Turkish Online Journal of Qualitative Inquiry (TOJQI)
Volume 12, Issue 9, August 2021: 7524-7528

Comparative Study of Risk, Liquidity and Return of Major Cryptocurrencies: Bitcoin and Ethereum

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Introduction

Cryptocurrencies, also called as crypto, are binary data collections designed to function as medium of exchange. It works on the block chain technology and has emerged as one the favorite asset classes amongst the investors round the globe. With an overall market cap of $1.18 trillion, it has been one of the most talked about financial concepts of recent times.

Bitcoin was launched in 2009 and has inspired the whole crypto market for over a decade now. Bitcoin is created, distributed, traded, and stored with the use of a decentralized ledger system, known as a blockchain. Bitcoin has been turbulent historically as a store of value.

The paper talks about the risk and return matrix of the two most traded cryto Bitcoin and Etherium. It studies the comparative risk and return profiles of the two crypto using the technques of finance like Value at Risk and statistical methods of risk measurement like standard deviation, coefficient of variance.

Literature Review

Kayahan and Topal (2009) calculated the quantity of daily loss that would be featured by a corporation from the producingbusiness with its exchange portfolio through PVaR and HSM in line with 95% and 99% confidence level. Authors conclude that PVaR and HSM are a lot ofvital and convenient strategies for manufacturing companies.

Study of Zikovic and Aktan (2009) distinguishes the analysis before- and after-crisis periods. Estimations createdsupported the daily come back rates of BIST (XU100) and Croatian securities market (CROBEX) indexes at confidence levels of 95%, 99%, and 99.5% are taken into thought in volt-ampere analysis. As a results of the study, BIST (XU100) and Croatian (CROBEX) indexes are found to be similar Aziz and Ansari (2017) calculablevolt-ampere values for return rates of the portfolio engineered by the stocks listedwithin the Indian securities market for the amount of 1999-2014. Findings of authors recommend that the portfolio built by instruments with high volt-ampere variables yielded higher returns compared with the portfolios engineered by instruments with low volt-ampere values.

In the study of Cekici (2017), the danger level of constructingAssociate in Nursing investment on non-depository financial institution stocks listedwithin thestock exchange is calculable through volt-amperetechniquesupportedthe information set from the {amount} of 01.04.2016-31.03.2017. to it end, the portfolio in the price of 5,000 atomic number 81 build by 5completely different stocks invested with in an equal amount of 1,000 atomic number 81 is tested by mistreatment VCM. Study findings address that the utmost loss are 1,694.47 atomic number 81 at 99% confidence level whichit'd be risky to form an investment on stocks of insurance corporationsas a result of the estimated loss is rather high.

Gap Analysis: While going through the literature review in the related field of study it can be made out that there is a gap which exists in the form of comparative study of leading crypo-currencies. Also, there has not been any relational study of risk – return of major cryptocurrencies.

Objective

1) Study the price movement of three major cryptocurrencies, bitcoin and etherium.
2) Measure the risk of the two cryptocurrencies.
3) Compare the risk and return of three major cryptocurrencies.

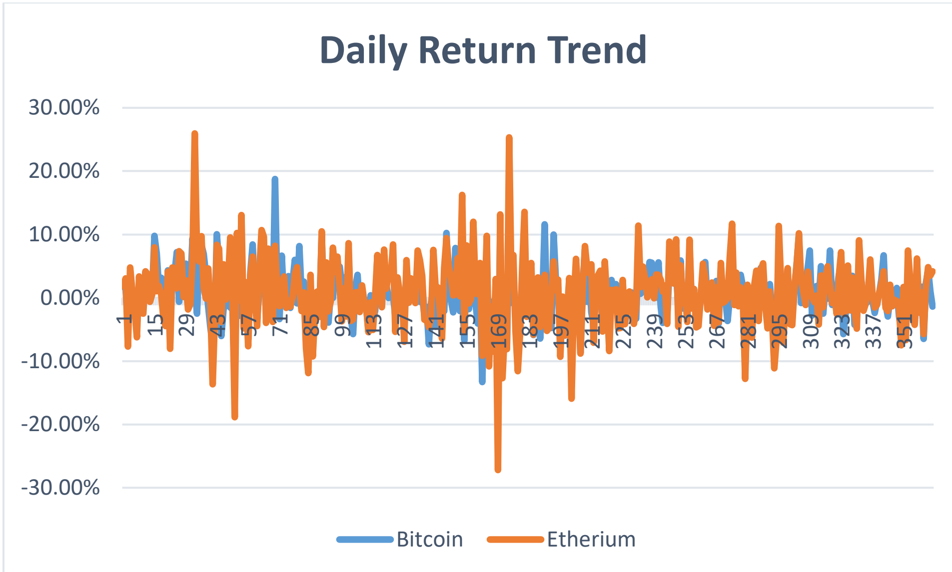
Sampling:

- The price data of all the three cryptos have been extracted from yahoo finance for past 365 days (from 1st December 2020 to 30th November 2021).
- The research is based on secondary data and daily closing price data has been chosen for the analysis.

