Risk-Return Analysis of Select Crypto Currencies: During 2018-2022

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Funding: No specific funding was received for this work.

Potential competing interests: No potential competing interests to declare.

Abstract

An investor who acquires intangible digital assets through "cryptocurrencies" should consider that they may or may not make a get returns. Sometimes there is a possibility of a loss of the entire real asset of the investor. Every investor faced the unexpected market conditions during the period i.e. 2020-21. Hence, this paper made an attempt to focus risk and return on investments in select crypto currencies during the period i.e. 2018-19 and 2021-22.

This paper focus on whether Cryptocurrency is an intangible digital asset or a way of vanishing fiat currency?

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Objectives:

1. To make focus on the empirical studies on crypto currencies operated through online trading platforms.
2. To know the risk and return on select crypto currencies during the study period i.e. 2018-19 and 2021-22.

Keywords: Crypto-asset, Crypto-exchange, Digital transactions, Crypto Regulations, Intangible digital asset.

JEL Classification: E49- Money and Interest rates-Other; F-39- International Finance-Other, K-24-Cyber Laws.

1. Introduction

The concept of an open-source currency i.e., ‘cryptocurrency’, such as a central distribution agency or state lead control, is an innovation in the present business world (King & Nadal, 2012). Every investor faced the unexpected market conditions during the covid-19 period, particularly during 2020-21. Hence, this paper made an attempt to focus risk and return on investments in select crypto currencies during the period i.e. 2018-19 and 2021-22. The total value of all cryptocurrency in circulation is over $100 billion arguably posing a credible threat of supplanting central-bank-issued money (Yates, 2017).

Most researchers are trying to define ‘crypto currency’ as an 'intangible digital asset' but could not identify how much value it creates. An investor who acquires intangible digital assets through "cryptocurrencies" should consider that they may or may not create a fiat currency. Sometimes there is a possibility of a loss of the entire fiat currency of the investor. Nara Kim and Jang Mook Kang (2018) analyzed block chaining technology and digital authentication technology. A digital authentication system is proposed to solve the high cost of existing digital authenticated technology. They suggested a user authentication service based on blockchain. In this context, this paper is intended to focus on online-trading platforms for cryptocurrencies and regulatory mechanisms.

As of now, there are nearly 11000 crypto-currencies available through ‘Initial Coin Offering’ (ICO). However, the most considerable problem regulator have is that investors buy Cryptocurrency on any digital platform and send it to unknown addresses that even digital platforms cannot track. The Securities Exchange Board of India (SEBI) announced during December 2021 that instead of using the word 'crypto-currency,' it can be called 'Crypto-asset.'

One should know that the 'Intangible Digital Assets' can be created through a 'Non-Fungible Token' (NFT). It is a non-interchangeable unit stored on a digital ledger or blockchain. NFTs can be associated with easily-reproducible items such as photos, videos, audio, and other types of digital files as unique items. Copies of the original file are not restricted to the owner of the NFT. The lack of interchangeability, i.e., fungibility, distinguishes NFTs from blockchain-based cryptocurrencies. Blockchain serves as a database for storing all information about cryptocurrency transactions. The creation and control of these transactions are based on cryptographic methods (Butenko 2014).

2. Review of literature

There is empirical evidence for the ineffectiveness of digital currencies. Cryptocurrency, an encrypted, peer-to-peer network for facilitating digital exchange, is a technology developed 12 years ago. Bitcoin, the first and most popular Cryptocurrency, is paving the way as a disruptive technology to long-drawn-out standing and whole financial payment systems that have been in place for many decades. While cryptocurrencies are not likely to replace traditional fiat currency, they could change the way Internet-connected global markets interact with each other, clearing away barriers surrounding normative national currencies and exchange rates (Peter D. DeVries, 2016). Volatility dynamics of Bitcoin’s logarithmic returns are measured by Ardia et al. (2019) by using the Markov Switching GARCH (MSGARCH) model to test the existence of institutional changes.

The financial sector has gradually been digitized, introducing the online payment gateway PayPal or the digital currency (Gonzalez, 2004). Crypto exchanges in India are gearing up to launch bitcoin futures. However, first, they want to integrate other cryptocurrencies such as Ethereum, Ripple, and Bitcoin Cash (BCH) on their platform. Other than bitcoins, there are about 1,000 alternative coins (altcoins) in the global market, with Ethereum being the most popular. Altcoins are cryptocurrencies that were launched after the success of bitcoin (Rajesh Kurup, 2017). The rise of fintech has led to the widespread belief that a major source of systemic risk in the financial sector is the dominance of financial institutions. It will overturn the hypothesis that new crypto brokerages include hundreds of crypto trading platforms, or “exchanges,” where investors can buy and sell Cryptocurrency (William, 2018).

