

Empirical Evidences for the Impact of Cryptocurrency



Triveni P
Head Research
Ramaiah Institute of Management
Bangalore, Karnataka, India
triveni@msrim.org

Ankita Sinha
Tax Analyst
Ernst & Young Global Delivery Services
Bangalore, Karnataka, India
ankitasinhados@gmail.com

ABSTRACT: *Today's world is becoming globalized and its economy is mostly dependent on financial market. These financial markets have various instruments such as stocks, currencies, commodities, derivatives etc. of various country for trading. The recent introduction of another kind of investment instrument has witnessed more volatility than currency. It is cryptocurrency. Cryptocurrencies are a digital currency maintained by method of encryption, collaborative ledger maintenance and public verification. Bitcoin is the first cryptocurrency. It is treated both as a currency and an asset. In this paper the relationship of Bitcoin has been compared with other selected asset classes such as EURO, Gold, Crude oil, S & P 500 in terms of price fluctuation shown by each of them over the period of 5 years i.e. from 1st April, 2013 to 31st March, 2018. The findings of this paper show that even though bitcoin shows very robust results investing in bitcoin comes with certain risk which are inherent to bitcoin characteristics and bitcoin's usage.*

Keywords: Cryptocurrency, Bitcoin, Digital Currency

Received: 25 February 2021, Revised 29 June 2021, Accepted 9 July 2021

DOI: 10.6025/pms/2021/10/2/39-54

Copyright: Technical University of Sofia

1. Introduction

Investment is the sacrifice of certain present values for the uncertain future reward. It involves numerous decision of investment such as type, mix, amount, timing, grade etc., the decision making has to be continuous. Investment may be defined as an activity that commits funds in any financial/physical form in the present, with an expectation of receiving additional return in the future. The expectation brings with it a probability that the quantum of return may vary from a minimum to a maximum. This expectation has given rise to the market called financial market. Financial market started centuries ago and it has been updating itself with time. The continuous evolution in financial market has given rise to a completely new form of investment opportu-

nity, namely, Cryptocurrency. It is a new form of currency that is created and held digitally and the most important part, of course, is that no government owns it, or decides its value. Bitcoin is the first cryptocurrency introduced in the market. It has become the point of attraction for today's financial market and many investors are enthusiastically investing it.

2. Review of Literature

Bitcoin: Currency or Asset? Dirk G. Baur, Kühne Logistics University¹ KiHoon Hong, Hongik University College of Business Adrian D. Lee, UTS Business School: This paper analyses the question of whether Bitcoin is currency or an asset and more specifically, what is its current usage and what usage will prevail in the future given its characteristics. It analyses the statistical properties of Bitcoin and find that it is essentially uncorrelated with traditional asset classes such as stocks, bonds and commodities both in normal times and in periods of financial turmoil. The analysis of transaction data of Bitcoin accounts shows that Bitcoins are mainly used as a speculative investment and not as an alternative currency and medium of exchange. Bitcoin is still small relative to the size of other asset classes and thus does not pose an immediate risk for monetary, financial or economic stability.

BITCOIN AS ASSET CLASS - Lawrence J. Trautman* Taft Dorman **: This research examines the history of Bitcoin from inception until mid-year 2018 and compares and contrasts price performance and correlation with other asset classes: Dow Jones 30 Industrial Average; S&P 5000; NASDAQ; Russell 2000; gold; real estate; Nikki; MSCI; and bond market. The study covers performance of this important alternative class over the greatest period of time to date. It concludes that Bitcoin may be an attractive investment from a diversification perspective because of its low correlation with equities markets.

SjoerdKlabbers- “Bitcoin as an investment asset”: This paper investigates whether bitcoin as an investment asset offers diversification benefits, more specific whether bitcoin has hedge or safe haven properties. Bitcoin is a decentralized digital cryptographic currency which has gone through and still goes through spectacular developments leading to a lot of media but also academic attention. This paper uses the mean variance framework, which can uniquely incorporate policy constraints, in combination with the Monte Carlo Simulation to address the estimation risk issue which is considers as an important aspect for a very volatile asset such as bitcoin. The findings of the paper are consistent and show that bitcoin is an effective diversifier with on average a weight allocation between 0% to 5%. Bitcoin shows no hedge or safe haven properties for a global market portfolio. Even though bitcoin shows very robust results investing in bitcoin comes with certain risk which are inherent to bitcoin characteristics and bitcoin's usage.

