IMPACT OF GLOBAL EVENTS ON INDIAN INVESTORS:
A COMPARATIVE STUDY OF TWO DIFFERENT INVESTMENT AVENUES IN TWO DIFFERENT TIME PERIODS

Sarjid Ahmed[*]
Neha Jain[**]

ABSTRACT

Global economic downturns have hampered global economic progress in recent years. It began with the outbreak of pandemic COVID19 and its successive descendants, most notably the Russia-Ukraine War, the Sri Lankan Debt Crisis, and others, all of which have harmed nations' and people's financial health. As a result of the regular downward trend in the value of investments, investors have suffered significant losses. Bitcoin (BTC) has the greatest market capitalization in the virtual asset category, and Nifty50 stocks, the most popular index, has the biggest market capitalization in the dematerialized asset category. A comparison of these two financial instruments over two time periods will aid in the development of reasonable investment decisions. The purpose of this research is to look into the link between these two assets and compare monthly returns across two time periods. The first period (April 2018 to March 2020) is the least volatile, while the second period (April 2020 to March 2022) includes big recent economic downturns. The paper also tries to figure out if there is any correlation between the two market capitalization leaders. The researchers ultimately concluded that although both Bitcoin and Nifty50 stocks had a positive correlation in both periods but when it comes to risk aversion in times of turmoil, an Indian investor should focus on Nifty50 trading rather than cryptocurrencies.

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Keywords: Economic Downturns, Bitcoin, Nifty50, Volatility, Correlation.

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Introduction

Our 21st century has progressed at a significantly faster rate in terms of modern technologies. With the advent of the latest technologies such as artificial intelligence, machine learning, metaverse, blockchain and decentralized finance (DeFI), people are becoming more inclined toward these futuristic technologies and want to be a part of them. This became possible in 2008, when Bitcoin (BTC), the first cryptocurrency was created under the pseudonym Satoshi Nakamoto by an unknown person or group of persons. A cryptocurrency is a hash or an encrypted string of data encoded to represent one unit of currency. "It makes use of encryption and blockchain technology, with both parties exchanging codes". From 2017 onwards, Bitcoin gained enormous popularity as an investment avenue worldwide. But in the subsequent year, cryptocurrency trading was banned by the Reserve Bank of India considering various factors. This ban was ultimately lifted by the Supreme Court of India in March 2020. Although, cryptocurrency has not achieved the legal tender status but most recently, in the union budget of India, 2022, new taxation laws on cryptocurrency were incorporated where all virtual digital assets will be taxed at a flat rate of 30% and an additional TDS of 1% will be deducted when any such transactions take place. Along with the passage of the Cryptocurrency and Regulation of Official Digital Currency Bill, 2021, a framework for the development of official digital currency to be issued by the RBI has been established. "Cryptocurrency can help with eliminating financial fraud, corruption, encourage

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[*]   Research Scholar, Department of Commerce, Gauhati University, Assam, India.
[**]   Research Scholar, Department of Commerce, Gauhati University, Assam, India.

entrepreneurship, attracting foreign direct investment, and providing more monetary policy options". It enables quicker transactions at a lower cost. This technological innovation will move the economy forward. In this respect, the anonymity and volatility risk factor cannot be overlooked as its prices fluctuates heavily. "According to Bloomberg Wealth Report (2021), the market capitalization of cryptocurrencies in India increased from $923 million in April 2020 to $6.6 billion in May 2021. In India, an estimated 15 million people have already invested in cryptocurrency". With a total circulating supply of over 19 million coins and a market valuation of over 600 billion dollars, Bitcoin is the most widely traded cryptocurrency on the planet. Similarly, the Nifty 50 index of the National Stock Exchange (NSE) is the most popular stock market benchmark, representing a weighted average of 50 of India's top companies. The NSE has a market value of about 3.4 trillion dollars. Both Bitcoin and Nifty50 equities are highly volatile and risky investment options so, a comparative analysis from the standpoint of an average Indian investor is required. Effect of external factors such as major global and national economic downturns, which have a significant impact on each of their prices, must also be considered. The present study attempts to explore the performance of monthly returns of Bitcoin and Nifty50 stocks into two time periods consisting of 24 months each. The first period corresponds to a normal period where there were very less or no major global events. The second period corresponds to more disturbed and affected period due to the outbreak of pandemic leading to complete lockdown and halt in economic activities in the initial months and then with successive waves and new variants of the disease again, the number of affected people increased which then led to further disruptions in business activities. Finally, when the COVID19 scenario improved, other global events such as the Russia-Ukraine conflict, Sri Lankan debt crisis, etc., forced the markets to plummet which affected the sentiments of the investors. Therefore, an average investor needs to act rationally in these difficult times and make the right choice as to which financial instrument is optimal for investment. In this context, the researchers have tried to find a correlation between a newly evolved virtual asset category or investment in equities of the most profitable companies of India.

