

Bitcoin: A Mainstream Currency or an Investment or a Bubble

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ABSTRACT

This paper aims to determine the possibility of Cryptocurrencies like Bitcoin being used as a mainstream day to day currency and assess how crypto currencies compare to other investments. With legal restrictions across many countries and high level of volatility there might be little possibility of such an asset becoming a regular currency anytime soon. This leads us to the next question are these currencies just volatile assets that could possibly be the largest bubble since the tulip mania. In the paper we try to prove that reason why Cryptocurrencies cannot be used as regular currencies and how they compare with other assets and major previous bubbles.

1. Introduction

Bitcoin is a well-known cryptocurrency originally developed by Satoshi Nakamoto and Martti Malmi. The site used for Bitcoins is an independent project in which there are participants from around the globe. Then in the minds of the reader a question arises on who controls this form of cryptocurrency, since the departing of Nakamoto. This can be answered by all the users of Bitcoins.

Bitcoins only work with the permission of all the users of Bitcoins. It is a decentralized system which works on the principal of block chain. Thereby, all users have a strong motive to conserve this consensus.

Bitcoin has a current value of 3216.77 USD (as on 16/12/2018). Bitcoins are usually used as investment. In the context of this research paper, we are trying to look at the scope of Bitcoins as a possible currency in the future and also throw some light on the investment aspect of Bitcoins, since Bitcoins are usually used as an investment.

In order to fulfill various conditions for Bitcoins to be accepted as a medium of exchange, there are different criteria which it must follow and hence overcome various challenges and regulations.

2. Literature Review

A. Is Bitcoin a real currency? An economic appraisal (Yermack, 2013) :

This research gives the readers an idea about the various functions of a Bitcoin. As proposed the various functions of Bitcoin of that to act 'as medium of exchange with a value to it and also it is known to be a unit of account'.

But researcher, David Yermack says that, Bitcoins fails to follow these requirements and hence he concludes that it is difficult to accept it as a form of currency. He also clearly states the many disadvantages of considering Bitcoins to be a form of currency which further helps us come to a remark that it is evidently a bad decision. He says that Bitcoins

behave more like a 'speculative investment' rather than a medium of exchange.

B. Volatility analysis of Bitcoin price time series (Pichl & Kaizoji, 2017) :

This research talks about the price volatility between different currency and risks and uncertainty associated with Bitcoins. Pichl and Kaizoji in their research focuses on the price fluctuations of Bitcoins. The volatility of Bitcoins is researched and studied on based on various models such as those of logarithmic return and Realised Volatility, sum of squared logarithmic returns. The researchers concluded on the fact that Bitcoin prices are effectively more volatile than those of other currencies. While they also confirmed that Bitcoins possess the values of a market bubble and hence there would be a bubble burst in the future.

C. Bitcoin: Money or Financial Investment? (Wolla, 2018) :

This research done by Scott A.Wolla studies about the clear differentiation between money and financial assets. He says that there isn't a clear line between the two factors and that money is one kind of a financial asset but it is highly liquid when compared to the other assets.

He has also enlightened the readers about the Dutch Tulip Bubbles. He also concludes on the fact that there are many reasons why Bitcoin could considered as a form of medium of exchange but the undesirable factors to the same over rides the positive factors about the same being considered as a form of currency.

D. Bitcoin Is an Asset, Not A Currency (Dorfman, 2017) :

Jeffrey Dorfman in his research studies about the future of Bitcoins. There are two main problems regarding the possibility of Bitcoin as a currency. The reasons being the instability of the value of Bitcoins

and slow transaction processing of Bitcoins. Instability is due to the high fluctuations in the price values of Bitcoins and hence the investors/traders find it hard to predict the future value and the future returns from the same. The writer has a strong opinion on how Bitcoins should not be allowed as a currency and people should stop expecting it to be too. And that it should just be used as a way to speculate the value.

- E. **The Future of Cryptocurrency An Investor's Comparison of Bitcoin and Ethereum** (D'Alfonso, Langer, & Vandelis, 2016) :
- F. Three researchers studied about the differences and similarities between two types of Cryptocurrencies: Bitcoin and Ethereum. After considering practical aspects of the two Cryptocurrencies on various industries, they were able to identify the various future prospects of both the currencies. After a lot of statistical and various other studies, they were of a positive opinion about Bitcoins when compared to Ethereum.

