

IMPACT OF COVID-19 LOCKDOWN ON INVESTOR RETURNS: EVIDENCE FROM INDIAN FINANCIAL MARKETS

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Abstract

This research investigates the consequences of COVID-19 on the relationship between stocks and bonds in Indian financial markets using Event Study Methodology. The study has been conducted around the lockdown phases to better analyze the effects of the crisis. The findings revealed that the stock market saw positive abnormal returns during the lockdown phases which is attributed to the existence of high market volatility at times that attracted trading volumes leading to certain significant returns to the investors. Whereas bond market did not see much ups and downs as a result of lack of investor confidence due to continuous economic slowdown and unstable fiscal status of the government. This study observes a positive correlation between stock and bond market movement at the time of COVID-19 where both the markets are declining and proves it to be affected greatly by the investor sentiment. However, as tested by the significance of Pearson Correlation Coefficient, the correlation is not as strong to be replicated for other crisis periods indicating again that the correlation between stock and bond returns differs with the economic conditions.

Key words: Stock and Bond Returns, COVID-19, Event Study Methodology, Investor Behavior/Sentiment

JEL Classification: G11; G12; G14; G15

Introduction

Bond prices and stock prices are correlated to each other, their relationship changes with the surrounding conditions. When the economy slows, consumers demand less, and corporate profits fall which is reflected in declining stock prices. So, the investors prefer the fixed income securities (bonds) as they guarantee a regular interest payment to diversify equity risk. During economic boom, stock and bond markets have an inverse relationship. Bond yields are dependent on inflation status prevailing in the economy. The high inflationary pressure drives the central bank to raise the interest rates due to higher demands with which the bond yields go up. It makes sense to sell bonds and buy stocks. Hence, as bond prices fall the stock market rises. However, at times, borrowing becomes expensive due to the high inflationary pressures in the economy. This is reflected in the increasing interest rates. Consequently, bond prices decline due to an indirect relationship between interest rates and bond prices. The cost of doing business also rises as everything becomes more expensive. It is logical to make an assumption that companies will not do that well which is reflected in the falling stock prices. Thus, when bond prices fall, stock prices follow. A lag can be observed between the falling bond prices and the declining stock market as each market would react differently and in their own time. Both may also fall when investors are in a panic and start selling everything. Both stocks and bonds could go up as well in value at the same time when there is too much liquidity in the market chasing few investments. Some investors may be optimistic about the economic future and buy stocks, whereas other investors are pessimistic and buy bonds. Motilal Oswal Investment Services mentioned in their article that historical data usually presents a negative correlation between stocks and bonds. This is because the government treasury acts as a hedge whenever the stock market tumbles. This sentiment coincided with the expectations of falling interest rates leading to rising bond prices. Thus, the investors with balanced portfolios suffered smaller losses than from equity alone. Nasdaq news articles further explains that investors need to make a choice between the safety, but low returns of bonds and risky nature but high returns of stocks. Hence, there exists a trade-off between risk and return. If they already have invested completely in one, then they need to sell one in order to buy the other, so stock prices tend to drop when bond prices are rising and vice versa. However, some points in history may weigh to a conclusion

that stocks and bonds carry a positive correlation. The literature explains how different papers state their view about the correlation between the two instruments depending on certain aspects and macroeconomic factors.

By the end of 2019, COVID-19 emerged leading the world into a crisis, continuing to have a major impression on the world economy throughout every field. The most recent comparable event is The Influenza Pandemic or The Spanish Flu that took place in 1918. Hence, the need arises to study the current crisis to observe and devise ways to take informed decisions. A lot of papers have studied this impact using country specific data as their basis. Majorly, the emergence of the Coronavirus has led to a labor supply shock and has affected demand across almost every country. Some findings revealed a negative relationship between the number of cases of Coronavirus and the stock exchanges as the spread of the virus created unprecedented level of risk causing the investors to incur losses. The debt market faced disruptions due to COVID-19 and the safer end of the credit range experienced losses that will be hard to completely adjust. A paper showed that different crisis with different reasons have a different impact on the same markets. The Indian economy was already in a dire state before the crisis and is now expected to face a period of slowdown as a result of a country-wide lockdown affecting the demand and supply chains.