Literature Review

Muthukumaran et al., (2011) carried out a study to measure the impact of the global financial crisis in the Indian Stock Market and its integration of the US stock market. They employed 10-year data from 1999 to 2008 to understand the risk and return in times of financial crisis. Their findings showed that the impact of the global financial crisis has been felt in India through three distinct channels: the financial sector, exports, and foreign exchange. In terms of the financial sector, a $12 billion decline in foreign institutional investment from the stock market directly impacted the Indian stock exchange. Their analysis concluded that the highest positive correlation between the Indian stock market and the US stock market, indicating equity integration over the time period under consideration. Sakthivel et al., (2014) adopted the GJR GARCH model on NSE index and BSE index data of 7 years from 2005 to 2012 to demonstrate the influence of the crisis on stock returns volatility. They classified the study period into pre-crisis and post-crisis periods. Their results depicted that when compared to the pre-crisis period, the volatility of most stock returns rose during the post-crisis period. This was owing to foreign institutional investors' continued retreat from the Indian stock market. They concluded that global events such as the US sub-prime crisis had an adverse impact on the Indian Stock Market. Li & Wang (2017) examined that in commodity, security, and foreign exchange markets, speculative trading behaviours such as investment decisions based on insignificant information and Chartism are frequent. Speculative trading, while regarded as less rational, is an important feature of financial exchanges, particularly during periods of significant market uncertainty. To determine the dynamics of the Bitcoin exchange rate, they used an Autoregressive Distributed Lag (ARDL) model with a bounds test approach. Their approach corrects empirical flaws in previous research and allows us to comprehend the long-term relationship between exchange value and variables that account for short-term oscillations. Bitcoin continues to spread as an alternate medium of exchange, according to their findings. "As cryptocurrency has grown in popularity, it has become a successful investment vehicle. As a result, new methods and means of investing develop on the market, which increase the curiosity of many investors and are linked to the bitcoin investment lifecycle" (Koval et al., 2017). Panagiotidis et al., (2018) examined the effects of factors such as stock market returns, exchange rates, gold and oil returns, central bank rates, internet trends and policy uncertainty on bitcoin returns for alternate time periods employing the Least Absolute Shrinkage and Selection Operator (LASSO) framework. Their analysis revealed that bitcoin returns are positively affected by exchange rates, interest rates, gold and oil prices, negatively affected by policy uncertainty and mixed results from stock markets. Caporale et al., (2018) investigated the degree of persistence and evolution of the four major cryptocurrencies (Bitcoin, Litecoin, Ripple, and Dash) using Rescaled Range

(R/S) analysis and fractional integration long-memory approaches. According to them, any predictable patterns might, of course, be used as the basis for crypto trading techniques aiming at reaping abnormal profits. Olena et al., (2019) conducted a study in Ukraine to determine the possibility of using cryptocurrency in the development of the national economy. Their study revealed that regardless of how people feel about cryptocurrency, the number of transactions and its market valuation is steadily expanding. As a result, governmental financial institutions all over the world cannot continue to overlook the existence of this worldwide phenomenon; doing so is not only inefficient but also dangerous to the country's economic structure. Market demands should determine the future of cryptocurrencies and blockchain technologies. Dasman (2021) compared the yearly returns of bitcoin with other investment instruments such as stocks, gold, and the rupiah exchange rate. The researcher performed a compare means test (t test) and analysis of variance (F test) on rate of return of bitcoin investment. The results showed that in comparison to exchange rates, gold, and stock returns, the bitcoin currency had the highest rate of return 18% and a standard deviation of 61%. The rate of return on other investment products was less than 0.5 percent, with a standard deviation of less than 5%. The researcher concluded that risk-averse investors should look for risk-free investments or speculate on investments with a positive premium.

Objectives of the Study

- To analyse the performance of monthly market returns of Bitcoin prices in two different periods.
- To analyse the performance of monthly market returns of Nifty50 stock prices in two different periods.
- To determine the correlation between two different financial instruments in two different periods.

Hypothesis of the Study

H_0:   There is no significant difference in monthly market returns of Bitcoin in period 1 and period 2.

H_1:   There is a significant difference in monthly market returns of Bitcoin in period 1 and period 2.

