An Event Analysis of Loan Moratorium by RBI: Evidence from Indian Bank Index

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Abstract: *Loan moratorium announcement by RBI and its impact on the banking stocks listed in the Bank nifty index has been explored in this study. The RBI announced a 3-month loan moratorium to ease the repayment of loans EMI's by the borrowers affected by the COVID-19 pandemic. This announcement is treated as the event for this study, based on the hypothesis that it may have influenced banking stock returns during such period. The study employs an event study methodology with a 41-day event window, encompassing 20 days before and 20 days after the announcement of the moratorium. This research is among the few studies that utilizes the event study methodology within the context of the Indian stock market to assess the impact of loan moratorium news on bank stock prices. The findings of the study indicate potential reaction on the stock returns after RBI's announcement on moratorium alongside 3-week lockdown announcement. The normal behaviour of the stock was observed to be disrupted by moratorium and lockdown. The findings of the study provide valuable insights into the market's response to significant economic policies and measures taken during crises. This study will enable policymakers in future decision-making and implementation and help investors in drawing strategy to trade during such events round the corner.*

Keywords: *Event study, Covid-19 pandemic, Loan moratorium, Single-index model, Nifty Bank Index*

Introduction

Discussions over the loan moratoriums have been extensively on rise in India ever since the Covid-19 outbreak. To temporarily relieve debtors during the pandemic-induced economic downfall it was exercised in India. The RBI announced moratorium for a time period of three month on all term loans, which was further extended by additional three months, from March 2020 to August 2020. A moratorium is legally recognised and authorised time period which postpones the payment of EMI's on loans.

The COVID-19 pandemic, caused by the novel virus SARS-CoV-2, had a global impact starting in late 2019. On February 11, 2020, the World Health Organization (WHO) officially named the disease COVID-19. As the world grappled with the unprecedented challenges posed by this virus, India was also affected. India reported its

first case of COVID-19 on January 30, 2020. Recognizing the gravity of the situation, the WHO declared COVID-19 a pandemic on March 11, 2020.A pandemic is defined as "an epidemic occurring over a very wide area, crossing international boundaries, and usually affecting a large number of people" (Porta, 2014). COVID-19 emerged as a major threat to societal well-being in the 21st century, widely recognized for causing economic decline, unemployment, financial crises, and stock market collapses (Verma et al., 2021).

Financial crises are often precipitated by significant events in the stock market. On March 24, 2020, the Indian government implemented a nationwide lockdown to contain the increasing COVID-19 cases, leading to a cessation of all economic operations in the country. The implementation of a nationwide lockdown in India, initially lasting 21 days and subsequently extended, resulted in a significant slowdown of economic activities, severely impacting small firms. Micro, small, and medium-sized enterprises (MSMEs) emerged as particularly vulnerable, facing substantial challenges. To stabilize the debt, money, and foreign exchange markets and support small enterprises, the Reserve Bank of India (RBI) introduced several measures, including liquidity injections and a three-month loan moratorium for cooperative banks, commercial banks, All-India Financial Institutions, and non-banking financial companies (NBFCs) (Mehta & Kaul, 2020).

The loan moratorium aimed to provide relief to debtors by temporarily suspending the repayment of equated monthly instalments (EMIs). This measure offered comfort to borrowers and placed considerable pressure on the banking sector. Conditions under the moratorium period do not allow banks to receive interest payments, which raises concerns about the potential defaults once the moratorium period ends. Although moratoriums are not new in India and previously have been applied to specific financial institutions over the past two decades- such as Yes Bank, Global Trust Bank, United Western Bank Ltd., and others (Mehta & Kaul, 2020)the broad

application during the COVID-19 pandemic was unprecedented.

This study is aimed towards the investigation of disruption caused towards the normal returns on the banking stocks. Considering the importance of the event, validity of the EMH theory is examined that the market is efficient and free from any abnormality. An important implication of EMH is that it is impossible to "beat the market". The current analysis will provide insights into how such significant policy measures influence market perceptions and the financial stability of the banking sector.

The announcement of a three-month moratorium on loan payments was officially released on March 27, 2020, by the RBI, and subsequently, on May 22, 2020, another notification extended the moratorium period until August 31. The primary goal of the study is to identify the effects that moratorium brought on the prices of Indian bank stocks listed in the Nifty Bank index, utilizing event study methodology (Bhattacharjee et al., 2020). The impacts of corporate events, like mergers or earnings announcements, are assessed using an event study methodology (Binder, 1998). It requires that the stock market be efficient. The "Efficient Market Hypothesis (EMH) proposes that financial markets efficiently process and reflect all relevant information. The weak form of the EMH suggests that past trading information, such as price and volume data, is already reflected in current stock prices, making it impossible to gain an advantage by analyzing past trading data alone"(Fama, 1970). The semi-strong form assumes that all publicly available information is reflected in stock prices, including historical data and any publicly available information such as earnings reports and news releases (Alam et al., 2020; Fama, 1992). The strong form asserts that all public and private information is reflected in stock prices, implying that even insider information cannot be used to consistently generate above-average returns (Jensen, 1978).