A Kotishwar (2016), “Role of Bitcoin in Global Portfolio - An Empirical Study”: This study has been emphasized from the period of 2011-2015. Johanson co-integrated analysis has been applied on ADF values (Augmented Dicky Fuller) and formed the co-integration with select global assets along with dollar index. The granger casualty test results unveil that gold is the only asset class which is getting influenced by the dollar index. Modigliani risk adjusted method shows that performance of bitcoin is superior than the other asset classes. Vector auto regression analysis indicates that MSCI, gold and bitcoin future momentum is expected to go downside when sentiment index moves upside. This study is useful to the investors fraternity like global exporters and importers, investors of currency and retail investors of bitcoin.

Analyzing the Effects of Adding Bitcoin to Portfolio –Shashwat Gangwal: This paper analyses the effect of adding Bitcoin, to the portfolio of an international investor by using daily data available from 2nd of July, 2010 to 2nd of August, 2016. It concludes that adding Bitcoin to portfolio, over the course of the considered period, always yielded a higher Sharpe ratio. This means that Bitcoin's returns offset its high volatility. This paper, recognizing the fact that Bitcoin is a relatively new asset class, gives the readers a basic idea about the working of the virtual currency, the increasing number developments in the financial industry revolving around it, its unique features and the detailed look into its continuously growing acceptance across different fronts (Banks, Merchants and Countries) globally.

A Statistical Analysis of Bitcoin Transactions During 2012 To 2013 In Terms of Premier Currencies: Dollar, Euro and Rubles-Sandeep Bhattacharjee, Amity University, Kolkata, January,2016:Today's globalized world economy is dependent on financial markets spread all over the world. These financial markets have various instruments of trade such as stocks, derivatives, currencies of various countries. The large number of currencies such as Dollar, Euro, Rubles etc. create high volatility while trade takes place in financial markets. This problem needs to be resolved to ensure economic development of all the countries in the world. Therefore, this paper is an attempt to statistically analyse certain aspects of a new

evolving algorithmic based currency or virtual currency known as Bitcoin. In this paper, we have tried to statistically determine the strengths of Bitcoin by studying and analyzing data available over internet. These findings of this research can be utilized by academicians as well as those involved in currency trade for betterment of the economy.

Price Fluctuations and the Use of Bitcoin: An Empirical Inquiry Michal Polasik, Nicolaus Copernicus University in Toruń, Anna Piotrowska, Nicolaus Copernicus University in Toruń Tomasz Piotr Wisniewski, University of Leicester, Radoslaw Kotkowski, Warsaw School of Economics, Geoffrey Lightfoot*, University of Leicester

This paper aims to provide a comprehensive empirical study of the payment and investment features of Bitcoin and their implications for the conduct of ecommerce. Bitcoin returns are driven primarily by its popularity, the sentiment expressed in newspaper reports on the cryptocurrency, and total number of transactions. The paper also reports on the first global survey of merchants who have adopted this technology and model the share of sales paid for with this alternative currency, using both ordinary and Tobit regressions. The analysis examines how country, customer and company-specific characteristics interact with the proportion of sales attributed to Bitcoin. Findings says that company features, use of other payment methods, customers' knowledge about Bitcoin, as well as the size of both the official and unofficial economy are significant determinants. The results presented allow a better understanding of the practical and theoretical ramifications of this innovation.

The future of cryptofinance: an empirical analysis of the adoption of Bitcoin The impact of country determinants on the adoption rate of Bitcoin, Liesje Degrave, Postgraduation in business economics, IESEG School of management

his paper adds to the literature by using country-level determinants to investigate the different drivers and barriers that influenced the adoption rate of Bitcoin during the period 2011-2015. The findings demonstrate that the cryptocurrency Bitcoin is used to a lesser extent in corrupt countries. It is found that both the inflation rate and the efficiency of the banking system in a country act as a barrier to the adoption of Bitcoin while the occurrence of many non-cash transactions tends to drive the adoption rate. It is now establish that the better the accessibility to the internet and the more open a country is to globalization, the higher the adoption rate of the cryptocurrency. Previously, these determinants did not seem to be important drivers since no significant impact on the adoption rate of Bitcoin could be found. In addition, unexpected results for the impact of financial inclusion and the degree of non-cash utilization on the adoption rate since the sign of the beta estimate of the variables changes over different subsets is found. It is therefore not clear what the true relationship is between these country determinants and Bitcoin's adoption rate.

