

Volatility Comparison of Ethereum and Litecoin

Praveen Singh Rathore

Senior Quantitative Analyst (Independent Researcher), Lucknow, India

Abstract: Litecoin and Ethereum have been renowned and eminent cryptocurrencies since their inception in 2013 and 2015 respectively. The technologies behind these cryptocurrencies have created a lot of buzz in the financial world as well as the technology sector. In this paper we will throw light on the intricate features and technology underlying the Litecoin and Ethereum. I have performed a comprehensive study of the Litecoin and Ethereum. I have also performed an exhaustive study on volatility and price speculation of Litecoin and Ethereum. In this research I will be evaluating and comparing the volatility of Litecoin and Ethereum.

Keywords: Litecoin, Bitcoin, Decentralized, Ethereum.

I. INTRODUCTION

Background and History of Cryptocurrencies

Nowadays articles mentioning cryptocurrencies are the hot topic of debate and discussion in the economic and financial world. While it is safe to assume that the rapid growth and popularization of the digital currency started with the release of Bitcoin in the late 2009, the history of cryptocurrencies and the concept behind it dates back as far as several decades ago. In 1980's an American cryptographer David Chaum invented an algorithm that would serve as a centre point and a foundation for modern encryption and digital currencies. With the help of other like-minded developers, he created DigiCash, which the co-founders sought to commercialize. In the end, a Microsoft corporation took over the executive power of the company. While DigiCash was similar to modern cryptocurrencies in a way that it used difficult protocols and complex algorithm, however it lacked the major point that is central to nowadays digital currencies, which is decentralization. During that time Wei Dai produced a paper about B-money. B-money incorporated mostly similar technologies to modern cryptocurrencies, like security, anonymity and decentralization. Nevertheless the B-money never came into being. Shortly after, Bit-Gold was introduced to the mainstream, however it never gained popularity. PayPal is another example of preceding medium for transfer and transaction of digital currencies. Around the late 1990's and early 2000's a popular virtual currency e-gold was introduced, which was exchanged for jewelry and old metal coins. Unfortunately, the poor designed protocols put an end to e-gold in the mid 2000's.

Officially, the first cryptocurrency that inspired the birth of other modern virtual currencies that share similar underlying concepts and are built on the same technology was Bitcoin. It was created in 2009 by a person or a group of people that used pseudonym Satoshi Nakamoto. Until these days Bitcoin remains the most popular and widely accepted cryptocurrency. Currently there are more than 5000 internationally recognized cryptocurrencies listed on Coinmarketcap.com. Ethereum comes in the second place after Bitcoin, if we take market capitalization into consideration. Litecoin comes at seventh spot. It is an online payment system that operates similarly to other cryptocurrencies on the market, but instead of using dollars for exchange it uses units of Litecoin as a means of transaction. Litecoin was officially released in the end of the year of 2011 and Ethereum went live in 2015. Cryptocurrencies are becoming more widespread and used as means of money exchange in modern days. More people feel safe using this type of money in their everyday lives, the more businesses and governments tend to recognize the cryptocurrencies, there is more venture funding, partnerships and collaborations that involve this type of money. The scenario of cryptocurrencies future is satisfying by extrapolating the data available. It can be logically concluded that Bitcoin, with its ever growing market share, will stay on the top position.

II. HISTORY OF LITECOIN

Litecoin is most of the times referred to as a 'shadow' of Bitcoin. The virtual currency came into existence in 2011 and had its true break in 2013. The creator's name of the cryptocurrency is Charlie Lee, who used to work at the Google. Unlike other altcoins that existed at around the same time of the creation of this cryptocurrency, Litecoin survived, while others stopped existing. Many researchers attribute the success of Litecoin's survival due to its appropriate updates and in-time modifications. While Bitcoin was often called as "digital gold", Litecoin was referred to as "digital silver".