Events such as pandemics, corporate actions, and regulatory changes have historically impacted

stock prices significantly. Event study methodology has become predominant since Fama, Fisher, Jensen, and Roll's 1969 study on the effects of stock splits on security returns (Boehmer et al., 1991). Pandemics cause serious financial issues in afflicted countries in addition to raising concerns for public well-being (Verma et al., 2021). The next section will discuss previous literature on loan moratoriums and the application of event study methodologies.

Review of Literature

The loan moratorium impacting the stock market is not new to the market. Rescheduling and restructuring of the loan had immediately shown its effect in the market with available information as seen the study of Mansur et al. (1990). In their empirical analysis of debt rescheduling of Argentinian commercial banks, they had found significant impact of the relevant information on the equity returns of the market. In the other study Mehta and kaul (2020) examined the Moratorium granted by RBI with similar cases in the U.S, Greece and Thailand in the past 20 years. Philippatos & Viswanathan (1991) examined the impact of the debt moratorium announcement for Brazil on the equity prices the U.S banks. Employing the standard event study methodology, they analysed loan-exposed and non-exposed banks, using intervention analysis and Chow-tests. Their research revealed that neither exposed nor non-exposed banks experienced negative impacts, likely because stock prices had already adjusted substantially in response to associated events. Zhang (2001) in his study analysed the impact of IMF term loan announcements to South Korea on the loans of U.S banks and investments, and the equity values of U.S bank creditors. He analysed 230 U.S. banks from November to December 1997. His analysis demonstrated that international bank creditors experienced notable upward shifts in equity values coinciding with key event declarations with more exposed groups experiencing a more positive equity-price response. Further, (Kumar Digal et al., 2020) discussed in their analysis how the event pandemic had a major effect on the financial sector,

with the stock market falling by over 27% by April 2020. Due to investor's confidence plunging due to uncertainties over the disease's containment and vaccine availability, Bank Nifty has been a major factor in driving the index lower. Global bank viability was seriously threatened by COVID-19, particularly in poorer nations. The implications were determined to be minimal during the initial COVID-19 case detection and shutdown phase but considerable during the subsequent period in a study that looked at short-term abnormal returns to investors of nifty banks in India. Efanga et al., (2021)in their research investigates the effect of coronavirus information on the stock returns of commercial banks in the Nigerian Banking System. Using an event study approach, data from the Nigerian Stock Exchange was collected for 146 days. The results showed that the pandemic positively influenced stock returns, contrary to expectations. Banking firms' abnormal returns on the 100th day of coronavirus information spread were positive but insignificant. The study concludes that COVID-19 information in the Nigerian banking sector leads to good investment and desirable abnormal returns. The authors urge authorities to review the responses over the policy and further analyse COVID-19 information. Berlinger et al., (2022)in their study examines the impact of time preferences and locus of control on loan forbearance take up in Hungarian adults during the COVID-19 pandemic. The findings show that, even after taking into consideration present bias, risk aversion, demographic traits, educational attainment, financial situation, and pandemic effects, temporal discounting is correlated with the use of forbearance. Forbearance resort is not, however, substantially correlated with current bias or locus of control. Bhattacharjee et al., (2020) in their article used event study methodology to examine the impact of the Reserve Bank of India's 3-month moratorium on Indian public sector bank equity returns. Their study used a "single-index model" or market model to compute the expected returns. Their findings suggests that the market responded to the news about the Reserve Bank's liquidity infusion, falling global indices, the development of a coronavirus vaccine, and the

lockdown announcement. The loan moratorium announcement by the government was expected by the market, following recommendations from industry organizations such as the "Associated Chambers of Commerce and Industry" to safeguard businesses. It has been observed that the average annual return on day ED-0 is not significant. Verma et al., (2021) investigates the impact of the lockdown announcement by the Indian government on various sectors, including pharmaceuticals, FMCG, financial services, banking, and energy. They employed event study method to analyse the data from a 40-day event window, 20 days before and 20 days after the lockdown announcement. They utilised the secondary data which was collected from the NSE website and analysed using three methods: mean-adjusted, market-adjusted, and risk-adjusted abnormal return. The results indicated that the majority of sectors experienced positive performance and obtained abnormal returns within 21 days, demonstrating investors' confidence in the abnormal market conditions.