Will the cryptocurrency have the ability to benefit from a higher degree of confidence than the present one starting from the backdrop of the growing discontent generated by numerous imbalances occurring in the economies of different states?" (Angela and Liana, 2014).

The pricing behavior of cryptocurrencies is studied by Kyriazis (2019), which reveals that the Efficient Market Hypothesis is rejected. Nevertheless, significant steps towards efficiency in cryptocurrencies have been traced during the last years. The profitability of technical trading rules in the cryptocurrency market using trend-following and mean-reverting strategies are examined by Resta Marina et al. (2018). Since the inception of digital currency showed a success path, which now numbers as many as 5025 cryptocurrencies as of 13th Jan 2020. Caporale et al. (2018).

It was observed that the crypto-currency market is persistent. Chaim et al. (2018) estimated a multivariate stochastic volatility model with discontinuous jumps in cryptocurrency markets. The results showed that permanent volatility appears to be driven by significant market developments and popular interest levels.

Maurice et al. (2019) show that 'volatility persistence' was powerfully revealed across all trading scales and in conditional market volatilities than in the full-sample and unconditional volatilities. By extension, the markets persist more in volatility across scales. It is found that the evidence of demand efficiency and the intensity of volatility persistence is somehow sensitive to time scales, the measure of market returns and volatilities, and data regimes. Hence, any empirical investigation of the price dynamics of these markets should be mindful of the identified data properties.

Shaen Corbet et al. (2020) considered the role of negative sentiment in the outbreak and development of the COVID-19 pandemic. The results suggest significantly and pronounced time-varying price-volatility effects as investors identified the severity and nature of the pandemic’s growth trajectory and potential economic repercussions.

Beatriz and André's (2020) analysis indicates that the strength of dependence among the crypto-currencies has increased over the recent years in the cointegrated crypto-market. The findings will help investors manage risk while identifying opportunities for alternative diversified and profitable investments. The researchers have briefly discussed the effects of the COVID-19 pandemic on the crypto market using data relating to 2020.

One may acquire 'Intangible Digital Assets' created through a 'Non-Fungible Token' (NFT). The lack of interchangeability, i.e., fungibility, distinguishes NFTs from blockchain-based cryptocurrencies, such as Bitcoin. It is a non-interchangeable

unit stored on a digital ledger or blockchain. NFTs can be associated with easily-reproducible items such as photos, videos, audio, and other types of digital files as unique items. Copies of the original file are not restricted to the owner of the NFT.

The concept of an open-source currency without a central point of trust, such as a significant distribution agency or state lead control, is new (King & Nadal, 2012). Every investor needs to have an answer to the questions, viz., is it Bitcoin, that particular private currency that will have the most extended life? Moreover, how long will it run in parallel with the traditional currency? Will Cryptocurrency have the ability to benefit from a higher degree of confidence than the present one starting from the backdrop of the growing discontent generated by numerous imbalances occurring in the economies of different states?" (Angela Rogojanu and Liana Badea, 2014).

The results reveal that Cryptocurrency has shown a successful path since its inception, despite volatile market conditions (Caporale et al., 2018). It is observed that the technology can potentially improve central banks' operations and can serve as a platform to launch their cryptocurrencies (Raskin & Yermack, 2016). The nature and the ability of the five largest cryptocurrencies, viz., Bitcoin, Ethereum, Ripples, NEM, and Dash, are examined by Phillip et al. (2018).

It should be noted that the cryptocurrencies cannot replace the fiat currency, and they could change how inter-connected global markets interact, clearing away barriers surrounding normative currencies and foreign exchange rates (Peter D. DeVries, 2016).

Although consumers may have digital banking credentials to access the digital financial system, consumers in many emerging markets are not active users of digital channels due to a lack of consumer trust and confidence in the new channels (Maladay, 2016).

Yates (2017) highlighted that government agencies explore the potential for cryptocurrencies to compete with government-backed money; the total value of all cryptocurrencies in circulation is over $100 billion, arguably posing a credible threat of supplanting central-bank-issued money.