3. Research Design

A. Statement of the Problem

The main problem considering Bitcoins as a future mainstream medium of exchange is its high volatility when compared to other currencies. The price fluctuation in Bitcoin varies every one millisecond and hence causes a problem in predicting the future values for a future prospective good return for the investor. This further confuses and disables the investor from investing in Bitcoins confidently.

Another problem which arises is knowledge about Bitcoins for the users around the globe. Not many people are aware about the various facts and have a prior knowledge about Bitcoins which would've enabled the users to analyze various future prospects for Bitcoins. These further proves as a disadvantage and as a problem to even consider Bitcoins as form of currency.

B. Source of Data

The data that was used for this research was purely secondary data. From different journals and articles. And main source of article information was from investing applications. The data was collected based on the reliability and credibility of the source that was backed by established websites and publishing agencies. Most information collected were directly from Bitcoin.org which was set up by Satoshi Nakamoto. Further Data on historical prices were collected from yahoo finance and investing.com

C. Hypothesis

Hypothesis 1 H0 : Cryptocurrency is NOT stable like other fiat currencies

Hypothesis 2 H0: Cryptocurrency is NOT related to other Financial Assets

Hypothesis 3H0 : Cryptocurrency is NOT a Bubble

D. Data Analysis Tools

To Prove Hypothesis 1

We are going to compare Bitcoin with GBP EUR USD RUB. For this we have used Mean and other dispersion tools like Range, standard deviation, Variance

The main goal here is to calculate Coefficient of Variation. (SD/mean)

To Prove Hypothesis 2

In order to Check if Bitcoin is a investment which moves in correspondence with other assets we will compare it with other investments using Pearson Correlation. If we figure out that Bitcoin Behave Very Differently from other investments and are not correlated to changes in them Bitcoins can be regarded as a unpredictable investment

This will be done by comparing BTC, GOLD, S&P 500, S&P IT 500

To Prove Hypothesis 3

We are going to compare Bitcoin with Previous bubbles like:

- ❖ Tulip Mania
- ❖ Housing Bubble(By using S&P Case Shiller index)
- ❖ Dotcom Bubble (By Creating a custom index of Top 8 IT stocks in the US)
- ❖ Asian Financial Crisis (By Creating an Aggregate of Currencies of Thailand, Indonesia, Malaysia and South Korea)

As Exact Data will not be available for Tulip mania we are going to Take the Best possible interpretation.

The Tulip Prices increased 20 fold in 6 months and dropped 99 % in the following 3 months (half the time)

We will keep this as the base and take peak prices of different bubbles and check the total decline in value and see the monthly average change in prices

E. Expected Outcomes

Hypothesis 1 will be proven correct Proving that Crypto currencies are very unstable and can not be used as a medium of exchange.

Hypothesis 2 will be proven wrong which will show relation between financial market and Bitcoin.

Hypothesis 3 will be proven wrong showing the Bubble that occurred in the months of 2017. Followed by a steep drop in its prices.

F. Limitations

There are Different ways to analyze the data for Different time periods and these results give Different results especially for plotting patterns in the Economic bubbles.

As few of the bubbles we have considered are over 25 years old getting Quantitative data which is exact may not be possible.

4. Data Analysis And Interpretation

To Prove Hypothesis 1
Descriptive Statistics

	N	Range	Minimum	Maximum	Mean		Std. Deviation	Variance
	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Statistic
BTC	80	13795.1	4.9	13800.0	1864.415	347.6468	3109.4479	9668666.4
GBP	80	.4862	1.2244	1.7106	1.475256	.0156104	.1396237	.019
JPY	80	.00480	.00800	.01280	.0095809	.00014070	.00125846	.000
EUR	80	.3351	1.0516	1.3867	1.208716	.0114821	.1026992	.011
RUB	80	.02080	.01320	.03400	.0219024	.00079804	.00713790	.000
Valid N (listwise)	80							

Calculation of Coefficient of Variation = SD/ mean

BTC = 3109.4479/1864.415 = 1.66

GBP = 0.1396237/1.475256 =0.08

JPY = 0.00125846/0.0095809 =0.11

EUR= 0.1026992/1.208716 =0.08

RUB= 0.00713790/0.0219024 =0.35

1. Coefficient of Variation of Bitcoin is also very high at 1.66. Thus we can conclude that Bitcoin is not stable like fiat currencies.

The variation of Bitcoin on any given day is really high and it does not store a stable value which is one of the essentials of a medium of exchange. Even a relatively unstable currency like RUB has way less volatility than Bitcoin.