The environment changes the volatility of the markets, but it changes the correlation too, as said by Russel Investments on correlation between stocks and bonds. The relation of stock-bond prices is one of the fundamental building blocks of asset strategy and the nature of this relation is not constant. It seems that the volatility and correlation environment are somewhat related. However, volatility regimes change frequently possessing low stability. This raises the need to research this correlation owing to the combination of risky and safe investments and the commonality of diverse portfolios comprising of stocks and bonds. Christiansen and Rinaldo (2005) give reasons why the investigation of the comovement between stocks and bonds is material. In the first place, this correlation plays a major role in asset allocation decisions given their popularity among the investors. Secondly, this identified relationship allows for better risk management and hedging. And third, the information gained on the correlation in different macroeconomic conditions across business cycles provides a closer look on the factors involved in the valuation process of these assets. Stock market performance is influenced by the bond market, in particular the bond yields, differently across different economic regimes depending on the sensitivity of stocks and bonds to interest rates, inflation, investor sentiment, and other asset specific factors.

With the unfolding COVID-19 crisis, it is safe to assume that the investors' reaction would be to adopt the risk off regime. As a result, the stock market fell due to loss in investor confidence and their shift to safer investors. Hence, expecting the portfolios to involve more fixed income securities, namely 10-year government bonds as they constitute a much safer long-term investment being highly liquid and backed by the government, bond market should see a rise in bond prices. However, India's 10-year bond yield continues to be elevated as stated in an article by The Economic Times. This could be because the country foresees a slowdown and the investors want the GDP to improve before buying government bonds.

This paper conducts an analysis for understanding the correlation between stocks and bonds under the COVID-19 crisis posing extreme market conditions using the benchmark indices for both the markets. It attempts to explain the level of this correlation for the Indian stock and bond markets using the Event Study Methodology and Pearson Correlation Coefficient. A stock-bond analysis will throw light on investment behavior in such market conditions and how it contributes to the stability or instability of financial markets making it useful for investment decisions and also important for regulators and policy makers in the future. The major objective is to gain clarity on the intertwined functioning of these instruments which will greatly impact portfolio optimization and help achieve better risk management and hedging. Since this paper is confined to Indian Markets, this will help Indian investors achieve a broader perspective on their investment decisions and help financial markets in other countries draw further results aligning with the study.

Review of Literature

A lot of studies have been administered to understand the relationship between the movements of these financial instruments.

Stock-Bond Relation

There is a direct relationship between bond yields and long-term interest rates. Shiller and Beltratti (1990) explain in their paper the reaction of real stock prices to long-term interest rates. As the rate rises, the stock price falls more than a rational expectation depicted by a Present Value Model based on auto-regression, using market interest rates as the discounting factor. This overreaction did not factor in any changes in the short-term inflation rates. Thus, it was observed on annual data from UK and US, that for over 100 years, real stock prices showed minimal reaction to the changes in inflation rate. One argument pointed out a simplest negative relation between interest rates and stock prices implying a fall in both stock and bond prices given a rise in interest rates. Explaining further, higher long-term interest rates will result in higher long-term bond yields making them an attractive investment. Thus, making the stock prices fall in order to induce people to hold them. This paper gave a view of how the stock prices and the bond yields are impacted by the long-term interest rate, whereas no evidence was found of any overreaction towards the changes in inflation by either stock or bond markets.