H_0:   There is no significant difference in monthly market returns of Nifty50 stocks in period 1 and period 2.

H_1:   There is a significant difference in monthly market returns of Nifty50 stocks in period 1 and period 2.

H_0:   There is no significant relationship in monthly market returns between Bitcoin returns and Nifty50 stock returns in period 1 and period 2.

H_1:   There is a significant relationship in monthly market returns between Bitcoin returns and Nifty50 stock returns in period 1 and period 2.

Methodology of the Study

The authors have carried out the exploratory and correlational study design on the data sourced from investing.com (2022). In order to achieve the desired objectives, monthly closing prices of Bitcoin and Nifty50 index has been collected from April 2018 to March 2020 for period 1 and April 2020 to March 2022 for period 2, since daily data or weekly data has substantial random white noise associated with it in terms of risk and return variables (Mun, Vasconcellos, & Kish, 2000). The indicator and source of the two variables used in the study are shown below:

Table 1: Operational Variable

Variable	Indicator	Source
Bitcoin	Bitcoin price is in USD/Bitcoin	www.Investing.com
Stock	Nifty50 index	www.Investing.com

Source: (Dasman, 2021)

Further, to calculate the monthly returns the following formula have been used:

Monthly Return, $(R_{it}) = \dfrac{(P_t - P_{t-1})}{P_{t-1}}$

Where, (R_{it}) is monthly returns, (P_t) and (P_{t-1}) represent the closing price at time t, and the previous day's closing price at time t − 1, respectively. The researchers used various measures and statistical tests such as average return, standard deviation, paired t test and correlation to test the hypothesis and get the desired results. The researcher computed the data with the help of statistical software Microsoft Excel and SPSS.
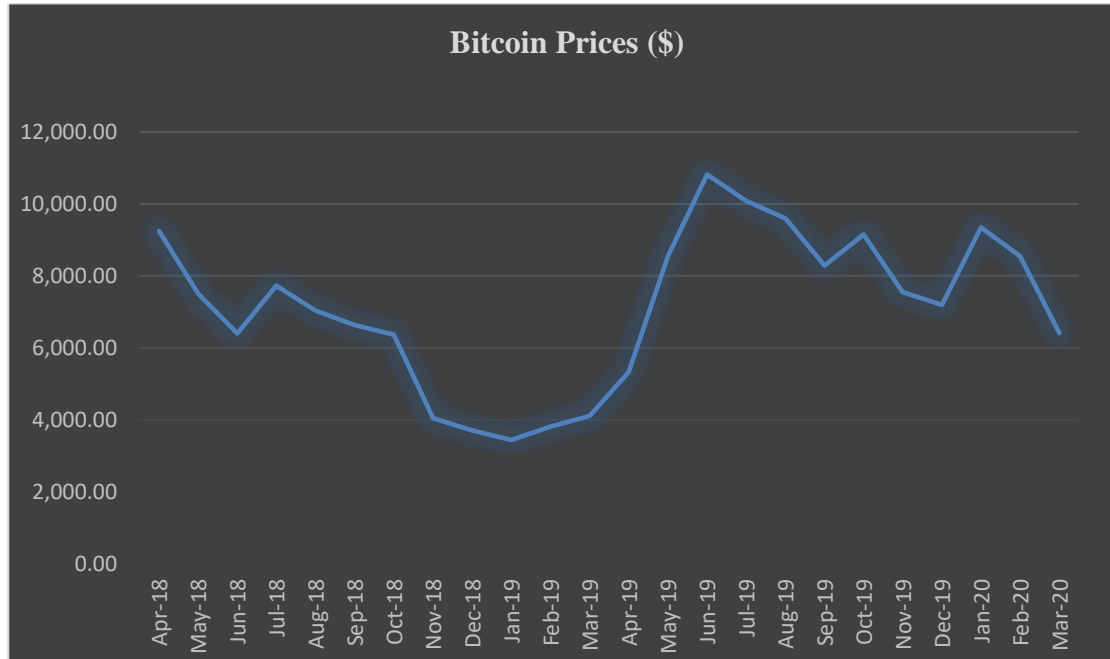
Results and Discussion