The reason and inspiration behind creation of Litecoin was the known Bitcoin. The developer wanted to make several changes and improve the already existing famous cryptocurrency. Charlie Lee aspired to create cheaper and convenient version of Bitcoin. He thought Bitcoin transaction process was too slow and he wanted to make it easier and faster with Litecoin. Because of the well established identity behind creator and a good marketing plan, Litecoin became fairly

popular and well-received currency by many people. Interestingly enough, Litecoin a lot of the times serves as a testing platform for many businesses because of how similar the technology is to Bitcoin's. Litecoin has been evolving rapidly since its release. In just 2 years since Litecoin received a spotlight of its own it managed to cross a mark of \$1 billion in market capitalization.

Technology Background Details

Litecoin is a lot similar to Bitcoin that even major corporations use it as a testing network. However, there are some notable differences in the technology to that of Bitcoin. Before diving into the peculiarities of the differences it is crucial to understand some basic points. Just like a fellow cryptocurrency Bitcoin, Litecoin is based on a peer-to-peer decentralized system. It is open-source software that acts as a platform for exchanging virtual coins. It belongs to the group of digital currencies called altcoins that were named so because of their emergence to the blockchain market after Bitcoin was created.

One of the primary things you need to possess to start buying, receiving, transferring, in other words doing operations with this cryptocurrency is a wallet address. Much like the Bitcoin, this address conceals the client's identity. A person can also create multiple wallets or addresses. Once someone wishes to send coins, he/she performs a task and the Litecoins are transferred through Litecoin blockchain. A new block is created every 2.5 minutes that contains all of the previous transactions. The same as with Bitcoin, in Litecoin there is no middle man to control the transactions. The system is decentralized. That is why there are volunteers that are called miners who check the transactions and approve or disapprove them, in other words say whether it is valid or not.

Now onto the main differences between Bitcoin and Litecoin. Litecoin operates on a proof-of-work algorithm that uses the scrypt hash function as opposed to the SHA-256. As it was stated before, Litecoin is much faster than Bitcoin. In fact, it is four times faster than its counterpart. The blocks are created every 2.5 minutes which is faster than Bitcoin which has block time of 10 minutes. Also, there is a notable difference in mining difficulty which is changed every two and a half days as opposed to every two weeks in Bitcoin, which is good for security purposes. Finally, it is fair to say that many investors prefer Litecoin over Bitcoin.



Figure 1: Price graph of Litecoin
Source: <https://www.coindesk.com>

History of Ethereum

Ethereum is another type of cryptocurrency that became very popular on the market as of recent years. It is an open-source public service that operates as a decentralized platform for exchanging virtual money. The history of Ethereum started when a great programmer and a researcher vocalized his initiative to create a more sophisticated version of the already existing Bitcoin in 2013. Vitalik Buterin, a co-founder of Ethereum, collaborated with other people who shared the same enthusiasm for the project. The interest of Buterin to cryptocurrency started when he was only seventeen years of age. As a teenager, he followed the bandwagon of experimenting with Bitcoin. He got so fascinated by the system, that he started envisioning a possibility to create another one. What Bitcoin lacked hypothetically could be something his cryptocurrency could fulfill. Bitcoin's main purpose focused within its financial use and Buterin aspired to create something beyond that. One way Ethereum differed the most from Bitcoin was the ability to trade more than just cryptocurrency. The process of converting idea into reality started a year later, when an online crowd sale funded the project. When the time came to finding sponsors Buterin and his team started a campaign where the guests could be

rewarded with Ether. The team gained more than \$18 million for the project. In 2014, development began and by July 2015 the whole system went live.

Ever since the launch of the project Ethereum has been increasing in popularity and more people are aware of its existence nowadays. It is safe to say that nowadays Ethereum holds a strong position on the market. It is crucial to mention that the road to success has not been an easy one. In 2016, \$50 million in Ether was reported stolen by a hacker, whose identity has not been yet revealed. This event raised a lot of questions and concerns in regards to the security of a platform. If we are talking about the place of Ethereum on the market, it is logical to assume that the main rival of the cryptocurrency is Bitcoin. No matter the unlucky incident, Ethereum did not lose its competitive grip and many forecasters call Ethereum to be a serious opponent to Bitcoin. Some say that Ethereum could take over the most popular cryptocurrency one day. However, it is only a theory as of now as only time can tell who would be the final leader in a crypto world.