Hypothesis

Risk	H0: Bitcoin is more risky than Etherium H1: Eherium is more risky than Bitcoin.
Return	H0: Bitcoin has better average return as compared to Etherium. H1: Bitcoin does not have average return as compared to Etherium.
Risk Return Ratio	H0: Risk to Return Ratio is better for Bitcoin as compared to Etherium. H0: Risk to Return Ratio is not better for Bitcoin as compared to Etherium.

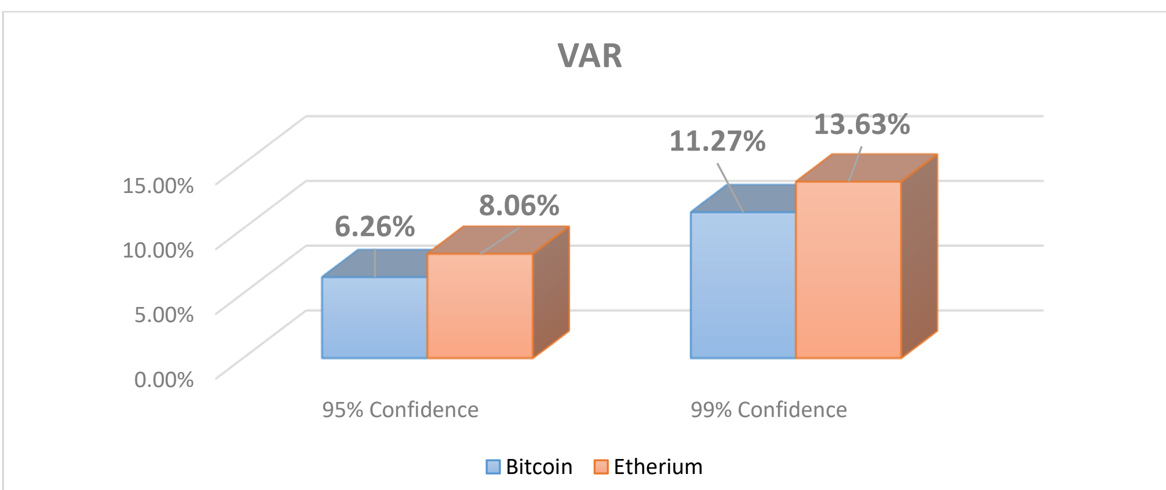
Trend Analysis of Daily Return:



<u>Data Analysis</u>: The methods adopted for the study are Value at Risk at 95% confidence and 99% confidence, Coefficient of Variance and Visualization techniques for trend analysis.

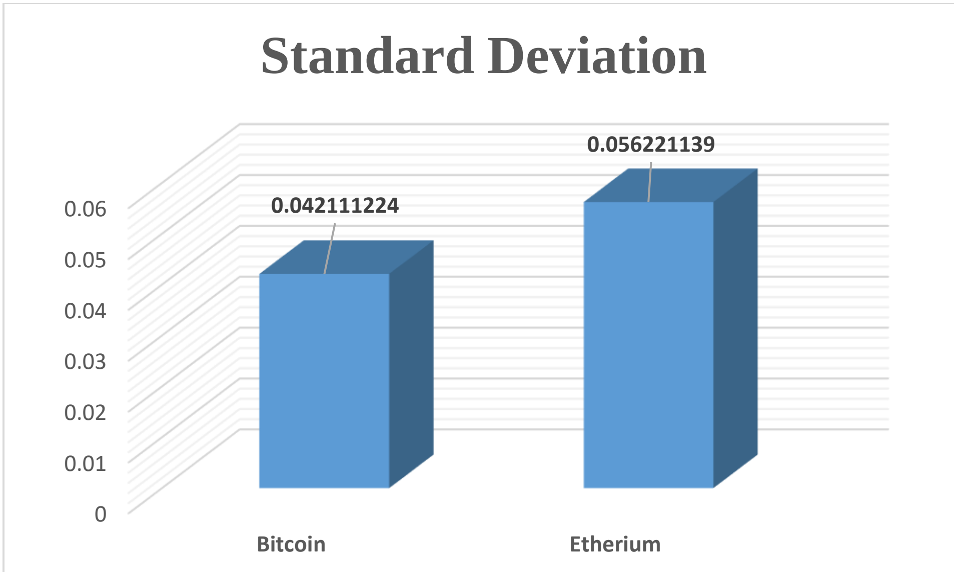
	VAR					
	95% Confidence	**99% Confidence**	**SD**	**Mean/ Average**	**Coefficient of Variance**	**Yearly Return**
Bitcoin	6.26%	11.27%	0.042111	0.3934%	10.70577075	143.57%
Etherium	8.06%	13.63%	0.056221	0.7271%	7.73208988	265.40%