Objectives of the Study

This study attempts to discover the effects of the moratorium announcement on different banking stocks. Bank nifty indices of the National Stock Exchange (NSE) have been used as stand-ins for the various estimations and calculations.

Hypotheses of the Research Work

H_0: The implementation of a loan moratorium, spanning from the announcement date to the end of the moratorium period, is anticipated to have no adverse impact on the stock prices of the indexed banks in the Bank Nifty of NSE.

Research Method

To measure the impact of moratorium and financial stress on the banks the study consists data from 12 commercial banks included in the bank nifty index of the National Stock Exchange (NSE). The study employs event study methodology (Bhattacharjee et al., 2020; Demirgüç-Kunt et al., 2021; Verma et al., 2021) to test the effect that the moratorium announcement had on the stock prices of the bank nifty stocks. Before calculating

any type of returns the data was checked for the stationarity using ADF method. The data at first difference was found to be stationary. The returns were then calculated using logarithmic returns for the Bank Nifty Index stocks. The study considers daily returns calculated for 180 trading days i.e., the estimation period prior to the event window and which is 20 trading days before event day and 20 days after the event day. The timeline of estimation and event window is portrayed in Figure 1.

The study considers March 27, 2020 as the event day as on this day the announcement of 3-month loan moratorium was announced officially by the RBI. To examine the impact of moratorium on various bank stocks of the Banknifty index, the estimation period runs from June 7, 2019 to February 26, 2020, or 180 trading days. The event window runs from February 27, 2020 to April 30, 2020, or 41 trading days, with 20 days preceding the event and 20 days following the declaration of the loan moratorium. The study employs secondary data which were sourced from Yahoo! Finance. This data forms the foundation for the event study methodology employed to assess the impact of the RBI's loan moratorium announcement on banking stocks.

Daily stock returns were computed using the following formula based on the data accumulated for the study:

$$R_{it} = \ln(P_{i,t}/P_{i,t-1}) \qquad (1)$$

where the $R_{i,t}$ denotes the stock return of the security i on day t, the $P_{i,t}$ is the stock price of security i for day t and $P_{i,t"1}$ is the stock price of security i for day t – 1. In a similar way market returns were also calculated,

$$R_{m,t} = \ln(P_{m,t}/P_{m,t-1}) \qquad (2)$$

In this context, $R_{m,t}$ represents the market return of index m for day t. The term $P_{m,t}$ denotes the value of stock market index m on day t, while $P_{m,t"1}$ signifies the value of the same stock market index on the preceding day, t " 1. The market return $R_{m,t}$ is calculated as the percentage change

in the index value from $P_{m,t}$ providing a measure of the daily performance of the stock market index.

Further, the study applied "single-index model" propounded by Fama (1976) popularly known as the market model. It is used for ascertaining the expected returns. The formula being used to compute the returns is done using following equation:

$$E\,(R_{i,t}) \;=\; \alpha_i \;+\; \beta_i R_{m,t} \;+\; \varepsilon_{i,t} \qquad (3)$$

In the equation, $E\,(R_{i,t})$ denotes the expected return of security i for day t. The parameters ái and âi are the market model parameters, which are estimated during the estimation period. These parameters capture the relationship between the security's returns and the market returns. The term $R_{m,t}$ is the market return of index m on day t, reflecting the overall performance of the market on that particular day.

Subsequently, the expected returns were estimated using the "single-index model", and the abnormal returns (ARs) were calculated using the following equation:

$$AR_{i,t} \;=\; R_{i,t} - E\,(R_{i,t}) \qquad (4)$$

The expected return of security i on day t is represented by $E\,(R_{i,t})$ in Equation (4), while $AR_{i,t}$ represents the abnormal return of security i for day t. $R_{i,t}$ is the stock return of security i for day t.

Further the average abnormal return (AAR) was calculated by averaging the abnormal returns from all the bank stocks considered in the study. The formula used for AAR is as follows:

$$AAR_t = \left(1/N \sum_{i\,=\,1}^{N} AR_{i,t} \right) \qquad (5)$$

To test the significance of the calculated AARs t-statistic of the average abnormal returns were calculated using the equation (6) where the standard deviation of AARs is determined for the estimation period (ED-200 to -21), and TAARt is the t-statistic of the abnormal average return for the day t.

$$TAARt = AAR/SD \qquad (6)$$

To compute the Cumulative average abnormal return (CAAR) Equation (7) was employed for the five-time window period of (-20,20), (-10,10), (-5,5), (-2,2) and (-1,1) before and after the event occurred.