The paper by Lingfeng Li (2002) uses the asset pricing model giving a broader perspective of the co-movement between the returns of stocks and long-term government bonds for the G7 countries, by their exposure to the macroeconomic factors. The link between the two is examined by using a more practical formulation of asset return dynamics. The results indicated that the courses of the stock-bond relation are majorly dependent on the volatility of the predicted inflation. While unforeseen inflation and the interest rates are less significant. Forecasting this correlation helped provide investors insights into better asset allocation. A simple model reveals that increase in expected inflation uncertainty is anticipated to increase the co-movement of stock-bond returns. Whereas the effect of unexpected rise in prices on this correlation depends on how interest rates and dividend react to these unforeseen inflation shocks. Therefore, when the inflation risk is elevated, asset returns are likely to be unstable which increases the need for the investors to diversify their risk. But when correlation between stocks and bonds is high, diversification opportunities are less. This observation of the link between inflation rates and the relationship between stock prices and bond yields led to Murphy's Law of Diversification. Christiansen and Rinaldo (2005) explain how macroeconomic announcements also affect the realized stock-bond relation and the fact that an announcement occurs influences the bond-stock correlation. The US sample used allowed to address the time-varying nature and the state-dependent character of the stock-bond co-movement. The analysis of this co-movement goes through the price discovery process searching for a new equilibrium to adjust to the new information announced, delivering insights into the process of determining the price in differing markets. This implies the realized correlation depends strongly on general economic and market conditions and varies accordingly. Chiang (2020) studies this dynamic correlation for different bond maturities and indices in the US markets. This paper found the nature of stock-bond return correlations with risk and policy uncertainty, revealing a positive relation with economic policy uncertainty and negative relation with monetary and fiscal policy uncertainties. Hence, different news items and prevailing conditions have different impacts also depending on the business cycle.

Another paper by Baur and Lucey (2006) analyses the existence of contagion between the asset classes and flight-to-quality from stocks to bonds. Flight-to-quality is present if the asset classes move in opposite directions implying decreasing correlation in declining stock markets. Movement in same direction marked by increasing correlation implies contagion. These effects are exclusive with regards to stock-bond correlations. For the sample period, flight-to-quality and contagion are observed as regular occurrences characterized by large fluctuations and extreme changes. The regression model used revealed that the volatility in stock-bond markets explained up to 80 percent of the correlation when positive and negative correlation regimes were accounted for. This implies that increased stock market volatility reduces the correlation leading to flight-to-quality, and increased bond market volatility raises correlation leading to contagion. Consistent with the flight-to-quality phenomenon, Andersson et al. (2006) examined the time varying nature of the correlation between stock-bond returns due to the impact of inflation, economic growth presumptions and recognized stock market unpredictability. It was found that the stock-bond relationship is more or less unmoved by expectations of

economic growth and high stock market volatility may dissociate stock-bond returns. Additionally, Harumi and Tatsuyoshi (2015) found rising and falling trends in stock-bond correlations for many developed countries that are comparatively safer by introducing a trend element in a smooth transition regression model for multiple transition variables. With the introduction of a trend component, the yield spread and short rate became somewhat significant dominating other models. This was considered as a consequence of diminishing diversification effects and rigorous flight-to-quality conduct post the Euro crisis.

COVID-19 Economic Impact

This paper focusses on studying the relationship between stock-bond markets amidst a crisis. Point in case, the year 2020 has faced a global pandemic and impacted the global economy. The paper by Akira Toda (2020) aimed at making out-of-sample predictions using a simple mathematical epidemic model and discussing ideal policy and economic effect, hence built a stylized production-based asset pricing model. This model predicted the stock prices to fall 50 percent during the pandemic but recover quickly as the economic impact is only due to the short-lived labor supply shock. Maital and Baizani (2020) also argue in their paper that the major repercussion of COVID-19 is on the supply segment of the global economy. An article by Goodell (2020) says that the crisis is informing investors, policy makers and the public at large about the direct destructive economic impact in every area on the globe. A study by Sansa (2020) investigates the impact of the pandemic on the financial markets of USA and China by applying a simple regression model specifically for the month of March in 2020. The findings revealed a decline in the stock exchanges of the two countries with an increase in the number of cases of Coronavirus, posing a negative relationship. The spread of the virus created uncommon level of risk causing the investors to incur losses. Zhang et al. (2020) aimed to depict the patterns of systematic and country specific risks and also analyses the plausible results of policy interventions. The study was conducted on the basis of patterns observed in stock market reactions to provide a statistical examination of the COVID-19 impact on the stock market risk. The pandemic associated losses have caused the financial markets to become extremely unstable and dubious. Pavlyshenko (2020) uses logistic curve model with Bayesian regression for predictive analysis of the Coronavirus spread compared to other crisis influence. The results showed that different crisis with different reasons have different effects on the same stocks. The uncertainty for COVID-19 is larger and allows for risk assessment for portfolios and other financial and business processes. Ji et al. (2020) even presents a monitoring method to assess if the equity portfolios can be replaced by a safe haven asset, re-evaluating the role of some traditional assets.