Bitcoin is not the New Gold - A Comparison of Volatility, Correlation, and Portfolio Performance, Tony Klein, Queen's University Belfast, Thomas Walther, University of St.Gallen, Hien Pham Thu, Humboldt-Universität zu Berlin:

This study, shows that the two assets could barely be more different. Firstly, analysis and comparison of conditional variance properties of Bitcoin and Gold as well as other assets has been made and find differences in their structure. Secondly, implemented a BEKK-GARCH model to estimate time-varying conditional correlations. Gold plays an important role in financial markets with flight-to-quality in times of market distress. The results show that Bitcoin behaves as the exact opposite and it positively correlates with downward markets. Lastly, the properties of Bitcoin as portfolio component is analysed and find no evidence for hedging capabilities. We conclude that Bitcoin and Gold feature fundamentally different properties as assets and linkages to equity markets. Our results hold for the broad cryptocurrency index CRIX. As of now, Bitcoin does not reflect any distinctive properties of Gold other than asymmetric response in variance.

Cryptocurrencies: A Developing Asset Class, Kaustubh Arvind Sontakke, Aishwarya Ghaisas:

Study of cryptocurrencies is focused on analysis of cryptocurrency market, with special reference to Bitcoin and Ethereum. Objective of the study is analyzing blockchain technology and cryptocurrencies. The study is limited to cryptocurrency markets in general with special focus on Bitcoin and Ethereum. The study is based on exploratory research design. The data under consideration for analysis of cryptocurrencies as asset class is, historical as well as real-time price and volume data retrieved from public domain platforms – websites. Other data for study of factors impacting the market movements is sourced from magazines, newsletters, websites, etc. The study analyses select cryptocurrencies with a view of them being a potential asset class. It measures the currencies on two major factors, liquidity- based on trading volume and store value - ability to use for transactions. A comparative study of cryptocurrencies with Gold and Fiat currency, which are already established assets, is done to further understand the potential for cryptocurrencies to develop into an asset class. The cryptocurrency prices are purely driven by demand supply model, without any regulatory authority. Thus, forecasting cryptocurrency prices fundamentally is difficult. The legal ambiguity although currently present, seems to be reducing with governments coming forward to discuss cryptocurrencies.

Gold Versus Bitcoin as a Store of Value, Ron Glantz: Bitcoin's superiority over gold lies in its protocol. Bitcoin mining reaps more than just the creation of bitcoins. Mining for gold just adds more gold to the market. The concept of gold's intrinsic value is ultimately misplaced, as gold's value lies not in the material itself but instead in its potential utility. In contrast, Bitcoin's intrinsic value lies in its ability to provide secure, reliable transactions of arbitrary value within an ecosystem that self-strengthens through mining.

Statement of the Problem

Bitcoin is treated both as a currency as well as an asset. When bitcoin is viewed from an investment perspective, it is more often compared to assets than it is to other currencies. It is because bitcoin also has the qualities like a common asset. It has emerged as a unique asset class and it differs significantly from other assets in its politico-economic profile, price of independence, and risk-reward characteristics. Hence, Bitcoin as an asset class cannot be considered unique without observing its behavior in relation to traditional classes of assets. In this paper the relationship of Bitcoin has been compared with other selected asset classes in terms of price fluctuation.

Research Objective

1. To compare the price fluctuation of Bitcoin with respect to Euro.
2. To compare the price fluctuation of Bitcoin with respect to gold.
3. To compare the price fluctuation of Bitcoin with respect to S&P 500.
4. To compare the price fluctuation of Bitcoin with respect to crude oil.

HYPOTHESES

- H_0 : There is no significant relation between the performance of bitcoin and Euro.
 H_1 : There is relationship between the performance of bitcoin and Euro.
- H_0 : There is no significant relation between the performance of bitcoin and gold.
 H_1 : There is relationship between the performance of bitcoin and gold.
- H_0 : There is no significant relation between the performance of bitcoin and S&P 500.
 H_1 : There is relationship between the performance of bitcoin and S&P 500.
- H_0 : There is no significant relation between the performance of bitcoin and crude oil.
 H_1 : There is relationship between the performance of bitcoin and crude oil.

3. Methodology

Sources of Data: The data has been collected from various websites for the purpose of study.

Study Period: The study has been conducted for a period of 5 years that is from 2013-14 to 2017-18. Tools used for hypothesis testing: Regression and Correlation Model.

4. Limitations

- The study has been limited for the period of 5 years.
- This research was carried out on the basis of secondary data only, no primary research or data was collected for analysis.

5. Data Analysis

The price fluctuation of the bitcoin has been analysed compared to other asset classes over the period of 5 years based on the below mentioned objectives of the study:

1. To compare the price fluctuation of Bitcoin with respect to Euro.
2. To compare the price fluctuation of Bitcoin with respect to gold.
3. To compare the price fluctuation of Bitcoin with respect to S&P 500.

4. To compare the price fluctuation of Bitcoin with respect to crude oil.

These objectives have been analysed using graphs and hypothesis testing is carried out using various statistical tools like Correlation and Regression tests. In correlation and regression tests, the output value of Significance (2-tailed), which is otherwise called as P-value is taken to interpret the results.