$$CAAR_{T_1 T_2} = \sum_{t\,=\,T1}^{T2} AAR_t \qquad (7)$$

Further the t-statistics of CAAR was calculated as using the equation (8) where TCAAR represents the t-statistic of CAART1, T2 and the SD is the standard deviation of

$$TCAAR \;=\; CAAR_{T1,T2}/SD \times (T)^{1/2} \qquad (8)$$

AARs and has been calculated over the period ranging from (ED-200 to ED-21) and T=(T1-T2+1).
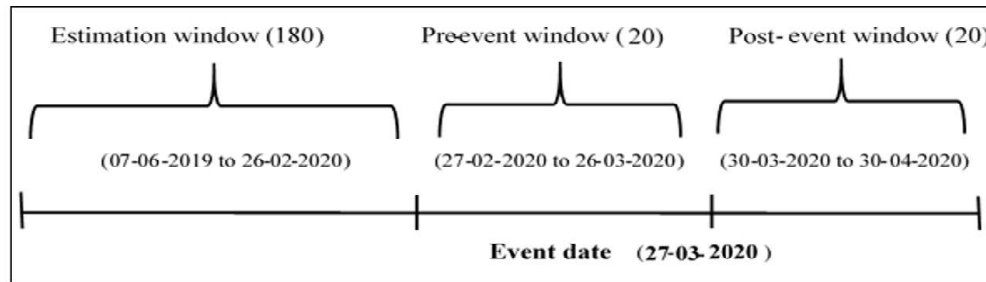
Figure 1: Time Period and Estimation and Event Window

Source: Author's own

Analysis, Results and Discussion

Tables 1 and 2 display an overview of the AR and the corresponding t-statistic of the moratorium established for the event window. During the event window, it comprises of both positive and negative significant returns. The ARs shows how news and information regarding the moratorium announcement impacted the banking stocks. If it is observed the Punjab National Bank stock on Event day (ED) on ED (-10, -7, -4), State bank of India on ED (-10, -9, -7, -4) in HDFC bank on ED (-10, -6, -2, -1) and on ED (+2, +5, +7, +10, +11, +12, +15, +19, +20) show significant ARs. In the ICICI bank on ED -(17,13,11,3,2,1) and on ED 0, and ED +(2,5,7,10,11,14,1517,18,20), In Kotak Mahindra bank ED -(18,17,12,5,3,2,1) and on ED +(1,+5,+7,+11,+14,+15,+17,+18,+10,+12,+18,+19), in AXIS bank ED -7,0 and ED +(1,+5,+7,+8,+9,+11,+17) and +18, in IndusInd bank ED –(17,15,10,5,1), on ED +(6,+8,+9,+18), in Federal bank ED -(20,10,9,7) ED 0, +3,+9,+10,+18), in Bandhan bank on ED –(15,5,1) on ED 0,+1,+6,+10,+12,+19,+20), RBL ED-(12,11,7,6,3,2), ED+2,+7,+15,+20, on IDFC bank ED –(18,11,4,3,2,1) ED 0, ED+(1,5,6,7,11,15), AU –(10,9) ED 0, ED+(1,2,5,7,9,11) had substantially good and significant positive returns on the day as specified. Majority Significant positive ARs were found on ED – (10,1) and ED +(5, +7, +11) combining all the banks in the study. It is noteworthy that, along with the positive ARs, significant negative ARs are also visible on day ED – (18,9,7,5,2,1) and on ED +13 among all the banks in the study for the Moratorium event. A significant AR on event day showcases the violation of the EMH theory, where it propogates that stock prices always trade at their fair value and it is impossible for any investors to time the market and purchse undervalued stock and sell the inflated stocks. Since the present study finds disruptions in the normal return of the securities due to an event, it is imperative that when there is an event taking place chances of abnormality happening increases.

Table 1: Abnormal Returns and t-Statistic for Listed Banks in the Bank Nifty Index

