

“RISK RETURN TRADE-OFF OF BIT COINS” – A STUDY ON USD, EURO, JPY & INR

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ABSTRACT

The usage of Bit coin has emerged as enormous in many exceptional structures in recent years. Digital cash is not absolutely managed and regulated therefore most of the international locations have not admitted this currency in their financial sports. This paper studies about crypto currency's current legality in addition to future government actions and its impact on those currencies.

The present paper examines the returns offered by Bit coins on various currencies like USD, INR, EURO and JPY. An attempt has been made to ascertain and analyse the risk involved in trading the Bit coins on the various chosen currencies. Paper also focuses on identifying the impact of trading one currency with another. Study has been conducted using data for the time period of January 2018 to December 2021. Descriptive statistics has been used for analysing the data. Single factor Anova has been used for testing Hypothesis. Further correlation coefficient has also been calculated to examine the relativity of trading in the all the four chosen currencies of Bit coins.

Key words — Bit coin, USD, INR, EURO, JPY, legality, digital currency

1. Introduction

Digital currency is nothing though the digital representation of the physical currency of a nation. Virtual foreign money may be used for transactions and all different utilities that generally would be accomplished using bodily currency. They're regulated by the authorities and may be used thru debit/credit score cards or online payments. Digital currency digital foreign money is neither issued by means of the government neither is it regulated by the authorities. digital currencies may be used for transaction in apps and video games and are issued through the developers. They do not hold any actual price and can best be used digitally, i.e, they can't be converted to fiat currency (virtual or bodily form). Virtual currency and digital currency is used interchangeably, But the difference among the two is apparent from the cited statistics. Bit coin is a crypto currency. It's a digitalized virtual currency without a relevant bank or an administrator that may be despatched from person to person on the peer-to-peer Bit coin network work without the help of intermediaries. Transactions are established

by means of community nodes through cryptography and recorded in a public allotted ledger referred to as a block chain. Bit coin was invented in the year 2008 by an unknown man or woman or group of any human organization. Satoshi Nakamoto has started out in 2009 when its supply code become launched as open-source software. Bit coins are created as a reward for a practice called mining. They can be exchanged for different currencies, merchandise, and services. studies produced by means of university of Cambridge estimates that during 2017, there were 2.9 to 5.eight million precise users the use of a crypto currency wallet, maximum of them the use of Bitcoin.

2. Review of Literature

Giungato, etall. (2017)The purpose of this work is to describe and evaluate current styles of literature related to the sustainability of bit coin, taking into account the environmental impacts, social issues and economic factors. From the analysis it turns out that the conversion of the entire financial system to a

new crypto currency will result in an unacceptable level of energy consumed in mining new bit coins and keeping the entire financial system visible, and perhaps bit coin will always be a niche currency. Under the guise of being a driver of social change, bit coins and related block chain technologies may overcome the problems highlighted by many opponents.

Peter, D. D. (2016) opined that Bit coin is flooring the approach as an unsettling technology to long lasting and unaffected monetary payment methods which have been in use for many years. General studies should be conducted on the economic impacts of Bit coin's effect for a longer period fiat currency enactment, and relate the outcomes to countries that are about to adopt crypto currencies. Cryptology, the base science underneath bit coin and all digital currencies, may be the technology behindhand the frontier for fresh and exhilarating digital inventions.

C. Baek & M. Elbeck (2015) They have used Bit coin and S&P 500 Index data daily to assess related volatility using reduced rates. They have further modelled the Bit coin market returning with selected economic variables to learn the drivers of the Bit coin market return. We report strong evidence to suggest that Bit coin volatility within (buyer and seller) is on-going leading to the conclusion that the Bit coin market is highly speculative at the moment.

Jordi, H.J.(2014) has identified Bit coin as the most promising digital currencies since 2009. A wide-ranging explanation on the fine points that mark such digital currencies a stimulating research theme in the privacy community. In addition to the research areas that can be accomplished directly on the learning of the bit coin system only, further approaches implement research with the bit coin system.

Sarah, M. (2013) In this paper the author attempts to further explore this unique feature, using heuristic clustering to collect Bit coin wallets based on shared evidence, and then using reconnaissance attacks (i.e., procurement of goods and services) to distinguish the operators of those collections. . From this analysis, we highlight the long-term changes in

the Bit coin market, the pressures these changes place on the system, and the challenges for those who want to use Bit coin for criminal or fraudulent purposes.