Figure 1: Trend of monthly Bitcoin prices ($) in Period 1 (April 2018-March 2020).
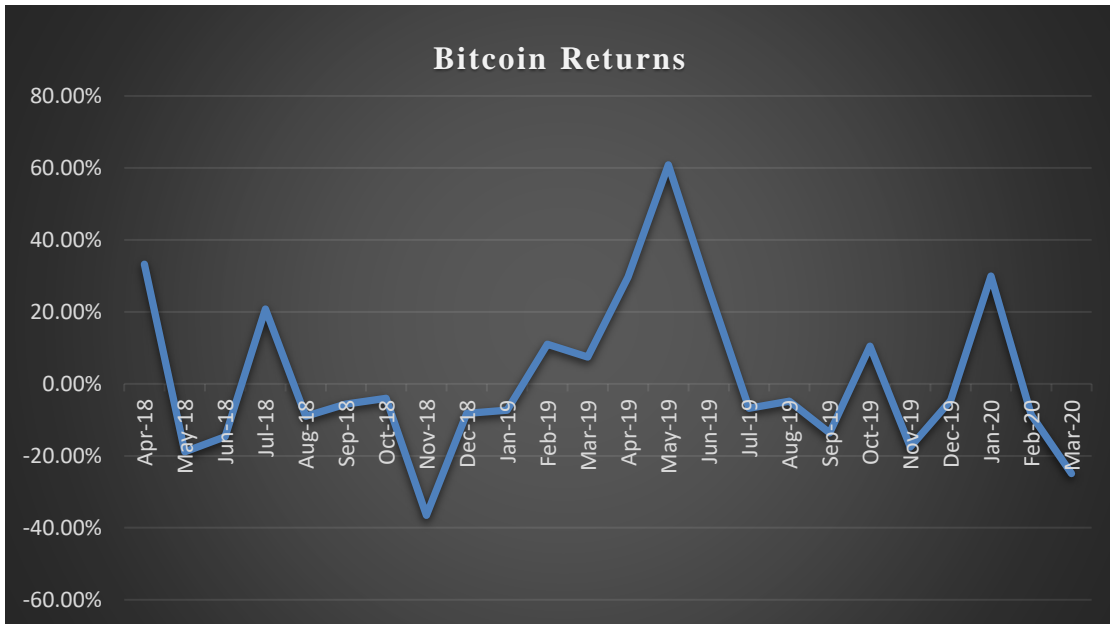

Figure 2: Trend of monthly Bitcoin returns in Period 1 (April 2018-March 2020)