The debt market faced disruptions due to the COVID-19 crisis as well. Safer component of the credit range recorded losses that will be difficult to completely adjust. The paper by Haddad et al. (May 2020) states that early phase of COVID-19 saw large price disruptions in US, corporate bonds and liquid bond ETFs were traded at a huge discount. These disruptions indicate inability of typical arbitrageurs in equating prices across markets and unwillingness of certain participants in buying some assets relative to others. This suggests rational investor behavior trying to sell safer or raise cash from more liquid securities. It was observed that safe debt and high yield debt lost in magnitude but comparably less than the stock market as when economic conditions worsen, equity owners lose first. Increases in economic uncertainty have a large effect on riskier firms and move the prices of more risky assets.

COVID-19 Indian Context

The economy was already in a dire state before the crisis and is now expected to face a period of slowdown as a result of a country-wide lockdown affecting the demand and supply chains. The magnitude of the impact depends on the duration and gravity of the pandemic and how the situations unfolds when the lockdown is lifted. The stock markets usually act in accordance with the public belief and the prevailing conditions in the market. Capital markets are witnessing high volatility across the world due to the Coronavirus outbreak. Mehta and Jha (2020) conducted a retrospective analysis of the macroeconomic repercussions of the pandemics till date to forecast the consequences of COVID-19 on the Indian economy. The economic situation has moved towards a scenario of an extremely volatile market. Lot of recommendations have been made by the authors to curb the adverse effects of the pandemic.

There are various papers that study the pandemic and its impact on the global economy and international markets. However, there hasn't been any study that focusses specifically on the stock-bond markets of India in lieu of the Coronavirus outbreak. This paper seeks to identify the current status of stock-bond relation in India for the event period under COVID-19, the co-movement between the two asset classes and how investor sentiment has affected the movement and returns of these financial markets given the current conditions.

Data & Methodology

This paper uses the data for the benchmark indices of both bond and stock markets. According to the National Stock Exchange (NSE), India, NIFTY 50 Index is a benchmark index for the Indian stock market. It is a diversified 50 stock index branching out to 13 sectors of the Indian economy that contribute majorly. On NSE India, NIFTY 10-year Benchmark G-Sec Index is a benchmark index for the bond market. It is devised using the price of a 10-year bond that is issued by the Central Government of India. The index tracks the performance of the 10-year benchmark security. As explained in a Financial Express article, 10-year government bonds go further just comprehending the return on an investment, they are also used for many other important financial matters that serve for the long-term. They are considered as safe havens because they carry the sovereign privilege and are more liquid.

To assess the effect of COVID-19 on the correlation between stock-bond returns in India, data for the daily closing prices of NIFTY 50 Index and NIFTY 10-year Benchmark G-Sec Index has been collected for the period of December 2, 2019 to June 19, 2020 constituting for the estimation and the event period according to the Event Study Methodology. Following are the dates for the event period considered in the study:

- Lockdown1.0 from 25-03-2020 to 13-04-2020
- Lockdown2.0 from 15-04-2020 to 30-04-2020
- Lockdown 3.0 from 04-05-2020 to 15-05-2020
- Lockdown 4.0 from 18-05-2020 to 29-05-2020
- Lockdown 5.0 from 01-06-2020 to 19-06-2020

The event period is taken from the day the first lockdown began as that is when the outbreak of Coronavirus majorly started impacting the Indian economy due to a hiatus in working operations throughout the country which further affected the investors behavior. Event Study is an empirical analysis that examines the impact of an uncertain event or a causal occurrence on the value of a financial instrument. The theoretical foundations of Event Study Methodology were first introduced by Ball and Brown in 1968. This reaction can be quantified into abnormal returns observed for the event period using the Event Study Methodology. This analysis makes use of the expected return models in relation to the effect of certain economic events. Campbell et al. (2012) have mentioned the same in their Event Study Analysis.