Moshe, B. & et.al(2012) have studied a common set-up that only partakers who are aware of the information can participate for various reward, and therefore educated participants have an incentive not to proliferate data to others. Researchers show that their proposed pattern flourishes in setting the accurate incentives, ie, Sybil-proof, and that it needs merely a lesser payment overhead, which can be attained with repeated exclusion of dominated policies.

3. Research Gap Even though many studies have been conducted on Bit coins, its return, risk involved it and its volatility has not been analysed in depth using various currencies. Hence a gap for research is prevailing.

4. Statement of the problem

World has remodelling into transactions without cash via innovative ways and making transactions by digital money. Purpose of the study is to examine the return offered, risk involved in trading the Bit coin as well as the impact of trading one currency with other currencies. One of the incredible innovations in cash, which is nothing but crypto currency or virtual money, no longer regulated by any government authority and bank.

5. Objectives of the study

1. To examine the returns offered by the Bit coins on USD, INR, EURO and JPY
2. To identify the risk involved in the trading of Bit coins on USD, INR, EURO and JPY
3. To compare the impact of trading one currency with other currencies.

6. Hypothesis

H₀: There is no significant difference in the returns offered by the Bit coins trading on USD, INR, EURO and JPY

7. Research Methodology

Researcher has been selected analytical research method for the current study. To meet the requirements of the research, researcher used secondary data which has been collected from various other sources like journals, information papers, books and magazines and so on...

8. Scope of the Study

The study is confined to only Bit coins and only four currencies ie, USD, INR, EURO and JPY has considered for the current study. Period of study has been confined from January -2018 to December 2021. Variations of the returns on Bit coins and its volatility has been calculated on monthly basis.

9. Sources of data collection

Secondary data

The secondary information necessary for finishing the investigation has been collected from the website Investing India.com. which shows the daily trading details of the trading of Bit coins and data has also been collected from other sources like libraries, books, journals, magazines, and so on.

10. Tools used for data analysis

Descriptive statistics has been used for analysing the data. Single factor Anova has been used for testing Hypothesis. Further correlation coefficient has also been calculated to examine the relativity of trading in the all the four chosen currencies of Bit coins

12. Analysis & Interpretation

The following table showing trends of Bit coin value in respect of USD, INR, Euro and JPY

Table 1 Showing Returns of Bit coins on Currencies for the year 2018

	USD		INR		Euro		JPY	
Date	Price	Change %	Price	Change %	Price	Change %	Price	Change %
Jan-18	10,284.00	---	---	---	8,177.70	---	10,87,452	---
Feb-18	10,315.00	0.30%	---	---	8,459.80	3.45%	11,05,306	1.64%
Mar-18	6,925.30	-32.86%	4,50,550	---	5,627.30	-33.48%	7,44,244	-32.67%
Apr-18	9,240.00	33.42%	6,13,004	36.06%	7,664.90	36.21%	10,11,192	35.87%
May-18	7,485.80	-18.98%	5,04,930	-17.63%	6,413.50	-16.33%	8,16,149	-19.29%
Jun-18	6,391.50	-14.62%	4,37,470	-13.36%	5,466.30	-14.77%	8,37,061	2.56%
Jul-18	7,730.60	20.95%	5,30,589	21.29%	6,618.20	21.07%	8,62,479	3.04%
Aug-18	7,025.90	-9.12%	4,97,978	-6.15%	6,043.30	-8.69%	7,77,658	-9.83%
Sep-18	6,618.10	-5.80%	4,79,973	-3.62%	5,701.10	-5.66%	7,48,743	-3.72%
Oct-18	6,368.40	-3.77%	4,71,799	-1.70%	5,599.50	-1.78%	7,11,165	-5.02%
Nov-18	4,038.30	-36.59%	2,81,748	-40.28%	3,534.30	-36.88%	4,51,775	-36.47%
Dec-18	3,830.50	-5.15%	2,67,136	-5.19%	3,256.50	-7.86%	4,06,649	-9.99%
Mean	7,187.78	-7%	4,53,517.70	-3%	6,046.87	-6%	7,96,656.08	-7%
SD	2064.347	21%	106217.3875	22%	1606.054	21%	216576.4011	20%
CV	29%	-313%	23%	-645%	27%	-362%	27%	-291%
MAX	10,315.00	33%	6,13,004.00	36%	8,459.80	36%	11,05,306.00	36%
MIN	3,830.50	-37%	2,67,136.00	-40%	3,256.50	-37%	4,06,649.00	-36%

(Source : Investing India.com)