Day	PNB		SBIN		HDFC		ICICI		KOTAK		AXIS	
	AR	t-stat	AR	t-stat	AR	t-stat	AR	t-stat	AR	t-stat	AR	t-stat
ED-20	-0.042	-2.183*	-0.010	-0.587	0.000	0.019	0.006	0.474	0.004	0.649	0.009	0.744
ED-19	-0.004	-0.183	0.007	0.420	-0.018	-2.070*	0.021	1.628	-0.040	-6.194*	-0.035	-3.055*
ED-18	-0.046	-2.408*	-0.040	-2.329*	0.002	0.187	0.063	4.864*	0.040	6.209*	-0.021	-1.776
ED-17	0.025	1.298	-0.015	-0.894	0.002	0.210	-0.037	-2.882*	0.019	2.894*	0.002	0.210
ED-16	0.004	0.183	-0.005	-0.310	-0.028	-3.192*	-0.011	-0.856	-0.015	-2.332*	0.021	1.813
ED-15	0.011	0.557	0.011	0.642	0.002	0.245	-0.047	-3.645*	-0.006	-1.004	-0.009	-0.732
ED-14	-0.036	-1.853	-0.019	-1.087	-0.014	-1.624	-0.025	-1.927	-0.014	-2.203*	-0.016	-1.373
ED-13	-0.013	-0.686	0.024	1.417	-0.025	-2.779*	0.030	2.331*	-0.069	-10.718*	-0.029	-2.466*
ED-12	-0.034	-1.766	-0.032	-1.886	0.006	0.661	-0.056	-4.304*	0.025	3.882*	-0.013	-1.086
ED-11	-0.044	-2.276*	0.010	0.585	-0.087	-9.786*	0.093	7.168*	-0.111	-17.409*	-0.044	-3.825*
ED-10	0.065	3.403*	0.068	3.967*	0.046	5.237*	-0.170	-13.062*	-0.019	-2.920*	0.000	-0.038
ED-9	0.035	1.846	0.059	3.469*	-0.068	-7.672*	-0.128	-9.863*	-0.136	-21.199*	-0.044	-3.781*
ED-8	0.011	0.588	0.009	0.525	-0.025	-2.790*	-0.045	-3.471*	-0.059	-9.239*	-0.016	-1.371
ED-7	0.097	5.074*	0.102	5.961*	-0.106	-11.981*	-0.145	-11.165*	-0.182	-28.405*	0.075	6.474*
ED-6	0.037	1.912	-0.010	-0.601	0.021	2.375*	-0.016	-1.218	-0.007	-1.023	-0.121	-10.456*
ED-5	-0.034	-1.776	-0.065	-3.839*	-0.014	-1.612	-0.163	-12.511*	0.057	8.942*	0.014	1.210
ED-4	0.067	3.482*	0.098	5.760*	-0.135	-15.210*	-0.024	-1.831	-0.262	-40.950*	-0.193	-16.583*
ED-3	0.000	0.018	-0.031	-1.847	-0.005	-0.565	0.066	5.097*	0.035	5.479*	-0.013	-1.118
ED-2	-0.121	-6.292*	-0.072	-4.247*	0.110	12.388*	0.162	12.479*	0.132	20.566*	-0.035	-2.983*

ED-1	-0.065	-3.373*	-0.048	-2.847*	0.050	5.697*	0.093	7.192*	0.123	19.235*	-0.007
ED0	-0.001	-0.035	0.015	0.896	0.004	0.419	-0.080	-6.186*	0.003	0.500	0.049
ED+1	0.028	1.468	0.033	1.913	-0.084	-9.472*	-0.025	-1.945	1.820	284.303*	0.107
ED+2	-0.054	-2.832*	-0.010	-0.611	0.036	4.033*	0.087	6.689*	0.012	1.907	-0.007
ED+3	-0.020	-1.026	0.019	1.134	-0.038	-4.304*	-0.020	-1.539	-0.112	-17.452*	-0.017
ED+4	-0.006	-0.303	-0.023	-1.326	-0.019	-2.170*	-0.076	-5.867*	-0.013	-1.962*	-0.078
ED+5	-0.071	-3.677*	-0.082	-4.832*	0.096	10.867*	0.200	15.363*	0.131	20.495*	0.082
ED+6	0.020	1.032	-0.007	-0.429	-0.008	-0.911	-0.042	-3.233*	-0.001	-0.220	0.014
ED+7	-0.012	-0.604	-0.042	-2.471*	0.040	4.499*	0.083	6.422*	0.111	17.401*	0.031
ED+8	0.011	0.596	0.002	0.127	-0.033	-3.683*	-0.047	-3.637*	-0.020	-3.062*	0.030
ED+9	0.000	-0.019	0.009	0.556	-0.036	-4.115*	-0.010	-0.745	-0.073	-11.424*	0.033
ED+10	-0.009	-0.476	0.023	1.333	0.019	2.131*	0.053	4.075*	-0.060	-9.363*	-0.006
ED+11	-0.006	-0.320	-0.024	-1.433	0.034	3.853*	0.100	7.678*	0.072	11.283*	0.091
ED+12	0.033	1.719	0.000	-0.026	0.037	4.205*	-0.072	-5.520*	-0.007	-1.055	-0.086
ED+13	-0.024	-1.250	0.015	0.854	-0.025	-2.806*	-0.061	-4.698*	-0.056	-8.716*	-0.056
ED+14	-0.023	-1.180	-0.015	-0.907	0.008	0.848	0.035	2.690*	0.035	5.424*	0.017
ED+15	-0.010	-0.546	-0.032	-1.865	0.028	3.158*	0.050	4.607*	0.113	17.650*	-0.031
ED+16	-0.015	-0.797	-0.006	-0.327	-0.018	-2.015*	-0.037	-2.875*	-0.003	-0.398	-0.045
ED+17	0.004	0.217	-0.015	-0.884	-0.009	-1.009	0.034	2.622*	0.065	10.220*	0.065
ED+18	0.006	0.290	0.003	0.171	0.002	0.206	0.028	2.172*	0.015	2.283*	0.062
ED+19	0.015	0.772	0.002	0.121	0.048	5.407*	0.014	1.093	-0.001	-0.182	-0.084
ED+20	-0.032	-1.645	-0.050	-2.931*	0.025	2.818*	0.057	4.422*	0.072	11.211*	-0.012