Objective 1: To compare the price fluctuation of Bitcoin with respect to Euro.

Date	Bitcoin Price	Euro Price
18-Mar	6,925.30	1.2323
18-Feb	10,315.00	1.2194
18-Jan	10,284.00	1.2421
17-Dec	13,800.00	1.1998
17-Nov	9,907.00	1.1904
17-Oct	6,458.30	1.1646
17-Sep	4,367.00	1.1814
17-Aug	4,718.20	1.191
17-Jul	2,856.00	1.1842
17-Jun	2,420.70	1.1426
17-May	2,191.80	1.1243
17-Apr	1,435.20	1.0897
17-Mar	1,081.70	1.0652
17-Feb	1,189.10	1.0577
17-Jan	966.2	1.0798
16-Dec	966.6	1.0516
16-Nov	739	1.0588
16-Oct	704.1	1.0981
16-Sep	611.1	1.1241
16-Aug	576.2	1.1158
16-Jul	623.7	1.1174
16-Jun	674.7	1.1105
16-May	530.7	1.1132
16-Apr	446.6	1.1456
16-Mar	416	1.138
16-Feb	439.2	1.0873
16-Jan	365.5	1.0837
15-Dec	429	1.086
15-Nov	376.9	1.0564
15-Oct	316	1.1005
15-Sep	236.5	1.1177
15-Aug	231.4	1.1215
15-Jul	284.5	1.0988

15-Jun	262.9	1.1138
15-May	228.7	1.0988
15-Apr	236.1	1.1224
15-Mar	244.3	1.0731
15-Feb	255.7	1.1196
15-Jan	217.4	1.1288
14-Dec	317	1.2099
14-Nov	376.7	1.2452
14-Oct	337	1.2525
14-Sep	387.1	1.2632
14-Aug	483.4	1.3133
14-Jul	579	1.3389
14-Jun	640	1.3692
14-May	635.6	1.3631
14-Apr	448.3	1.3867
14-Mar	452	1.3771
14-Feb	565	1.3802
14-Jan	800	1.3487
13-Dec	727.7	1.3746
13-Nov	1,112.40	1.3591
13-Oct	198.2	1.3584
13-Sep	123.1	1.3526
13-Aug	129.5	1.3222
13-Jul	97.9	1.3302
13-Jun	97.5	1.301
13-May	128.8	1.2999
13-Apr	139.2	1.3167

Table 1. The monthly prices of Bitcoin and Euros for the last 5 years are shown in the table

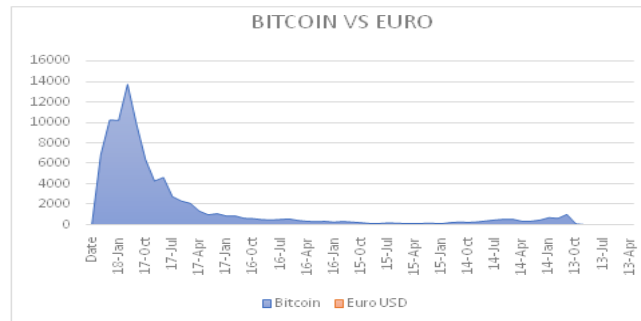


Figure 1. Bitcoin Vs Euro

The above objective focus on the comparison between the price fluctuations of bitcoin with respect to Euro over the period of 5 financial years i.e. 1st April, 2013 to 31st March, 2018.

Interpretation

- On the basis of above analysis, it is found that there has not been much fluctuation seen in the prices of Euro whereas the prices of Bitcoin went on increasing year after year.
- The prices of Bitcoin were highest in the 2nd half of the financial year 2017-2018.
- In the financial year 2014-15, the prices of bitcoin also didn't show much fluctuation but from the mid of 2016 it started increasing.
- In 1st half of the 2017-18, bitcoin started growing up and it went to its pick in the 2nd half after which it again started falling.

Inference

From the above data and chart, we can say that there has not been any significant change in the price of Euro but Bitcoin has been increasing from the year 2016 to 2017.

Hypothesis Testing

H_0 : There is no significant relation between the performance of bitcoin and Euro.

H_1 : There is relationship between the performance of bitcoin and Euro.

Particulars	Results
Pearson Correlation (r)	$r = 0.006$
Significance (2-tailed) or p-value	0.964
Coefficient of determination (r^2)	$r^2 = 3.56E-05$

From the above table it can be interpreted that the obtained p-value (0.964) is greater than 0.05. So, the null hypothesis is accepted. Thus, it can be inferred that there is no significant relation between the performance of bitcoin and Euro.

OBJECTIVE 2: To compare the price fluctuation of Bitcoin with respect to gold.