In the above Figure 1, it can be observed that 2018 was a bad year for Bitcoin as prices depreciated by more than 50% from a price level of ***$9,245.10 to $4,102.30*** till March 2019. Despite pull back, the Bitcoin performed well in 2019 by reaching ***$10,818.60*** in June 2019. The returns were so attractive that it gained the attention of big institutional investors. Monthly returns of Bitcoin can be observed in Figure 2 that in period 1, the bitcoin has given negative returns in maximum months. The monthly return was minimum in the month of Nov 2018 at -36.54% and maximum in the month of May 2019 with 60.9%.
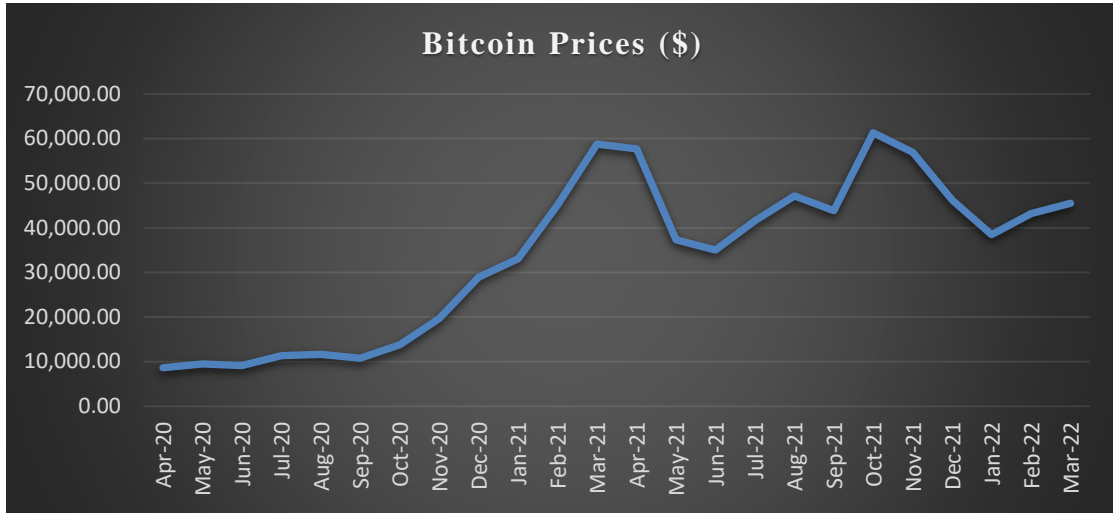
Figure 3: Trend of monthly Bitcoin prices ($) in Period 2 (April 2020-March 2022)
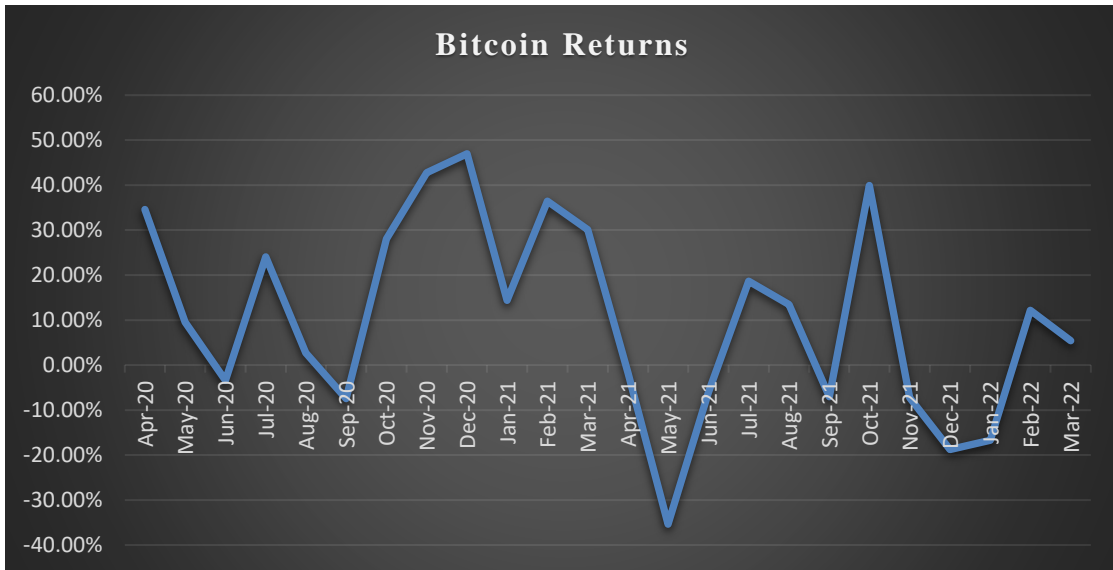

Figure 4: Trend of monthly Bitcoin returns in Period 2 (April 2020-March 2022)

Source: Author's Computation (Fig1, Fig2, Fig3, Fig4).

As it can be observed from Figure 3, Bitcoin's price increased to $58,763.70 in March 2021 from a price level of $8,629 in April 2020 increasing about 581% in just one year. Later, a larger breakdown took place though it does not continue for long and again the bitcoin reached a peak of $61,309.60 in the month of Oct 2021, since then Bitcoin fell to $38,498.60 in Jan 2022 as uncertainty about inflation continued to spook investors alongside the emergence of a new variant of COVID-19, Omicron. Global phenomenon like the Russian Ukraine war has positively impacted Bitcoin Price as its price rose during that period. From Figure 4, it can be inferred that in Period 2 the bitcoin has given positive returns in maximum months. The monthly return was maximum in the month of Dec 2020 at 46.97% and minimum in the month of May 2021 with -35.38%.

Table 2: Descriptive Statistics of Bitcoin Returns and Risk

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	BTC_Period_1	1.9%	24	22.2%	.0453632
	BTC_Period_2	10.6%	24	21.6%	.0442399

Source: Author's Computation

It can be inferred from Table 2 that the average returns of Bitcoin for Period 2 are much higher than Period 1. The mean values of returns of 24 months are 1.9% and 10.6% in Period 1 and Period 2 respectively. But the risk level measured by standard deviation is quite similar for both the periods which is 22.22% and 21.67%. Thus, if an investor has invested in Bitcoin in the previous two years, they would have gained 10.6% on an average per month at a risk of 21.6%.