We can interpret from the above that Bitcoin has the highest standard Deviation at 3109 and Variance at 9668666 while other currencies have Std. Deviation and Variance bellow

To Prove Hypothesis 2
Correlations

		BTC	GOLD	S&P 500	S&P IT 500	Crude Oil
BTC	Pearson Correlation	1	.204*	.771**	.839**	-.184
	Sig. (1-tailed)		.035	.000	.000	.051
	N	80	80	80	80	80
GOLD	Pearson Correlation	.204*	1	.046	.107	-.108
	Sig. (1-tailed)	.035		.342	.173	.169
	N	80	80	80	80	80
S&P 500	Pearson Correlation	.771**	.046	1	.957**	-.555**
	Sig. (1-tailed)	.000	.342		.000	.000
	N	80	80	80	80	80
S&P IT 500	Pearson Correlation	.839**	.107	.957**	1	-.507**
	Sig. (1-tailed)	.000	.173	.000		.000
	N	80	80	80	80	80
Crude Oil	Pearson Correlation	-.184	-.108	-.555**	-.507**	1
	Sig. (1-tailed)	.051	.169	.000	.000	
	N	80	80	80	80	80

*. Correlation is significant at the 0.05 level (1-tailed).

**. Correlation is significant at the 0.01 level (1-tailed).

From the above Data Analysis we Figure out that Bitcoin is very Closely and directly Related to S&P 500 and is more Tightly linked to IT stocks With significance levels being bellow 0.05 for both. While Bitcoins Correlation gold and crude oil is

pretty low. As its Significance is bellow 0.05 with respect to S&P 500 and S&P IT 500 we reject null hypothesis 2.

To Prove Hypothesis 3

Method Of Data Usage	
Bubble	Data used
Tulip Mania	A standardized price index for tulip bulb contracts, created by Earl Thompson (Thompson, 2006)
Asian Finacial Crisis	Composite value of South korean Won, Thai Bath and Indonesian Rupaiah in terms of USD
Dot Com Bubble	Composite value of top 8 IT companies during the period
Housing Bubble	Standard & Poor's Case-Shiller Home Price Indices
Bitcoin Bubble	Historical Prices Of Bitcoin

COMPARISON OF BUBBLES

Bubble	Peak Price	Duration of Decline	Declined Value	Total Decline	Percent Decline	Average Month End Change
Tulip Mania	200	3 months	2	198	99.00	-60.00
Asian Finacial Crisis	0.00023	3 months	0.000084	0.000146	63.48	-24.81
Dot com Bubble	320	26 months	123	197	61.56	-3.47
Housing Bubble	227.53	24 months	174	53.53	23.53	-1.11
Bitcoin Bubble	19650	13 months	3,183.00	16,467.00	83.80	-9.05

From the Above comparison we can interpret that after the Tulip Mania where Tulip prices dropped 99% Bitcoin has seen highest fall in value at 84% . However while Tulip Prices fell in a short span of just 3 months Bitcoin has reached this value after 13 months after touching its peak price. Thus compared to other recent bubbles Bitcoin Bubble is similar and it may be safe to assume that Bitcoin might still be in its bubble stage and The Null Hypothesis has been rejected as it exhibits similar characteristics to other bubbles. If anything it is more severe.

5. Finding And Suggestion

From the interpretation of the above data we find that Bitcoin has deviated around 166 % from its mean while the most volatile fiat currency has only deviated 35% with pound and Euro deviating only 8% from its mean on an average. Thus we must Accept Null Hypothesis 1.

Thus a currency this volatile may not be used as a medium of exchange any time sooner until it stabilizes to an extent.

Further analysis of the interpretation we Realize how closely Bitcoin is linked to IT stocks at a correlation of .839 and equity stocks as a whole at a correlation of .771. This shows how Bitcoin is an investment which actually behaves more in line with IT equity stocks than might appear to be. We Reject Null Hypothesis 2.

The value of Bitcoin grew 20 fold from the USD 1090 value in April 2017 to around USD19700 in December 2017 and then it fell 70% in the next 6 months. This was the worst Bitcoin bubble. It has also followed a close pattern to the tulip mania.

6. Conclusion

Bitcoin at the moment is not ready for mass adoption as a substitute medium of exchange and majority of the investors invest only with speculative perspective and its movement is correlated with the Equity market to an extent. Without a proper base value Bitcoin value fluctuations very closely follow the previous Financial Bubbles and there is a very high possibility of a bigger bubble in the Future. However even if Bitcoin fails

we may see a modified and better versions of such assets in the future.

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