Hacker and Thomale(2017) suggest two policy proposals to mitigate legal uncertainty concerning token sales. They are, first, tailoring disclosure requirements to the code-driven nature of token sales. An ICO-specific safe harbor would offer a clear and less burdensome path to EU law compliance for token sellers who suspect their tokens may qualify as securities. Second, overlapping and partially contradicting securities regulation regimes can undermine each other. It is noted that only a joint international regulatory authority can efficiently balance investor protection and investor access in the face of the novel generation of decentralized blockchain applications.

Blemus (2018) extensively compares the current regulatory trends in selected countries on the various applications enabled or issues raised by Blockchain technology.

Michael & Wei (2020) suggested a model for cryptocurrency as membership in a decentralized digital platform to facilitate transactions between users of certain goods or services. The problem induced by the cryptocurrency price has to clear membership demand with speculators' supply of the token.

3. Data Analysis

Table-1 is provided for a Comparative Data of Monthly Prices of Select Crypto Currencies: 2018-2022. Table- 2 shows the correlation among select crypto currencies and Table -3 is allotted for the 'Monthly Price Variation for Select Crypto Currencies'. The following results are observed:

- The unexpected surge with 425.13 per cent in price of Bitcoin during the period 1st March, 2020 to 1st March, 2021. However, 4.35 percentage of price drop is observed. by 1st March, 2022.
- The price of Bitcoin-cash is increased by 49.21 percent during 2020-21 period and drastically decreased by 26.7 percent in 2021-22.
- An unimaginable hike in price of 'cardono-crypto currency', with 2657 per cent during 2020-21 and a marginal decline of 26.72 per cent in 2021-22 period.
- The price of 'EOS-currency' is marginally declined in 2020-21 period and deeply decreased by 34.29 per cent in 2021-22 period.
- An unexpected positive growth in price of 'Ethereum Coin' during 2020-21 with 544.89 per cent and it also showed an additional positive growth of 106.18 per cent in 2021-22 period.
- The volatility in price of 'Litecoin' is observed that a positive trend with 181.87 per cent in 2020-21 and a negative trend with 32.22 per ent in 2021-22.

These results indicate that the investor should know that unexpected gains and losses are certain in crypto-asset trading. It also leads to the loss of tangible assets at the cost of digital assets.

Table 1. A Comparative Data of Monthly Prices of Select Crypto Currencies: 2018-2022

Date	BITCOIN	BITCOIN-CASH	CARDANO	eos	ETHEREUM	LITE COIN
Jan 01, 2018	14112.2	2534.82	0.718847	8.77	755.76	231.67
Feb 01, 2018	10237.3	1491.12	0.515912	12.24	1119.37	163.68
Mar 01, 2018	10385	1204.84	0.311973	8.39	856.01	203.12
Apr 01, 2018	7003.06	688.01	0.156597	6	397.25	116.9
May 01, 2018	9251.47	1348.64	0.342953	17.67	670.46	148.34
Jun 01, 2018	7500.7	995.66	0.224533	12.29	578.67	118.03
Jul 01, 2018	6411.68	749.18	0.138264	8.15	455.24	81.5
Aug 01, 2018	7769.04	779.95	0.143086	7.36	433.87	80.39
Sep 01, 2018	7044.81	543.96	0.101877	6.44	283.5	61.74
Oct 01, 2018	6619.85	531.64	0.085292	5.74	233.22	61.1
Nov 01, 2018	6318.14	423.07	0.069698	5.2	197.54	49.56
Dec 01, 2018	4024.46	172.52	0.038991	2.89	113.4	32.13
Jan 01, 2019	3746.71	150.9	0.040984	2.57	133.42	30.46
Feb 02, 2019	3484.63	116.55	0.038598	2.34	107.47	32.82
Mar 01, 2019	3853.76	132.08	0.043112	3.54	136.84	46.24
Mar 01, 2020	**8,599.76**	**308.26**	**0.04751**	**3.54**	**219.75**	**58.53**
Oct 01, 2021	43,816.74	502.85	2.12	3.94	3,001.13	153.29
Nov 01, 2021	61,320.45	596.66	1.96	4.64	4,288.22	192.05
Dec 01, 2021	56,907.97	569.95	1.55	4	4,623.68	207.64
Jan 01, 2022	46,311.74	430.7	1.31	3.04	3,683.05	146.54
Feb 01, 2022	38,481.77	285.51	1.05	2.34	2,687.90	109.59
Mar 01, 2022	43,194.50	337.15	0.9599	2.28	2,919.78	113.48