Table 3: Comparison of Bitcoin Monthly Returns of Period 1 with Period 2 through Paired T-test

	Paired T-test			t	df	Sig.(2-tailed)
	Standard Error Mean	**95% Confidence**				
		Upper	Lower			
BTC_Period_1						
BTC_Period_2	0.072	-0.236	0.0602	-1.228	23	0.232

Source: Author's Computation

Paired t test is conducted in Table 3 to test whether there is any significant difference in monthly returns of Bitcoin of Period 1 with Period 2. The test results show that p-value is 0.232 which is greater than 0.05 at 95% confidence interval. Hence, we fail to reject our null hypothesis H_0 and conclude that there is no significant difference in monthly market returns of Bitcoin prices during Period 1 and Period 2.
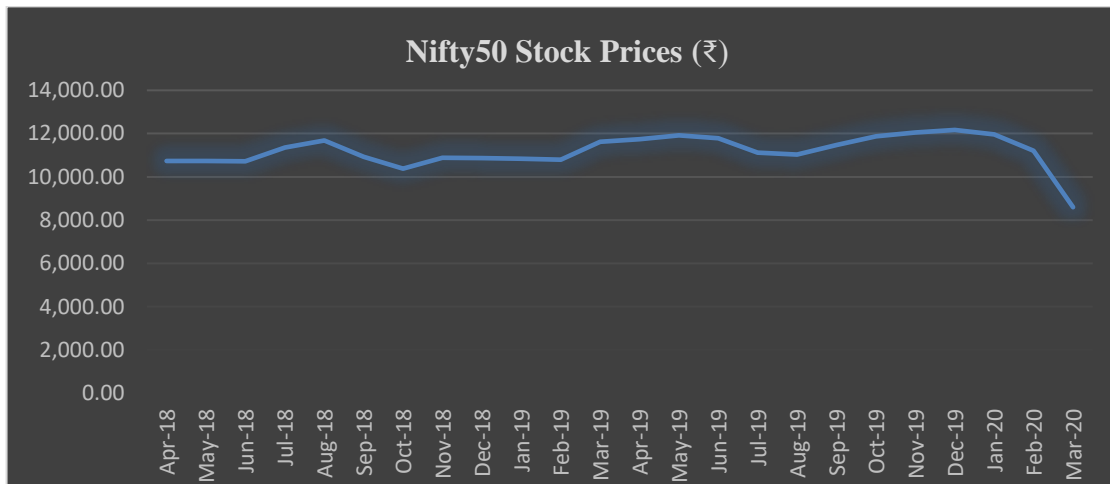

Figure 5: Trend of monthly Nifty50 stock prices (₹) in Period 1 (April 2018-March 2020)
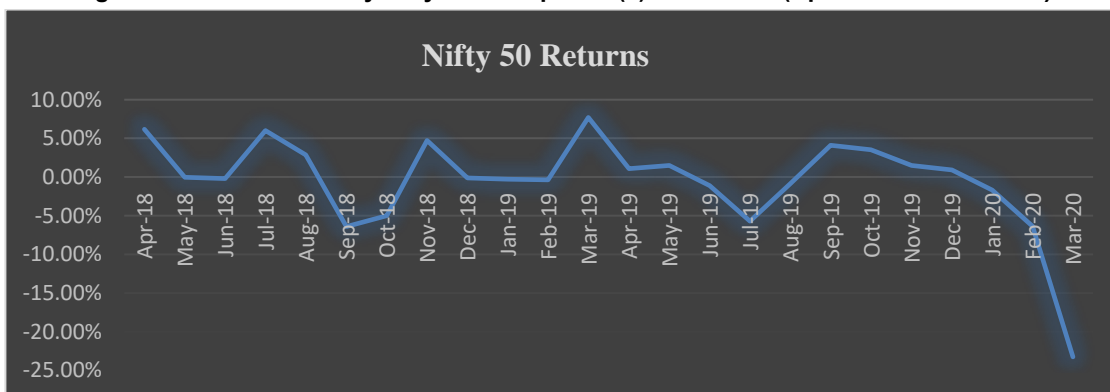

Figure 6: Trend of monthly Nifty50 stock returns in Period 1 (April 2018-March 2020)