It is inferred from the Table 1 that for the calendar year 2018 (month on month average returns), amongst the bit coins in USD, INR, EURO and JPY, mean returns offered by USD is -7%, by INR is -3%, by EURO is -6% whereas JPY also offered the same returns offered by USD ie, -7%. Meanwhile volatility is more or less same for all the currencies which lie between 20% to 22%. Among the given currencies, coefficient of variation is lower in JPY which means speculation amount is very less. Maximum return offered by USD is in the month of April

that is 33%. Maximum return offered by INR is in the month of April that is 36%. Maximum return offered by EURO is in the month of April that is 36%. Maximum return offered by JPY is in the month of April that is 36%. Meanwhile minimum return offered by USD was in the month of November that is -37%. Minimum return offered by INR is in the month of November that is -40%. Minimum return offered by INR is in the month of November that is -40%. Minimum return offered by JPY is in the month of November that is -36%.

Table 2 Showing Returns of Bit coins on Currencies for the year 2019

	USD		INR		Euro		JPY	
Date	Price	Change %	Price	Change %	Price	Change %	Price	Change %
Jan-19	3,501.10	-8.60%	2,49,431	-6.63%	2,995.70	-8.01%	3,70,851	-8.80%
Feb-19	3,894.00	11.22%	2,75,899	10.61%	3,365.50	12.34%	4,23,189	14.11%
Mar-19	4,167.60	7.03%	2,89,395	4.89%	3,665.40	8.91%	4,53,399	7.14%
Apr-19	5,599.50	34.36%	3,89,434	34.57%	4,735.10	29.18%	5,87,366	29.55%
May-19	8,533.30	52.39%	5,93,713	52.46%	7,689.30	62.39%	9,28,745	58.12%
Jun-19	10,745.00	25.92%	7,44,275	25.36%	9,481.60	23.31%	11,70,832	26.07%
Jul-19	10,088.00	-6.11%	6,94,522	-6.68%	9,105.10	-3.97%	10,99,649	-6.08%
Aug-19	9,623.90	-4.60%	6,85,360	-1.32%	8,760.20	-3.79%	10,20,456	-7.20%
Sep-19	8,331.10	-13.43%	5,85,865	-14.52%	7,629.70	-12.90%	8,97,305	-12.07%
Oct-19	9,185.60	10.26%	6,49,510	10.86%	8,213.70	7.65%	9,88,882	10.21%
Nov-19	7,599.90	-17.26%	5,41,312	-16.66%	6,875.50	-16.29%	8,27,953	-16.27%
Dec-19	7,208.30	-5.15%	5,13,407	-5.16%	6,404.80	-6.85%	7,79,728	-5.82%
Mean	7,373.11	7%	5,17,676.92	7%	6,576.80	8%	7,95,696.25	7%
SD	2521.751	21%	175317.300	21%	2330.562	22%	274706.06	22%
CV	34%	294%	34%	286%	35%	290%	35%	294%
MAX	10,745.00	52%	7,44,275.00	52%	9,481.60	62%	11,70,832.00	58%
MIN	3,501.10	-17%	2,49,431.00	-17%	2,995.70	-16%	3,70,851.00	-16%

Source : Investing India.com

It is inferred from the Table 2 that for the calendar year 2019 (month on month average returns), amongst the bit coins in USD, INR, EURO and JPY, mean returns offered by USD is 7%, by INR is 7%, by EURO is 8% whereas JPY also offered the return of 7%. Meanwhile volatility is more or less same for all the currencies which lie between 21% to 22%. Among the given currencies, coefficient of variation is also more or less same for all

currencies. Maximum return offered by USD is in the month of May that is 52%. Maximum return offered by INR is in the month of May that is 52%. Maximum return offered by EURO is in the month of May that is 62%. Maximum return offered by JPY is in the month of May that is 58%. Meanwhile minimum return offered by USD was in the month of November that is -17%. Minimum return offered by INR is in the month of November that is -17%. Minimum return offered by INR is in the month

of November that is -16%. Minimum return offered by JPY is in the month of November that is -16%.