Source: Web resources

Table 2. Correlation Among Select Crypto Currencies

	BITCOIN	BITCOIN-CASH	CARDANO	EOS	ETHEREUM	LITE COIN
BITCOIN	1					
BITCOIN-CASH	-0.10675	1				
CARDANO	0.94135	0.044526	1			
EOS	-0.32128	0.714968	-0.20048	1		
ETHEREUM	0.99012	-0.07295	0.930598	-0.26284	1	
LITE COIN	0.574139	0.690888	0.655893	0.363978	0.613644	1

Table 3. Monthly Price Variation for Select Crypto Currencies

Date	BITCOIN	BITCOIN-CASH	CARDANO	eos	ETHEREUM	LITE COIN
Feb 01, 2018	-32.85	-47.61	-42.13	15.50	34.19	-37.87
Mar 01, 2018	19.41	1.38	-27.81	-15.48	-15.87	47.40
Apr 01, 2018	-37.50	-50.23	-50.47	-34.41	-56.48	-45.07
May 01, 2018	33.24	110.14	137.91	234.81	77.45	28.88
Jun 01, 2018	-17.30	-25.78	-37.97	-35.04	-13.89	-19.24
Jul 01, 2018	-15.32	-26.27	-36.09	-33.96	-21.74	-33.09
Aug 01, 2018	19.40	4.05	-0.92	-10.70	-7.31	-2.97
Sep 01, 2018	-5.66	-20.02	-24.18	-8.54	-29.81	-15.30
Oct 01, 2018	-8.39	-13.72	-20.93	-13.55	-21.86	-8.70
Nov 01, 2018	-3.21	-20.12	-16.10	-8.01	-13.82	-16.51
Dec 01, 2018	-33.92	-59.41	-41.48	-43.94	-40.34	-31.69
Jan 01, 2019	-8.81	-4.22	2.60	-10.14	18.70	-6.87
Feb 02, 2019	-8.39	-26.12	-7.59	-8.65	-21.58	7.54
Mar 01, 2019	9.61	9.17	10.08	44.86	23.55	38.09
Mar 01, 2020	**4746.00**	**176.18**	10.20	**0.00**	**60.58**	**26.58**
Nov 01, 2021	39.95	18.66	-7.55	17.77	42.89	25.29
Dec 01, 2021	-7.20	-4.48	-20.92	-13.79	7.82	8.12
Jan 01, 2022	-18.62	-24.43	-15.48	-24.00	-20.34	-29.43
Feb 01, 2022	-16.91	-33.71	-19.85	-23.03	-27.02	-25.22
Mar 01, 2022	12.25	18.09	-8.58	-2.56	8.63	3.55

4. Summary

Every investor need to have an answer to the questions viz., Is it particular private currency that will have the most extended life? Moreover, if so, how long will it run in parallel with the traditional money?

Crypto-currency and online trading are becoming the most fashionable trend and attract youth. However, one should keep in mind that the crypto-currency is not recognized and illegal as notified by various governments across the globe. Some countries also announced that dealing in crypto-currency attracts the law of Anti-Money Laundering. In addition to this, the enormous amount of volatility in online trading is leading to severe losses.

Declarations

- The authors have no competing interests to declare that are relevant to the content of this article.
- All authors certify that they have no affiliations with or involvement in any organization or entity with any financial interest or non-financial interest in the subject matter or materials discussed in this manuscript.

- The authors have no financial or proprietary interests in any material discussed in this article.
- No funding was received to assist with the preparation of this manuscript.