Cumulative Abnormal Returns

In 1985, Brown and Warner, finance researchers, developed the method of using daily data to examine the statistical properties of abnormal returns for short-term event studies.

The expected return (normal return), that is the return realized if there would not have been any crisis, is calculated as the average of the daily returns for the estimation period. The actual daily returns are deducted from the expected return to get the Abnormal Return for each day.

$$\text{Abnormal Return} = \text{Actual Return} - \text{Expected Return}$$

Consequently, 10-Day Cumulative Abnormal Return (CAR) is calculated for each lockdown phase in the event period which further gives the overall Average CAR according to the Event Time. To test the significance of abnormal returns being different from the normal returns for the event period, t-test is conducted. One Sample Test is performed taking the following hypothesis.

For Stock Returns (NIFTY 50 Index)

$H_0: \mu S = 0$

$H_1: \mu S \neq 0$

(μS – Average CAR for NIFTY 50 Index)

For Bond Returns (NIFTY 10-year Benchmark G-Sec Index)

$H_0: \mu B = 0$

$H_1: \mu B \neq 0$

(μS – Average CAR for NIFTY 10-year Benchmark G-Sec Index)

Stock and Bond Market Relation

Understanding the movement of stock-bond returns during COVID-19 sets a precedent for understanding the correlation for the event period. Previous findings revealed a negative reaction to the current crisis with a higher decline in bond market. The Pearson Correlation Coefficient is calculated and a significance test is run using the following hypothesis.

$H_0: \rho = 0$ indicating insignificant correlation

$H_1: \rho \neq 0$ indicating significant correlation

Results

The descriptive statistics for the daily stock and bond returns in Table 1 give certain parameters to estimate the market situation during the event period.

Table 1: Descriptive Statistics

	<i>Stock Return</i>	<i>Bond Return</i>
Mean	0.0007	-0.0001
Standard Error	0.0021	0.0003
Count	137	137

Cumulative Abnormal Returns (CAR) Results

For NIFTY 50 Index, the 10-Day CAR is computed using Abnormal Returns for all lockdown phases, the statistics of which are given in Table 2. The 10-Day CAR calculated further gives the overall Average CAR as shown in Table 3. Towards the end of each phase, 10-Day CAR started increasing leading to an increasing and positive Average CAR as shown in Figure 1.

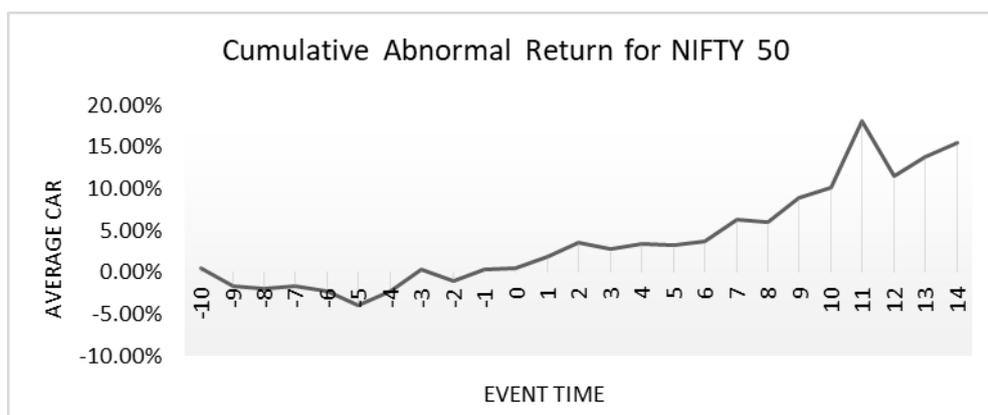
Table 2: Descriptive Statistics (Lockdown Phases)