In this objective, the comparison of bitcoin has been shown with gold, i.e. the price fluctuation shown by bitcoin and gold over the last 5 financial years and then comparison has been made. The prices are in USD and for gold the values considered here is of Gold Spot (XAU/USD).

Date	Bitcoin Price	Gold Price
18-Mar	6,925.30	1,325.00
18-Feb	10,315.00	1,318.05
18-Jan	10,284.00	1,345.10
17-Dec	13,800.00	1,302.55
17-Nov	9,907.00	1,274.76
17-Oct	6,458.30	1,271.58
17-Sep	4,367.00	1,279.45
17-Aug	4,718.20	1,322.07
17-Jul	2,856.00	1,269.55
17-Jun	2,420.70	1,241.60
17-May	2,191.80	1,268.60
17-Apr	1,435.20	1,268.15

17-Mar	1,081.70	1,249.13
17-Feb	1,189.10	1,248.59
17-Jan	966.2	1,210.63
16-Dec	966.6	1,151.85
16-Nov	739	1,173.11
16-Oct	704.1	1,277.38
16-Sep	611.1	1,315.96
16-Aug	576.2	1,308.95
16-Jul	623.7	1,350.91
16-Jun	674.7	1,322.18
16-May	530.7	1,215.24
16-Apr	446.6	1,293.74
16-Mar	416	1,232.70
16-Feb	439.2	1,238.14
16-Jan	365.5	1,118.04
15-Dec	429	1,061.30
15-Nov	376.9	1,064.42
15-Oct	316	1,142.38
15-Sep	236.5	1,115.00
15-Aug	231.4	1,134.50
15-Jul	284.5	1,095.65
15-Jun	262.9	1,172.60
15-May	228.7	1,190.50
15-Apr	236.1	1,184.37
15-Mar	244.3	1,183.50
15-Feb	255.7	1,213.15
15-Jan	217.4	1,283.55
14-Dec	317	1,183.95
14-Nov	376.7	1,167.35
14-Oct	337	1,174.42
14-Sep	387.1	1,209.24
14-Aug	483.4	1,287.57
14-Jul	579	1,282.35
14-Jun	640	1,327.50
14-May	635.6	1,251.05
14-Apr	448.3	1,291.90
14-Mar	452	1,284.25
14-Feb	565	1,326.40
14-Jan	800	1,243.80
13-Dec	727.7	1,205.55
13-Nov	1,112.40	1,253.49

13-Oct	198.2	1,323.80
13-Sep	123.1	1,327.55
13-Aug	129.5	1,396.40
13-Jul	97.9	1,323.10
13-Jun	97.5	1,234.25
13-May	128.8	1,386.90
13-Apr	139.2	1,477.10

Table 2. The monthly prices of Bitcoin and Gold for the last 5 years

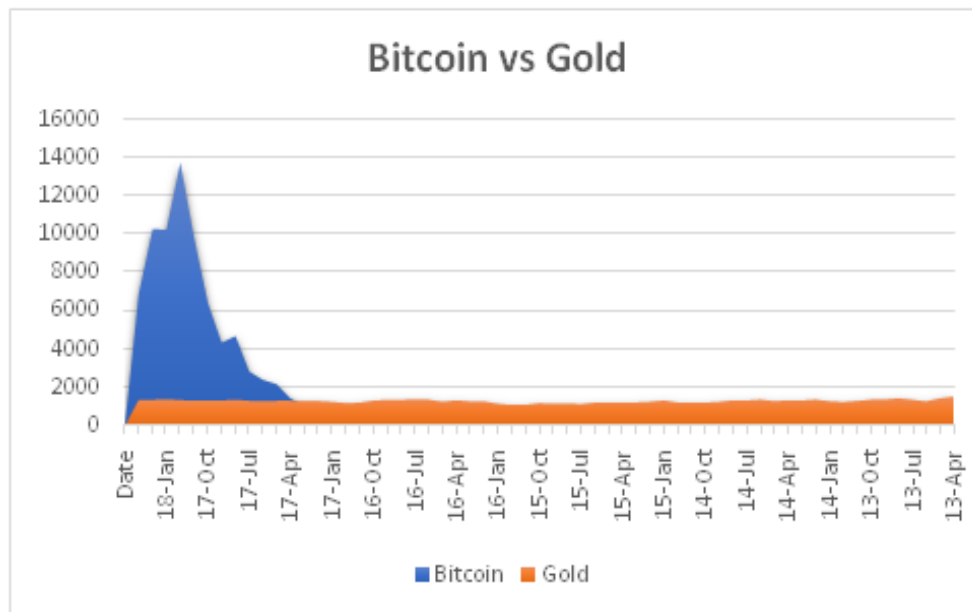


Figure 2. Bitcoin Vs Gold

Interpretation:

- On the basis of above analysis, it has been seen that Gold has been constant with respect to its price fluctuation with slightly ups and downs in financial year 2015-2016 and financial year 2016-2017.
- Gold again took its pace from January 2017 and it started increasing on a constant pace.
- Bitcoin was also going on par with Gold but from April 2017 it started increasing faster in comparison with Gold and it went to its highest peak during October 2017 to January 2018.