References

- Angela ROGOJANU and Liana BADEA (2014). The Issue of Competing Currencies-Case study-Bitcoin. Theoretical Applied Economics, XXI. (1): 103-114.
- Ardia, D., Bluteau, K., Rüede, M., 2019. Regime changes in bitcoin garch volatility dynamics. Finance Research Letters 29, 266–271.
- Blemus, Stéphane(2018), Law and Blockchain: A Legal Perspective on Current Regulatory Trends Worldwide. Revue Trimestrielle de Droit Financier (Corporate Finance and Capital Markets Law Review) RTDF N°4-2017 - December 2017, Available at SSRN: https://ssrn.com/abstract=3080639 or http://dx.doi.org/10.2139/ssrn.3080639
- Beatriz Vaz de Melo Mendes, & André Fluminense Carneiro. (2020). A Comprehensive Statistical Analysis of the Six Major Crypto-Currencies from August 2015 through June 2020. Journal of Risk and Financial Management, 13, 192. Source: https://doi.org/10.3390/jrfm13090192.
- Butenko ED (2014). Bitcoin The state and prospects for the development of cryptocurrency. Finance and credit , 23(599):44-47.
- Caporale, G.M., Gil-Alana, L., Plastun, A., 2018. Persistence in the cryptocurrency market. Research in International Business and Finance, 46, 141–148.
- Chaim, P., Laurini, M.P., 2018. Volatility and return jumps in bitcoin. Economics Letters 173, 158–163.
- Gonzalez, A. G. (2004). PayPal: The Legal Status of C2C Payment Systems. Computer Law & Security Review, 20 (7): 293–299.
- Hacker, Philipp, and Thomale (2018). Chris, Crypto-Securities Regulation: ICOs, Token Sales and Cryptocurrencies under EU Financial Law (22nd Nov 2017). European Company and Financial Law Review 645-696 (2018). Available at SSRN: https://ssrn.com/abstract=3075820 or http://dx.doi.org/10.2139/ssrn.3075820
- Katsiampa, P., 2018. Volatility co-movement between Bitcoin and Ether. Finance Res. Lett. https://doi.org/10.1016/j.frl.2018.10.005
- Kyriazis, Nikos. (2019). A Survey on Efficiency and Profitable Trading Opportunities in Cryptocurrency Markets. Journal of Risk and Financial Management. Doi: 12. 67. 10.3390/jrfm12020067.
- King, S., and S. Nadal.(2012). “PPCoin: Peer-to-Peer Crypto-Currency with Proof-of-Stake.” Source: https://decred.org/research/king2012.pdf.
- Maurice Omane-Adjepong, Paul Alagidede, Nana Kwame Akosah. (2019). Wavelet time-scale persistence analysis of cryptocurrency market returns and volatility, Physica A: Statistical Mechanics and its Applications, 514, 105-120, https://doi.org/10.1016/j.physa.2018.09.013.
- Michael Sorkin & Wei Xiong (2020). "A Model of Cryptocurrencies," NBER Working Papers 26816, National Bureau of

Economic Research, Inc.

- Nara Kim and Jang Mook Kang (2018). A Case study of Public BlockChain and CryptoCurrency Technology Focus on Authentication System. Journal of Engineering and Applied Sciences, 13(3):689-690. ISSN: 1816-949x.
- Peter D. DeVries (2016). An Analysis of Cryptocurrency, Bitcoin, and the Future. International Journal of Business Management and Commerce, 1(2).
- Phillip, A., Chan, J. and Peiris, S., 2018. A new look at Cryptocurrencies. Economic Letters. 163, 6-9.
- Raskin, M., and D. Yermack. 2016. “Digital Currencies, Decentralized Ledgers, and the Future of Central Banking”. National Bureau of Economic Research. NBER Working Paper No. 22238.
- Resta, Marina & Neffelli, Marco & De Giuli, Maria. (2018). Technical analysis on the Bitcoin market: trading opportunities or investors pitfall?
- Shaen Corbet, Andrew Meegan, Charles Larkin, Brian Lucey, Larisa Yarovaya (2018). Exploring the dynamic relationships between cryptocurrencies and other financial assets, Economics Letters, Volume 165, Pages 28-34, ISSN 0165-1765, https://doi.org/10.1016/j.econlet.2018.01.004.
- Shaen Corbet, Yang (Greg) Hou, Yang Hu, Charles Larkin, Les Oxley. (2020). Any port in a storm: Cryptocurrency safe-havens during the COVID-19 pandemic, Economics Letters, 194. Source: https://doi.org/10.1016/j.econlet.2020.109377.
- William Magnuson (2018). Regulating Fintech. Vanderbilt Law Review, 71(4).
- Yates, T (2017). The consequences of allowing a cryptocurrency takeover, or trying to head one off, Retrieved from https://ftalphaville.ft.com/2017/06/07/2189849/guestpost-the-consequences-of-allowing-a-cryptocurrency-takeover-or-trying-to-head-oneoff/.