Figure 5 depicts that the prices of Nifty50 index are less volatile in comparison to Bitcoin. On April 2018, Nifty index value was ₹10,739.35 and on March 2019, it was ₹11,623.90. It provided around 8.2% return to their investors in one year. Later, it kept consistency in the index value but ended with ₹8,597.75 in March 2020. It can also be observed from Figure 6 that in Period 1, Nifty50 has given positive returns in maximum months. The monthly return was maximum in the month of March 2019 at 7.7% and minimum in the month of March 2020 with -23.3%.
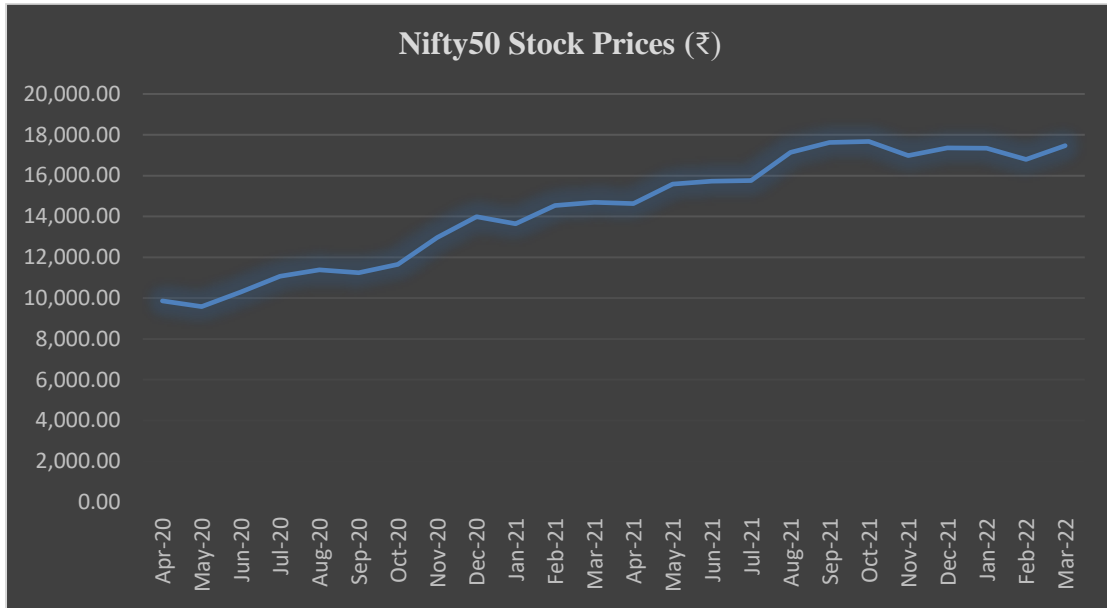
Figure 7: Trend of monthly Nifty50 stock prices (₹) in Period 2 (April 2020-March 2022)
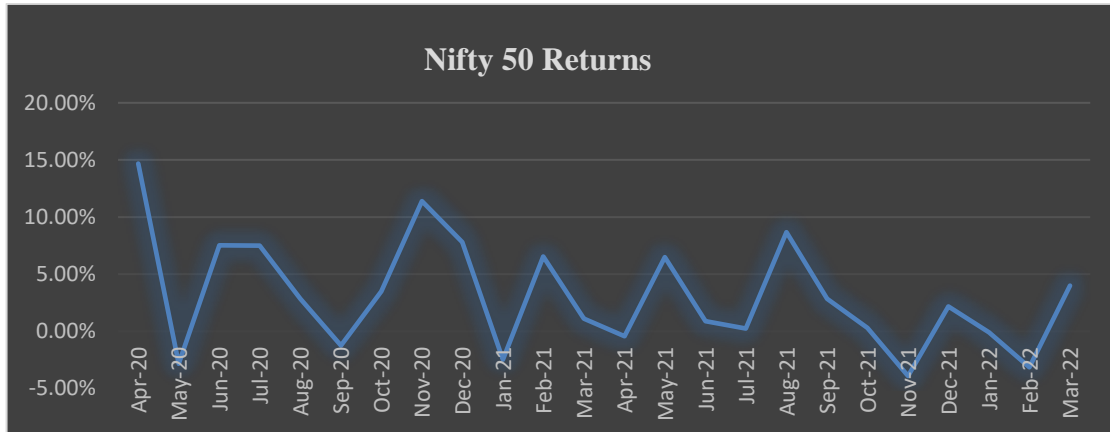

Figure 8: Trend of Monthly Nifty50 stock returns in Period 2 (April 2020-March 2022)

Source: Author's Computation (Fig5, Fig6, Fig7, Fig8).

It can be inferred from Figure 7 that in Period 2, the value of Nifty50 stocks is showing an upward trend despite the fact that the pandemic COVID 19 was at its peak at that point of time providing huge returns to the investors. But the start of Russian-Ukraine war has negatively impacted the stock market as the index fell by 3.15% in the month of February, 2022. Also, it was observed in Figure 8 that in Period 2, the Nifty50 stocks has given positive returns in most of the months. The monthly return was maximum in the month of April, 2020 with 14.68% and minimum in the month of November, 2021 at -3.90%.