Technology Background Details

Just like its rivals in the world of cryptocurrencies, Ethereum works on a decentralized, open source, public distributing computing platform that features smart contract functionality. Besides exchanging Ether, it is possible to sell tokens, which are the second main cryptocurrencies on a platform. These tokens do not have a blockchain of their own. Ethers, as well as tokens require a client to use wallets, or addresses. Tokens exist mostly for a specific function or application. People can differentiate the cryptocurrency with security and utility tokens. The first ones are used for investment purposes that are aimed at making profit, while the later ones are mainly used for interactions with other users. The other medium of exchange exists on the platform and that is coins, which are good for a multidimensional use. What make Ethereum different from Bitcoin are the platform's purpose, functionality and capability. Unlike, Bitcoin that is used solely for online payments, Ethereum emphasized on the maintenance and running of the programming code of all the decentralized application on Ethereum blockchain. Also, instead of mining, miners work to earn Ether. There is another type of token, called gas, which is used for the purpose of rewarding miners that create and verify blocks.

So, to sum everything up, it is crucial to finalize what the overall peculiarities of Ethereum are that make it different from Bitcoin. First, the trading currencies. While Bitcoin uses only Bitcoins for transactions, Ethereum accepts different methods of payment, including Ethers, tokens, and gas. Second, the protocols on both platforms are different. Ethereum uses a proof-of-stake security protocol, while Bitcoin works on a proof-of-work protocol. Also it is worth mentioning that the average block creation time differs. 12 seconds as opposed to 10 minutes. The reservoir of Bitcoins is depleted each year and by 2020 more than a half of Bitcoins is mined, while Ethereum supply is still full. Most of the people come to a conclusion that the main advantage of Ethereum over Bitcoin is its ability to offer a greater range of operations that can be computed on a platform. Ethereum has a great potential to gain more popularity and possibly one day take over the world.

