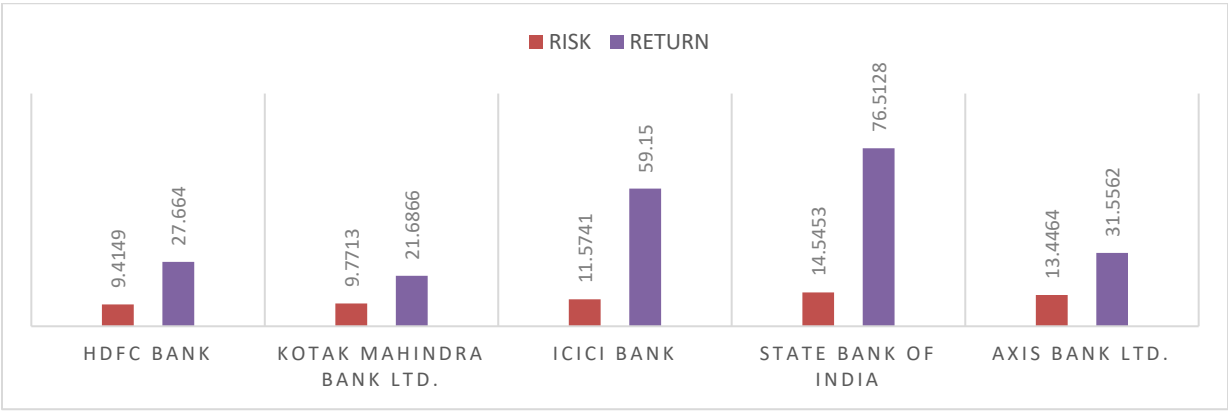
Figure 2: Risk and Return profile of the sample securities pre Covid-19 period



Source: Own Compilation

The above table and chart depicts the Risk & Return of select banking securities in pre Covid period. From the above it is notice that Kotak Mahindra Bank has the highest return, it is also observed that State Bank of India has highest risk. So, the investor must consider the risk factor before investing in SBI. All the investors irrespective of the risk class he may belong to, invest in the security which has maximum return with minimum risk. From the above analysis it may be suggested that the investors mayinvest in the securities of Kotak Mahindra Bank as the risk is minimum and the return is maximum in that security in pre pandemic (Covid-19) period.

Figure 3: Risk and Return profile of the sample securities during Covid-19 period



Source: Own Compilation

From the above table and chart, it is clear that State Bank of India has both highest Return &highest Risk than other securitiesduring pandemic (Covid) period. As the risk-return relationship of the securities is direct (as the correlation coefficient between securities' risk and return during Covid period is found to be 0.71), the security which the investors will select for investment would depend upon the risk class the investor belongs to. Since we know nothing about the risk class of the investors, either of the following three alternative decision may arise-

I. If the investor is **risk-averse**, he may select security of ***HDFC Bank*** with lower risk even though he may earn a lower return as a result.
II. If the investor is **risk-neutral,** he may select security of ***State Bank of India*** with highest return.
III. If the investor is **risk-seeker** he may select ***State Bank of India*** with highest risk and highest return.

Conclusions:

All the investors in general, irrespective of the risk class he may belong to, look for the investment alternative that gives highest return with lowest possible risk. In this study, it is found that the Kotak Mahindra Bank had highest return and lowest risk in pre-Covid period. Whereas, during Covid period the investment alternatives are found to have direct relationship between risk and return. Hence, selection of the security during covid period depends on the risk class of the investors. Based on the systematic risk analysis (β) it is found that ICICI and SBI had beta greater than one, indicating that these securities are aggressive in nature in pre-covid period, and rest of the three securities were defensive in nature during the said period. During the covid period the volatility has impacted more number of banking companies. During the said period HDFC Bank, ICICI Bank, SBI & Axis Bank ltd were found to have beta more than one, indicating the securities are aggressive in nature. Whereas, even during the covid period, Kotak Mahindra Bank could retain its pre covid

status as a defensive security. It was also found that during covid the banks return had positive impact on the performance of SENSEX and it could explain around 27 percent variation in the SENSEX. Whereas, during covid banks return was found to have negative impact on the SENSEX and only around 7 percent of the variation in SENSEX could be explained by the banks return.

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