Last column (rightmost):
-0.583, 4.190*, 9.217*, -0.576, -1.469, -6.711*, 7.038*, 1.247, 2.683*, 2.565*, 2.800*, -0.549, 7.825*, -7.421*, -4.800*, 1.477, -2.630*, -3.855*, 5.611*, 5.338*, -7.275*, -1.020

Table 2: Abnormal Returns and t-Statistic for Listed Banks in the Bank Nifty Index (contd.)

Day	INDUSIND		FEDERAL		BANDHAN		RBL		IDFC		AU	
	AR	t-stat	AR	t-stat	AR	t-stat	AR	t-stat	AR	t-stat	AR	t-stat
ED-20	-0.023	-1.108	0.040	2.591*	0.003	0.123	0.008	0.237	-0.087	-4.577*	-0.003	-0.123
ED-19	-0.032	-1.489	0.006	0.385	-0.004	-0.139	-0.031	-0.940	0.012	0.610	-0.011	-0.498
ED-18	-0.086	-4.058*	-0.077	-5.012*	0.048	1.824	0.059	1.804	0.086	4.499*	-0.054	-2.520*
ED-17	0.064	3.012*	0.002	0.118	0.015	0.555	-0.033	-1.002	-0.012	-0.652	0.001	0.060
ED-16	-0.028	-1.305	0.002	0.159	-0.022	-0.842	0.040	1.233	0.007	0.361	0.004	0.179
ED-15	0.056	2.636*	0.003	0.225	0.064	2.439*	-0.037	-1.136	-0.044	-2.305*	-0.045	-2.114*
ED-14	-0.033	-1.540	-0.024	-1.605	-0.031	-1.179	-0.119	-3.646*	-0.068	-3.561*	-0.005	-0.216
ED-13	-0.147	-6.939*	-0.026	-1.680	-0.047	-1.808	-0.071	-2.170*	0.033	1.739	-0.017	-0.796
ED-12	-0.001	-0.025	-0.046	-2.991*	0.017	0.665	0.085	2.596*	-0.144	-7.544*	-0.050	-2.314*
ED-11	-0.177	-8.374*	-0.011	-0.749	-0.071	-2.729*	0.088	2.680*	0.088	4.627*	-0.016	-0.742
ED-10	0.194	9.151*	0.101	6.604*	-0.022	-0.836	-0.196	-5.997*	-0.213	-11.153*	0.043	1.994*
ED-9	-0.063	-2.961*	0.054	3.511*	-0.132	-5.057*	-0.175	-5.353*	-0.106	-5.540*	0.087	4.049*
ED-8	-0.050	-2.343*	-0.020	-1.309	-0.047	-1.810	0.060	1.832	-0.037	-1.943	-0.040	-1.869
ED-7	-0.126	-5.945*	0.110	7.195*	-0.214	-8.161*	0.140	4.286*	-0.256	-13.438*	0.005	0.214
ED-6	-0.021	-1.002	-0.028	-1.844	0.010	0.382	0.079	2.407*	0.028	1.476	-0.105	-4.916*
ED-5	0.154	7.281*	-0.048	-3.128*	0.129	4.922*	-0.183	-5.583*	-0.079	-4.135*	-0.087	-4.084*
ED-4	-0.245	-11.590*	-0.015	-0.976	-0.095	-3.645*	0.048	1.472	0.066	3.455*	-0.010	-0.461
ED-3	-0.141	-6.638*	-0.094	-6.167*	-0.062	-2.381*	0.234	7.141*	0.162	8.516*	-0.043	-2.006*
ED-2	-0.198	-9.358*	-0.119	-7.764*	-0.005	-0.202	0.239	7.286*	0.180	9.444*	-0.099	-4.626*
ED-1	0.276	13.034*	-0.036	-2.338*	0.338	12.921*	-0.253	-7.715*	0.065	3.415*	-0.290	-13.532*