Abnormal Stock Returns					
	<i>Lockdown 1</i>	<i>Lockdown 2</i>	<i>Lockdown 3</i>	<i>Lockdown 4</i>	<i>Lockdown 5</i>
Mean	0.0024	0.0013	-0.0005	0.0006	0.0007
Standard Error	0.0029	0.0026	0.0025	0.0023	0.0021
Count	91	103	113	122	137

Table 3: Overall Average CAR

Event Time	Average CAR (%)	t-stat
-10	0.50	0.19
-9	-1.73	-0.65
-8	-1.92	-0.72
-7	-1.68	-0.63
-6	-2.24	-0.84
-5	-4.02	-1.51
-4	-2.32	-0.87
-3	0.27	0.10
-2	-1.00	-0.37
-1	0.33	0.12
0	0.44	0.16
1	1.89	0.71
2	3.53	1.33
3	2.78	1.05
4	3.40	1.28
5	3.32	1.25
6	3.76	1.42
7	6.35	2.40*
8	6.05	2.28*
9	8.93	3.37*
10	10.13	3.83*
11	18.05	6.82*
12	11.60	4.38*
13	13.88	5.25*
14	15.55	5.88*

Figure 1: Average CAR - NIFTY 50 Index.



The standard error calculated for Average CAR is 0.0264 for NIFTY 50 Index. Table 3 reveals that the Average CAR is significant at 95 percent Confidence Interval for the end of the lockdown phases due to increasing 10-Day CAR for the lockdown phases. This implies that shareholders made money around the event period probably because they saw a declining stock market as an opportunity to invest money and earn greater returns when the market started recovering or reacted positively to improvements in the economy.

For NIFTY 10-year Benchmark G-Sec Index, the 10-Day CAR is computed using Abnormal Returns for all lockdown phases, the statistics of which are given in Table 4. The 10-Day CAR calculated further gives the

overall Average CAR as shown in Table 5. It is observed that the average of the Cumulative Abnormal Returns of the bond index ranges from -1 to +1 and is mostly declining as shown in Figure 2.

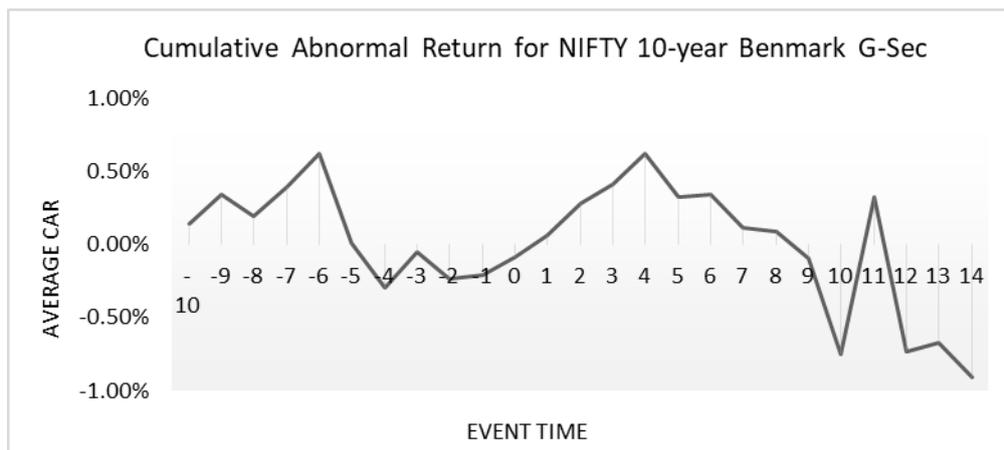
Table 4: Descriptive Statistics (Lockdown Phases)