Inference:

From the above chart we can see that there have been no significant changes in the price of gold for the given period of time whereas as the Bitcoin price started increasing rapidly between 2016 to 2017.

Hypothesis 2:

H_0 : There is no significant relation between the performance of bitcoin and gold.

H_1 : There is relationship between the performance of bitcoin and gold.

Particulars	Results
Pearson Correlation (r)	$r = 0.256$
Significance (2-tailed) or p-value	0.048
Coefficient of determination (r^2)	$r^2 = 0.065491$

Interpretation: From the above table it can be interpreted that the obtained p-value (0.048) is slightly less than 0.05. So, even though the null hypothesis is rejected, there is a weak association between Bitcoin and Gold. Thus, it can be inferred that there is a positive but weak relation between the performance of Bitcoin and Gold.

Objective 3: To compare the price fluctuation of Bitcoin with respect to S&P 500.

In this objective, the comparison of bitcoin has been shown with S&P 500, i.e. the price fluctuation shown by bitcoin and S&P 500 over the last 5 financial years and then comparison has been made. The prices are in USD.

Date	Bitcoin Price	S&P 500
18-Mar	6,925.30	2,640.87
18-Feb	10,315.00	2,713.83
18-Jan	10,284.00	2,823.81
17-Dec	13,800.00	2,673.61
17-Nov	9,907.00	2,647.58
17-Oct	6,458.30	2,575.26
17-Sep	4,367.00	2,519.36
17-Aug	4,718.20	2,471.65
17-Jul	2,856.00	2,470.30
17-Jun	2,420.70	2,423.41
17-May	2,191.80	2,411.80
17-Apr	1,435.20	2,384.20
17-Mar	1,081.70	2,362.72
17-Feb	1,189.10	2,363.64
17-Jan	966.2	2,278.87
16-Dec	966.6	2,238.83
16-Nov	739	2,198.81
16-Oct	704.1	2,126.15
16-Sep	611.1	2,168.27
16-Aug	576.2	2,170.95
16-Jul	623.7	2,173.60
16-Jun	674.7	2,098.86
16-May	530.7	2,096.96
16-Apr	446.6	2,065.30
16-Mar	416	2,059.74

16-Feb	439.2	1,932.23
16-Jan	365.5	1,940.24
15-Dec	429	2,043.94
15-Nov	376.9	2,080.41
15-Oct	316	2,079.36
15-Sep	236.5	1,920.03
15-Aug	231.4	1,972.18
15-Jul	284.5	2,103.84
15-Jun	262.9	2,063.11
15-May	228.7	2,107.39
15-Apr	236.1	2,085.51
15-Mar	244.3	2,067.89
15-Feb	255.7	2,104.50
15-Jan	217.4	1,994.99
14-Dec	317	2,058.90
14-Nov	376.7	2,067.56
14-Oct	337	2,018.05
14-Sep	387.1	1,972.29
14-Aug	483.4	2,003.37
14-Jul	579	1,930.67
14-Jun	640	1,960.23
14-May	635.6	1,923.57
14-Apr	448.3	1,883.95
14-Mar	452	1,872.34
14-Feb	565	1,859.45
14-Jan	800	1,782.59
13-Dec	727.7	1,848.36
13-Nov	1,112.40	1,805.81
13-Oct	198.2	1,756.54
13-Sep	123.1	1,681.55
13-Aug	129.5	1,632.97
13-Jul	97.9	1,685.73
13-Jun	97.5	1,606.28
13-May	128.8	1,630.74
13-Apr	139.2	1,597.57

Table 3. The monthly prices of Bitcoin and S&P 500for the last 5 years

The analysis of data for the above objective is plotted in the below graph:

HYPOTHESIS 3:

H₀: There is no significant relation between the performance of bitcoin and S&P 500.

H_1 : There is relationship between the performance of bitcoin and S&P 500.