ED0	0.022	1.028	0.058	3.817*	0.098	3.726*	-0.052	-1.575	-0.123	-6.438*	-0.049	-2.284*
ED+1	0.031	1.457	-1.908	-125.000*	-0.250	-9.554*	-0.096	-2.940*	1.908	100.036*	0.199	9.317*
ED+2	-0.250	-11.794*	-0.004	-0.239	-0.053	-2.018*	0.147	4.499*	0.008	0.440	0.072	3.371*
ED+3	-0.006	-0.288	0.118	7.716*	-0.027	-1.044	-0.025	-0.775	-0.142	-7.433*	-0.021	-0.995
ED+4	-0.013	-0.590	-0.022	-1.436	0.007	0.266	-0.156	-4.761*	-0.025	-1.326	-0.041	-1.895
ED+5	0.004	0.183	-0.063	-4.152*	-0.164	-6.253*	0.042	1.294	0.103	5.415*	0.191	8.934*
ED+6	0.081	3.830*	-0.043	-2.810*	0.133	5.063*	-0.040	-1.215	0.048	2.504*	-0.129	-6.011*
ED+7	-0.093	-4.386*	-0.109	-7.137*	-0.039	-1.486	0.091	2.772*	0.179	9.405*	0.072	3.359*
ED+8	0.084	3.991*	0.012	0.802	-0.026	-0.988	-0.112	-3.412*	-0.005	-0.287	0.033	1.524
ED+9	0.043	2.008*	0.091	5.988*	-0.065	-2.488*	-0.018	-0.554	-0.074	-3.856*	0.070	3.278*
ED+10	-0.027	-1.258	0.079	5.180*	0.066	2.505*	0.056	1.700	-0.013	-0.668	-0.042	-1.976*
ED+11	-0.014	-0.653	0.014	0.917	-0.003	-0.132	0.045	1.380	0.075	3.936*	0.052	2.441*
ED+12	0.034	1.586	0.008	0.514	0.085	3.237*	-0.101	-3.098*	-0.068	-3.583*	-0.038	-1.763
ED+13	-0.069	-3.279*	-0.005	-0.303	-0.045	-1.709	-0.022	-0.672	-0.043	-2.242*	0.034	1.606
ED+14	0.002	0.091	-0.019	-1.225	0.001	0.024	-0.039	-1.199	0.029	1.531	-0.052	-2.421*
ED+15	-0.074	-3.508*	-0.092	-6.004*	0.042	1.586	0.086	2.628*	0.081	4.255*	-0.091	-4.259*
ED+16	-0.031	-1.461	-0.041	-2.659*	0.032	1.212	0.038	1.159	-0.025	-1.300	-0.009	-0.406
ED+17	0.028	1.321	-0.033	-2.192*	-0.016	-0.628	0.057	1.753	0.029	1.517	0.013	0.602
ED+18	0.111	5.223*	0.035	2.274*	-0.003	-0.098	-0.032	-0.975	-0.028	-1.465	-0.004	-0.202
ED+19	-0.008	-0.364	-0.004	-0.275	0.143	5.464*	0.005	0.138	-0.007	-0.372	-0.094	-4.413*
ED+20	-0.064	-3.010*	-0.023	-1.539	0.124	4.745*	0.113	3.438*	0.019	0.993	-0.113	-5.285*

Source: The authors

Notes: AR, Abnormal return; ED, Event date; IndusInd, IndusInd Bank; Federal, Federal Bank; Bandhan, Bandhan Bank; RBL, RBL Bank; IDFC, IDFC Bank; AU, AU Bank

*Significant at 5 percent level

Table 3: Average Abnormal Returns and t-Statistic for Banks

Day	AAR	t-stat	Day	AAR	t-stat
ED-20	-0.008	-0.312	ED+1	0.147	21.567*
ED-19	-0.011	-0.960	ED+2	-0.001	0.239
ED-18	-0.002	0.107	ED+3	-0.024	-2.290*
ED-17	0.003	0.244	ED+4	-0.039	-2.340*
ED-16	-0.003	-0.409	ED+5	0.039	4.223*
ED-15	-0.003	-0.349	ED+6	0.002	-0.096
ED-14	-0.034	-1.818	ED+7	0.026	2.538*
ED-13	-0.030	-2.046*	ED+8	-0.006	-0.455
ED-12	-0.020	-1.176	ED+9	-0.003	-0.714
ED-11	-0.024	-2.569*	ED+10	0.011	0.220
ED-10	-0.009	-0.304	ED+11	0.036	3.065*
ED-9	-0.051	-4.046*	ED+12	-0.015	-0.934
ED-8	-0.022	-1.933	ED+13	-0.030	-2.335*
ED-7	-0.042	-4.158*	ED+14	-0.002	0.429
ED-6	-0.011	-1.042	ED+15	0.007	1.256
ED-5	-0.027	-1.193	ED+16	-0.013	-1.144
ED-4	-0.058	-6.423*	ED+17	0.019	1.596
ED-3	0.009	0.461	ED+18	0.016	1.268
ED-2	0.014	2.224*	ED+19	0.002	0.010
ED-1	0.021	2.592*	ED+20	0.010	1.016
ED 0	-0.005	-0.162			