Table 4: Descriptive Statistics of Nifty 50 Stock Returns and Risk

		Mean	*N*	*Std. Deviation*	*Std. Error Mean*
Pair 1	Nifty _Period_1	-0.47%	24	6.18%	.0126161
	Nifty_ Period_2	3.10%	24	4.85%	.0099002

Source: Author's Computation

Table 4 descriptive data shows that the average returns of Nifty50 stocks in Period 2 is much higher than Period 1. The mean values of returns of 24 months are -0.47% and 3.10% in Period 1 and Period 2 respectively. But the level of risk is at 6.18% and 4.85 % for Period 1 and Period 2.

**Table 5: Comparison of Nifty50 stocks Monthly Returns of
Period 1 with Period 2 through Paired T-test**

	Paired T-test			t	df	Sig.(2-tailed)
	Standard error mean	95% Confidence				
Nifty50_Period_1		Upper	Lower			
Nifty50_Period_2	0.0141	-0.065	-0.007	-2.541	23	0.018

Source: Author's Computation

Paired t test results from Table 5 tries to ascertain whether there is any significant difference in monthly returns of Nifty50 stocks of Period 1 with that of Period 2. We find that the p-value is 0.018 less than 0.05 at 95% confidence interval. Therefore, we reject our null hypothesis H_0 and interpret that there is a significant difference in monthly market returns of Nifty50 stock prices during Period 1 and Period 2.

Table 6: Correlation Results of Bitcoin Returns and Nifty50 Stock Returns in Period 1

Correlations			
		BTC_Period_1	Nifty50_Period_1
BTC_Period_1	Pearson Correlation	1	0.298
	Sig. (2-tailed)		0.158
	N	24	24
Nifty50_Period_1	Pearson Correlation	0.298	1
	Sig. (2-tailed)	0.158	
	N	24	24

Source: Author's Computation

Pearson's Correlation test was performed to check the relationship between Bitcoin returns and Nifty50 stock returns of Period 1. The correlation comes out to be 0.298 which is positive but the strength of relationship is very low. Also, the p-value is 0.158 which is greater than 0.05 and hence, insignificant. Therefore, our null hypothesis H_0 fails to be rejected and we conclude that there is no significant relationship between Bitcoin returns and Nifty50 returns during period 1.

Table 7: Correlation Results of Bitcoin Returns and Nifty50 Stock Returns in Period 2

Correlations			
		BTC_Period_2	Nifty50_Period_2
BTC_Period_2	Pearson Correlation	1	0.372
	Sig. (2-tailed)		0.074
	N	24	24
Nifty50_Period_2	Pearson Correlation	0.372	1
	Sig, (2-tailed)	0.074	
	N	24	24

Source: Author's Computation

The correlation results output in Table 7 showed the relationship between Bitcoin returns and Nifty50 returns of Period 2. Pearson's correlation value is 0.372 which is positive and slightly higher than the Period 1 correlation value which signifies that the two investment assets were more correlated in Period 2 than in Period 1. Again, the p-value of 0.074 is greater than 0.05 which prompts us to reject our alternative hypothesis H_1 and we conclude that there was no significant relationship between Bitcoin returns and Nifty50 stock returns even in Period 2 also.

Conclusion

Based on the research results discussed above, it was found that Bitcoin returns are more volatile in comparison to Nifty50 stock returns. The rate of average monthly return of Bitcoin is much higher than Nifty 50 monthly returns both in Period 1 and Period 2. It was also found that prospective investors might have earned a maximum of 60.9% returns in one month in period 1 by investing in Bitcoin at a risk of 22.2%. While the same investors if they had invested in Nifty50 stocks, then they would have earned a maximum of 7.7% returns at a risk of 6.18%. In the case of Period 2 which was the disturbed period, the investor might have earned a maximum of 46.97% returns in one month by investing in Bitcoin at a risk of 21.6%. While by investing in Nifty50 stocks, the investors might have earned a maximum of 14.68% at a risk of 4.85%. Therefore, it can be said that higher returns come along with higher risks. Paired T-test concludes that there was no significant difference in monthly returns of Bitcoin in Period 1 and Period 2 while there was a significant difference found in monthly returns of Nifty50 in Period 1 and Period 2. Further, positive correlation was found in both the periods between Bitcoin and Nifty50 stocks monthly returns. However, the correlation was not significant at 5%

level of significance. So, until and unless cryptocurrencies are regulated and considered a legal tender and medium of exchange for transacting by all the countries, investors should opt for investment in equities which will be a much safer option. Therefore, it can finally be concluded that for the investors who are risk averse, an investment on Bitcoin is not suitable since this investment has the highest risk irrespective of any global or national economic crisis.

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