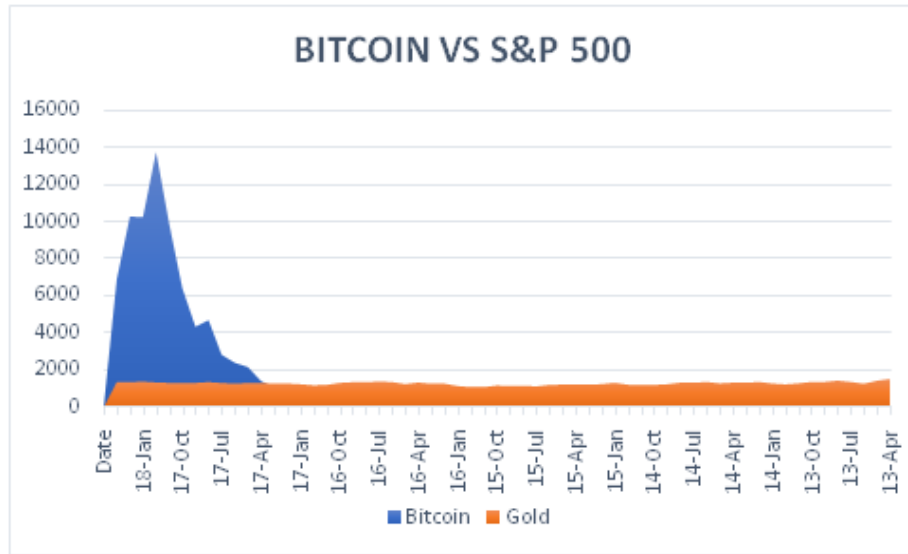


Figure 3. Bitcoin Vs S&P 500

Particulars	Results
Pearson Correlation (r)	$r = 0.771$
Significance (2-tailed)	0.000
Regression Equation	$y = -24.37x + 34.285$
Coefficient of determination (r^2)	$r^2 = 0.593822719435517$

Interpretation: From the above table it can be interpreted that the obtained p-value (0.000) is less than 0.05. So, the null hypothesis is rejected. Thus, it can be inferred that there is a strong relation between the performance of bitcoin and S&P 500 as 'r'-value is 0.771.

Objective 4: To compare the price fluctuation of Bitcoin with respect to crude oil.

In this objective, the comparison of bitcoin has been shown with Crude oil, i.e. the price fluctuation shown by bitcoin and Crude oil over the last 5 financial years and then comparison has been made. The prices have been taken in USD.

Date	Bitcoin Price	Crude oil price
18-Mar	6,925.30	64.86
18-Feb	10,315.00	61.52
18-Jan	10,284.00	64.93
17-Dec	13,800.00	60.23
17-Nov	9,907.00	57.24
17-Oct	6,458.30	54.43

17-Sep	4,367.00	51.34
17-Aug	4,718.20	47.08
17-Jul	2,856.00	50.19
17-Jun	2,420.70	46.34
17-May	2,191.80	48.63
17-Apr	1,435.20	49.2
17-Mar	1,081.70	50.79
17-Feb	1,189.10	53.99
17-Jan	966.2	52.8
16-Dec	966.6	53.89
16-Nov	739	49
16-Oct	704.1	46.72
16-Sep	611.1	48.05
16-Aug	576.2	44.84
16-Jul	623.7	41.38
16-Jun	674.7	48.38
16-May	530.7	48.87
16-Apr	446.6	46
16-Mar	416	38.12
16-Feb	439.2	33.91
16-Jan	365.5	33.75
15-Dec	429	37.11
15-Nov	376.9	41.69
15-Oct	316	46.42
15-Sep	236.5	45.41
15-Aug	231.4	48.16
15-Jul	284.5	46.77
15-Jun	262.9	59
15-May	228.7	60.3
15-Apr	236.1	59.74
15-Mar	244.3	47.52
15-Feb	255.7	49.41
15-Jan	217.4	47.77
14-Dec	317	53.78
14-Nov	376.7	66.05
14-Oct	337	80.65
14-Sep	387.1	91.35
14-Aug	483.4	95.86
14-Jul	579	97.64
14-Jun	640	105.53

14-May	635.6	102.89
14-Apr	448.3	99.7
14-Mar	452	101.53
14-Feb	565	102.71
14-Jan	800	97.47
13-Dec	727.7	98.69
13-Nov	1,112.40	92.79
13-Oct	198.2	96.27
13-Sep	123.1	102.31
13-Aug	129.5	107.77
13-Jul	97.9	105.35
13-Jun	97.5	96.49
13-May	128.8	91.67
13-Apr	139.2	93.06

Table 4. The monthly prices of Bitcoin for the last 5 years

The analysis of data for the above objective is plotted in the below graph:

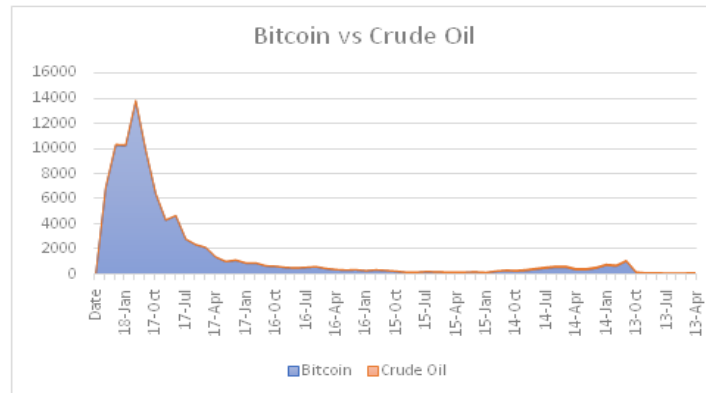


Figure 4. Bitcoin Vs Crude Oil

HYPOTHESIS 4:

H_0 : There is no significant relation between the performance of bitcoin and crude oil.

H_1 : There is relationship between the performance of bitcoin and crude oil.

Particulars	Results
Pearson Correlation (r)	$r = -0.131$
Significance (2-tailed) or p-value	0.317
Coefficient of determination (r^2)	$r^2 = 0.017260697$

Interpretation: From the above table it can be interpreted that the obtained p-value (0.317) is less than 0.05. So, the null hypothesis is rejected. Thus, it can be inferred that there is weak relation between the performance of bitcoin and Crude Oil.

6. Findings

- Bitcoin has shown a continuous increase in its prices during the last five years.
- The prices of Euro and Gold has not shown much fluctuation as the economy had not faced any major turmoil.
- The price fluctuation in crude oil prices is higher when compared with the prices of Bitcoin and it has had its all-time low in January 2016 and it was on its highest peak in August 2013.
- Bitcoin has been increasing till the first half of 2017 and has drastically fallen during the second half of 2018 which indicates the volatility in the bitcoins market.
- From the study it has been found that bitcoin is performing on par with Crude Oil and when it is compared to the other selected asset classes Bitcoin has performed better during the study period. Also, fluctuation in the prices of Bitcoin doesn't have any impact on the prices of any asset class.

7. Conclusion

Cryptocurrencies are a digital currency maintained by method of encryption, collaborative ledger maintenance and public verification. They are a medium of exchange and use cryptography for verification and use the same method for creation and control additional currency units. These currencies work on the blockchain and distributed ledger platform. The various cryptocurrency includes bitcoin, Litecoin, Monero, Ripple, etc. The first cryptocurrency is Bitcoin. From the study it has been found that bitcoin is performing on par with Crude Oil and when it is compared to the other selected asset classes Bitcoin has performed better during the study period. Also, fluctuation in the prices of Bitcoin doesn't have any impact on the prices of any asset class.

8. Suggestions

- The investors should respond according to the current market situation.
- Bitcoin is a riskier asset.
- Investing in Bitcoin can be profitable in Short-run but it is riskier in Long-run.

References

- [1] Bitcoin: Currency or Asset? Dirk G. Baur, Kühne Logistics University | KiHoon Hong, Hongik University College of Business Adrian D. Lee, UTS Business School.
- [2] BITCOIN AS ASSET CLASS - Lawrence J. Trautman* Taft Dorman.
- [3] Sjoerd Klabbers- Bitcoin as an investment asset.
- [4] Kotishwar, A. (2016). Role of Bitcoin in Global Portfolio - An Empirical Study.
- [5] Analyzing the Effects of Adding Bitcoin to Portfolio - Shashwat Gangwal.
- [6] A Statistical Analysis of Bitcoin Transactions During 2012 To 2013 In Terms of Premier Currencies: Dollar, Euro and Rubles.
- [7] Price Fluctuations and the Use of Bitcoin: An Empirical Inquiry Michal Polasik, Nicolaus Copernicus University in Toruń, Anna Piotrowska, Nicolaus Copernicus University in Toruń Tomasz Piotr Wisniewski, University of Leicester, Radoslaw Kotkowski, Warsaw School of Economics, Geoffrey Lightfoot*, University of Leicester.

[8] The future of cryptofinance: an empirical analysis of the adoption of Bitcoin The impact of country determinants on the adoption rate of Bitcoin, Liesje Degrave, Post graduation in business economics, IESEG School of management.

[9] Bitcoin is not the New Gold - A Comparison of Volatility, Correlation, and Portfolio Performance, Tony Klein, Queen's University Belfast, Thomas Walther, University of St.Gallen, Hien Pham Thu, Humboldt-Universität zu Berlin.

[10] Cryptocurrencies: A Developing Asset Class, Kaustubh Arvind Sontakke, Aishwarya Ghaisas.