<u>Value at Risk:</u>



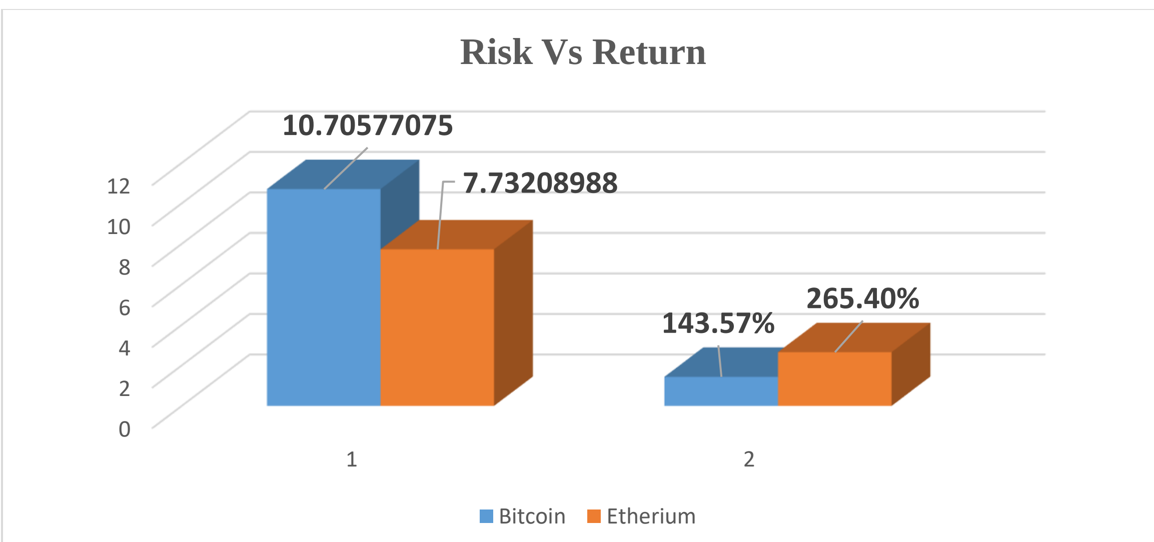
Value at Risk has been measured for the three cryptocurrencies at 95% confidence level and 99% confidence level. The VAR at 95% confidence level is maximum for Etherium at 8.06% and minimum for Tether (0.10%). Also, it can be easily observed that there is huge gap between the VAR of all the three cryptos. VAR at 99% confidence is 13.63% for Etherium as compared to 11.27% of Bitcoin and 0.22% of Tether.

Standard Deviation:



Etherium has higher standard deviation, which represents that the investment in etherium has been riskier than investment in bitcoin in last one year.

Risk (coefficient of variance) Vs Average Annual Return:



The higher coefficient of variance of Bitcoin represents more risk as compared to Etherium. However, the annual return on Etherium has been 265.40%, which is more than Bitcoin (143.57%).

Risk/ Return Ratio:

The Risk to Return Ratio for bitcoin and etherium stands at 7.46 and 2.91 respectively. As the ratio is lower for Etherium, it has been better investment asset as compared to bitcoin.

Hypothesis Testing:

Parameters	H0	H1	Remarks
Risk	Accepted	Rejected	Etherium has coefficient of variance less than bitcoin.
Return	Rejected	Accepted	Etherium is having higher average return than bitcoin.
Risk – Return Ratio	Rejected	Accepted	Bitcoin has higher Risk-to – Return Ratio as compared to Etherium. However, higher ratio shows that the asset has more risk as compared to the return it is giving.

Conclusion:

Bitcoin and Etherium form a major chunk of market of cryptocurrencies. The paper focused on the comparative study of the risk and return on both the widely traded cryptos.

The conclusion of the paper has been surprising as the basic saying in finance “high risk, high return; low risk, low return” has been violated. The historical market return on the basis of daily market price of both the subject cryptos show that the risk and return have not been directly proportional in case of cryptos. Though, the bitcoin has been historically more risky, the average return on Etherium has surpassed that of bitcoin by 84% approx.. Also, the risk to return ratio has been higher for bitcoin as compared to Etherium.

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