Abnormal Bond Return					
	<i>Lockdown 1</i>	<i>Lockdown 2</i>	<i>Lockdown 3</i>	<i>Lockdown 4</i>	<i>Lockdown 5</i>
Mean	-0.0002	0.0003	0.0000	0.0000	-0.0001
Standard Error	0.0004	0.0004	0.0004	0.0004	0.0003
Count	91	103	113	122	137

Table 5: Overall Average CAR

Event Time	Average CAR (%)	t-stat
-10	0.14	0.38
-9	0.34	0.91
-8	0.19	0.50
-7	0.40	1.06
-6	0.62	1.65
-5	0.01	0.02
-4	-0.30	-0.78
-3	-0.05	-0.13
-2	-0.24	-0.62
-1	-0.21	-0.54
0	-0.09	-0.23
1	0.06	0.15
2	0.29	0.75
3	0.41	1.09
4	0.63	1.65
5	0.33	0.87
6	0.35	0.92
7	0.12	0.31
8	0.09	0.23
9	-0.09	-0.24
10	-0.75	-1.98*
11	0.32	0.85
12	-0.73	-1.94
13	-0.67	-1.77
14	-0.90	-2.39*

Figure 2: Average CAR - NIFTY 10-year Benchmark G-Sec Index.



The standard error calculated for Average CAR is 0.0037 for NIFTY 10-year Benchmark G-Sec Index. Table 5 reveals that the Average CAR is significant at 95 percent Confidence Interval only for the last entry of Lockdown 5.0 because the bond market observed declining CAR for the event period. This mathematically explains the elevated 10-yr bond yield for the Indian bond market. Bond holders have not earned much significant returns during the event period which justifies lack of investment in these fixed income securities leading to lower prices.

Comparing the stock-bond abnormal returns during the event period, stock market saw more significant returns than the bond market which can be attributed to the more volatile nature of the stock market. The One Sample Test performed to gain clarity over the significance of the stock-bond returns gave the result as given in Table 6.

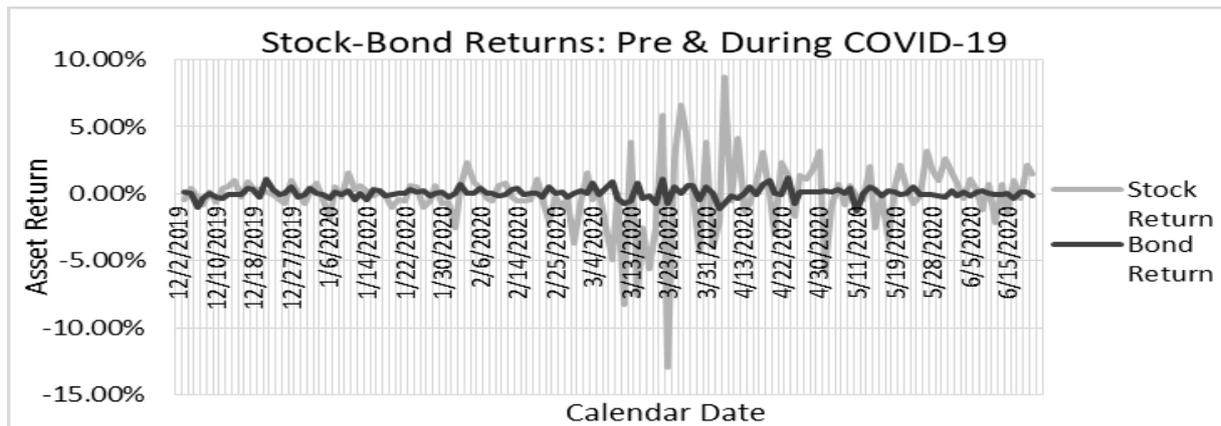
Table 6: One Sample T-test Result

One-Sample Test			
Test Value = 0			
	<i>t</i>	<i>df</i>	<i>Sig. (2-tailed) At 95 percent Confidence Interval, $\alpha = 0.05$</i>
<i>Stock Return</i>	-0.408	135	0.683
<i>Bond Return</i>	1.349	135	0.179