Source: The authors

Notes: AAR, average abnormal return; ED, event date

*Significant at 5 percent level
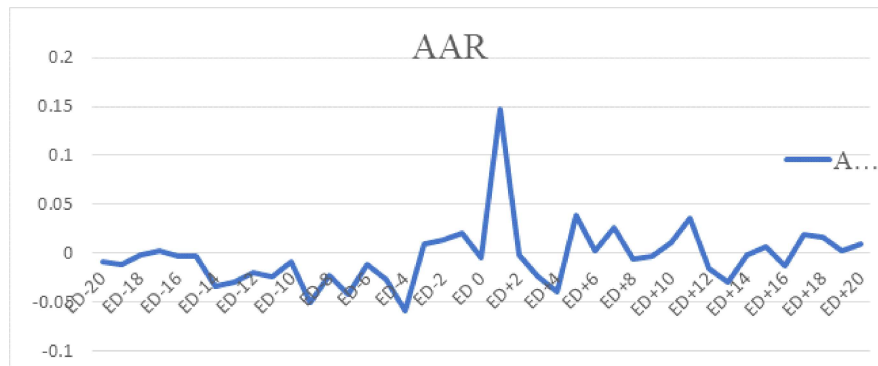
Figure 2: Graphical presentation of Average Abnormal Returns

Table 4: Cumulative Average Abnormal Returns for Moratorium"

Time Window	(-20,20)	(-10,10)	(-5,5)	(-2,2)	(-1,1)
CAAR	-0.127	-0.027	0.077	0.176	0.163
t-statistics	-1.259	-0.370	1.511	5.499*	7.193*

*Significant at 5 percent level

Table 4 provides a summary of the CAAR and the associated t-statistics. It's evident from the table that CAAR is positively significant at the time window of (-2,2) and (-1,1) and insignificant for other windows (-20,20), (-10,10) and (-5,5) for the moratorium event in the study. In Figure 2, the spike in the price is visible in around the event days.

Conclusion

The primary objective of the research was to examine how the loan moratorium affects the share values of the Banks included in the NSE Bank Nifty Index. The study employed event study methodology and computed the abnormal return, average abnormal return and cumulative abnormal return (AR, AAR, and CAAR) by taking the daily stock and the market return. The event window in the study spanned over 41 trading days, from February 27, 2020 to April 30, 2020, while the study took into account an estimation period of 180 trading days. According to the results of the research, throughout the specified event period, all banks under examination encountered a mix of positive and negative abnormal returns (AR) figures during the moratorium phase. The moratorium period in the study displayed high volatility. Furthermore, the noteworthy abnormal average returns in the event imply that the market reacted to the announcements of the nationwide lockdown, declining global indices, possible coronavirus vaccine, and RBI's infusion of liquidity. However, the price changes surrounding the event date show that there was quite high anticipation about the announcement of the loan moratorium which resulted in maximum price action in majority of the banking stocks on ED (-10, -9, -7, -2, and -1) prior to the event and on ED (+5, and +7) had a mixed negative and positive AR on the banking stocks. It has already been discussed earlier that several news flow about the loan moratorium, covid-19 announcement had negatively impacted the price of the stocks, but absence of significant AAR on the event day confirms about the market being informative about the news outflow to come and made price adjustment before the

event day. The AAR after the event day had significant t-statistic showing the maximum volatility in market.

Limitations and Further exploration

The findings of this study will significantly enhance the understanding of stock market volatility, especially in the context of certain events. This research will provide valuable insights for investors, facilitating informed decision-making both prior to and following market events. Uniquely, this study is among the few that have focused on the loan moratorium event. There remains considerable scope for further exploration, including an analysis of the second RBI moratorium event and a comparative study of both moratorium events. To achieve a more comprehensive representation of the economic impact across various sectors, future research should encompass a diverse range of industries, such as automotive, pharmaceuticals, services, and real estate, in addition to banking.

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