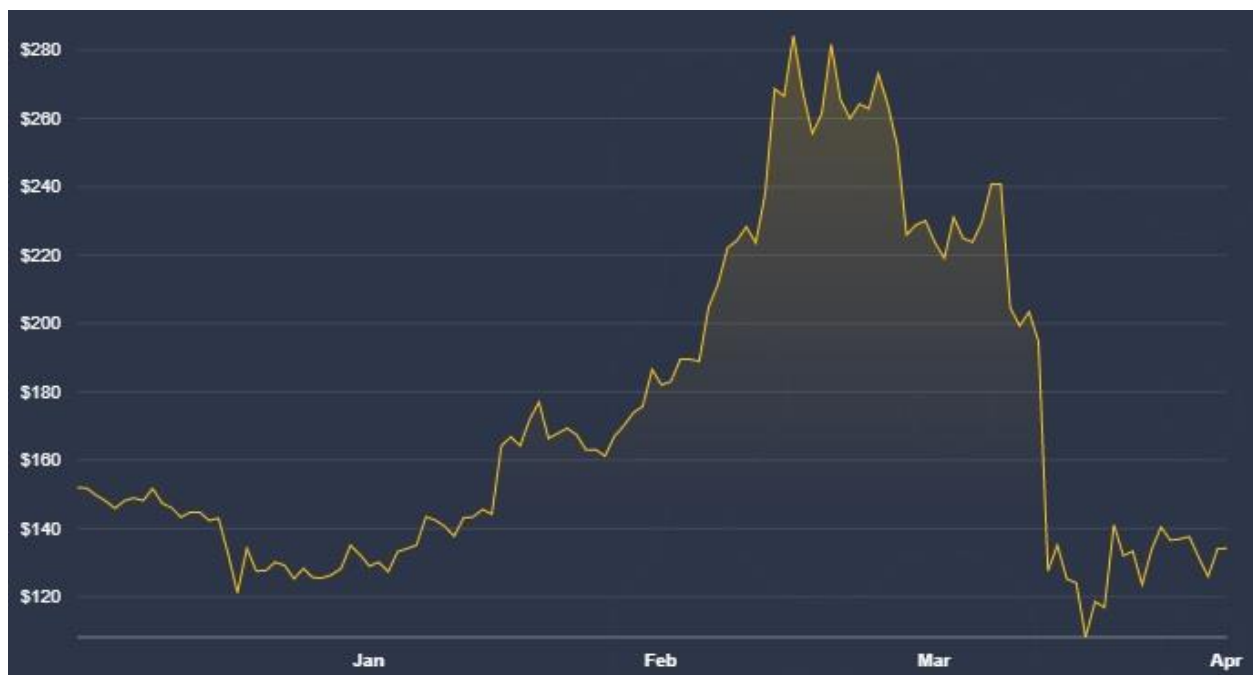


Figure2: Price graph of Ethereum
Source: <https://www.coindesk.com>

III. RESEARCH METHODOLOGY

For the purpose of calculation, the closing price of the Litecoin and Ethereum is taken from the website coindesk.com. The Litecoin and Ethereum have been compared from December 2019 till March 2020 as it has been in the past that the December is the most volatile month for the Cryptocurrencies. As compared to Bitcoin, both Litecoin and Ethereum are relatively new and have relatively less market dominance. Both the cryptocurrency consistently ranked in top 5 cryptocurrencies and are available for trading on all major crypto exchanges all around the world. Circulating supply of Litecoin as of 29th April 2020 is 64,617,881 while the max supply is 84,000,000. Circulating supply of Ethereum as of 29th April 2020 is 110,718,696.

	Ethereum	Litecoin
Mean	172.4238614	52.92505582
Median	149.0525294	48.63764043
Standard Deviation	47.81607196	13.80769167
Kurtosis	-0.620952002	-0.989681306
Skewness	0.83399192	0.536887439
Minimum	107.8983448	32.0531945
Maximum	284.0004909	83.64449904
Range	176.1021461	51.59130454
Count	122	122

Analysis of the Data

Coefficient of Variation (COV) is used to compare the volatility.

$$COV = (Standard\ Deviation * 100) / Mean$$

1) The Mean price of Ethereum was 172.4238614 from 1st December 2019 till 31st March 2020, with Median of 149.0525294 and Standard Deviation of 47.81607196 respectively.

So, the Coefficient of Variation can be calculated as shown below:

$$COV = (Standard\ Deviation * 100) / Mean$$

$$27.73170231298393$$

So, it can be computed as 27.73%

2) The Mean price of Litecoin was 52.9255582 from 1st December 2019 till 31st March 2020, with Median of 48.63764043 and Standard Deviation of 13.80769167 respectively.

So, the Coefficient of Variation can be calculated as shown below:

$$COV = (Standard\ Deviation * 100) / Mean$$

$$26.08913955038697$$

So, it can be computed as 26.08%

It can be clearly deduced from the above calculations that COV of both Litecoin and Ethereum have a difference of approximately 1.65%.

Although the price of the Ethereum is more than the Litecoin, the Litecoin is more stable and consistent as the COV is lesser as compared to the Ethereum.

IV. CONCLUSION

Cryptocurrencies are still evolving in the present scenario. In a nutshell, they are completely based on computer programming. So there are many challenges like digital money can be ransacked by a hacker, regulatory issues, money laundering issues etc. There are many merchants who are accepting cryptocurrencies but they are still a minority. To become widely accepted all throughout the world, they have to be accepted by the consumers. In the present scenario, mostly cryptos are seen as entities which are available to trade on crypto exchanges all around the world. Consumers transactions are still very less as compared to trading transactions. For cryptocurrencies to become a part of the financial system, they have to be mathematically complex so that they can't be hacked and they have to be very simple for the consumers to understand and use. There is no denying that the blockchain and cryptocurrencies are still the topic of discussion. Blockchain is considered revolutionary and being researched by many financial organizations all around the world. There are many conflicting and contradicting views among the renowned persons, some praise it while others are against it. At the same time these cryptocurrencies have gained the attention of prominent as well as common people all around the world.

If we compare Litecoin and Ethereum, they both have somewhat similar pattern on the graphs. In mathematical analysis it is found that Ethereum is more volatile than Litecoin. It can also be said, that both are more volatile than other trading assets like Stocks, ETF, Commodities etc.

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