Significance test for the stock-bond returns during the event period accepted the null hypothesis of Average CAR for both the markets being equal to 0 and thus insignificant, hence when tested overall, neither of the markets produced significant enough returns to attract investments. Although when tested for each entry of Average CAR, NIFTY 50 Index showed some significant results, however, they were not as greater and significant enough to make the complete series relevant for an investor's interests. This clarifies that the stock market only saw positive abnormal returns due to the existence of high market volatility at times that attracted trading volumes leading to certain significant returns to the investors during the lockdown phases.

Stock-Bond Relation

Figure 4: Stock-Bond Returns



To study the nature of the association between the two asset classes, values obtained for the daily returns of NIFTY 50 Index and NIFTY 10-year Benchmark G-Sec Index are analyzed and plotted against the calendar date as seen in Figure 4. Stock returns show high volatility immediately after the estimation period, that is the Pre-Lockdown Phase, and continue to do so. Whereas the bond-returns do not show much movement in their daily returns compared to the stock-returns. The magnitude of the movement in both markets differs significantly, however, when observed closely, it is seen that the direction of these movements is mostly similar at all points during the whole period plotted, implying a positive relationship.

Table 7: Correlation Values

Correlation		
<i>Complete Period</i>		
	<i>Stock-Return</i>	<i>Bond-Return</i>
Stock-Return	1	
Bond-Return	0.129	1
<i>Event Period</i>		
	<i>Stock-Return</i>	<i>Bond-Return</i>
Stock-Return	1	
Bond-Return	0.016	1

It is observed that the stock-bond returns are correlated for the estimation period at 0.219, however for the event period, it is only 0.016. These values are not as significant. For Pearson Correlation Coefficient, larger the coefficient is in numerical value, stronger will be the interrelation between the variables. At 95 percent Confidence Interval, Significance Value was 0.133. Significance test for correlation reveals that the Pearson Correlation Coefficient computed for the stock-bond relationship is not significant. Hence, the correlation between stocks and bonds exists during the COVID-19 period and is observed to be positive, however, it is not strong enough to model the relationship in the population and be replicated for other crisis periods indicating again that the correlation differs with the economic circumstances.

Conclusion

This study concludes a positive stock-bond relation at the time of COVID-19 where both the markets are declining, however proves it to be affected greatly by the investor sentiment. Andersson et al. (2006) stated that this relation is positive during periods of high inflation expectations, this holds true for the situation in hand. The India Households Inflation Expectations 1-Year Ahead report by the Reserve Bank of India (RBI) is projected in the long run to be around 5.10 percent in 2021. Similar to their results, this correlation between the two is found to be insignificant at times of high stock market uncertainty but unlike their results, the existing uncertainty and its influence on this correlation is notably due to the bleak economic growth expectations. According to Baur and Lucey (2006), when stocks and bonds follow a positive correlation, it is termed as contagion characterized by increasing correlation in falling stock markets which is not the case in this paper, in contrast this study observes a declining correlation. Although insignificant, a positive correlation means movement in the same direction by the two asset types which would have a critical implication for portfolio risk management due to multi-class investments moving in lockstep rendering diversification as unavailing. As stated by Harumi and Tatsuyoshi (2015), decreasing trends in stock-bond relation can be attributed to decreasing effects of diversification urging fund managers to find alternative ways of reducing risk.

This study raises a further need to deeply analyze the investor behavior at times of crisis and their reaction to the economic and political conditions fueled by the existence of high uncertainty in the markets. Stocks and bonds constitute of the major investments in Indian financial markets due to the trade-off between risk and return, thus, this correlation affects the investment decisions. There is a need to study the vicious cycle of emergence of crisis impacting the economy leading to lowered growth expectations which adversely affects investor sentiment that is reflected in declining markets. Greater understanding of the relationships among different assets will benefit the participants of the financial markets and establish a broader spectrum of information to base their investment decisions on.

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