Table 3 Showing Returns of Bit coins on Currencies for the year 2020

	USD		INR		Euro		JPY	
Date	Price	Change %	Price	Change %	Price	Change %	Price	Change %
Jan-20	9,367.40	29.95%	6,69,214	30.35%	8,417.20	31.42%	10,13,076	29.93%
Feb-20	8,557.30	-8.65%	6,18,838	-7.53%	7,756.20	-7.85%	9,23,645	-8.83%
Mar-20	6,427.70	-24.89%	4,83,270	-21.91%	5,839.80	-24.71%	6,91,706	-25.11%
Apr-20	8,635.30	34.35%	6,48,529	34.20%	7,900.70	35.29%	9,26,860	34.00%
May-20	9,452.10	9.46%	7,15,323	10.30%	8,514.50	7.77%	10,18,483	9.89%
Jun-20	9,150.60	-3.19%	6,90,369	-3.49%	8,145.30	-4.34%	9,88,083	-2.98%
Jul-20	11,350.00	24.04%	8,48,261	22.87%	9,648.00	18.45%	12,02,070	21.66%
Aug-20	11,671.00	2.83%	8,53,531	0.62%	9,783.50	1.40%	12,37,961	2.99%
Sep-20	10,794.00	-7.51%	7,92,221	-7.18%	9,196.60	-6.00%	11,36,905	-8.16%
Oct-20	13,788.00	27.74%	10,28,993	29.89%	11,850.60	28.86%	14,44,946	27.09%
Nov-20	19,686.00	42.78%	14,57,389	41.63%	16,427.40	38.62%	20,44,718	41.51%
Dec-20	28,933.00	46.97%	21,15,850	45.18%	23,681.90	44.16%	29,71,554	45.33%
Mean	12,317.70	14%	9,10,149.00	15%	10,596.81	14%	13,00,000.58	14%
SD	6219.744	23%	454082.0959	22%	4893.163	22%	626644.286	23%
CV	50%	158%	50%	153%	46%	163%	48%	162%
MAX	28,933.00	47%	21,15,850.00	45%	23,681.90	44%	29,71,554.00	45%
MIN	6,427.70	-25%	4,83,270.00	-22%	5,839.80	-25%	6,91,706.00	-25%

Source : Investing India.com

It is inferred from the Table 3 that for the calendar year 2020 (month on month average returns), amongst the bit coins in USD, INR, EURO and JPY, mean returns offered by USD is 14%, by INR is 15%, by EURO is 14% whereas JPY also offered a return of 14%. Meanwhile volatility is more or less same for all the currencies which lie between 22% to 23%. Among the given currencies, coefficient of variation is lower in INR which means speculation amount is very less. Maximum return offered by USD is in the

month of December that is 47%. Maximum return offered by INR is in the month of December that is 45%. Maximum return offered by EURO is in the month of December that is 44%. Maximum return offered by JPY is also in the month of December that is 45%. Meanwhile minimum return offered by USD was in the month of March that is -25%. Minimum return offered by INR is in the month of November that is -40%. Minimum return offered by INR is in the month of March that is -25%. Minimum return offered by JPY is also in the month of March that is -25%

Table 4 Showing Returns of Bit coins on Currencies for the year 2021

	USD		INR		Euro		JPY	
Date	Price	Change %	Price	Change %	Price	Change %	Price	Change %
Jan-21	33,141.00	14.54%	24,11,950	13.99%	27,355.50	15.51%	34,57,983	16.37%
Feb-21	45,300.00	36.69%	33,29,987	38.06%	37,385.00	36.66%	48,16,519	39.29%
Mar-21	58,796.00	29.79%	42,95,089	28.98%	50,042.00	33.86%	65,07,999	35.12%
Apr-21	57,637.00	-1.97%	42,80,074	-0.35%	47,993.30	-4.09%	63,21,857	-2.86%

May-21	37,305.00	-35.28%	27,04,282	-36.82%	30,505.50	-36.44%	40,84,702	-35.39%
Jun-21	35,043.50	-6.06%	26,05,588	-3.65%	29,551.60	-3.13%	38,98,439	-4.56%
Jul-21	41,409.00	18.16%	30,85,944	18.44%	35,000.90	18.44%	45,44,634	16.58%
Aug-21	47,157.00	13.88%	34,39,921	11.47%	40,013.80	14.32%	51,80,549	13.99%
Sep-21	43,830.00	-7.06%	32,47,950	-5.58%	37,865.80	-5.37%	48,78,209	-5.84%
Oct-21	61,330.00	39.93%	45,93,131	41.42%	53,155.90	40.38%	70,14,949	43.80%
Nov-21	56,938.00	-7.16%	42,78,062	-6.86%	50,272.30	-5.42%	64,52,296	-8.02%
Dec-21	46,218.00	-18.83%	34,42,226	-19.54%	40,657.40	-19.13%	53,24,766	-17.47%
Mean	47,008.71	6%	34,76,183.67	7%	39,983.25	7%	52,06,908.50	8%
SD	9677.811	23%	733733.1252	23%	8735.213	24%	1148111.787	24%
CV	21%	360%	21%	351%	22%	329%	22%	319%
MAX	61,330.00	40%	45,93,131.00	41%	53,155.90	40%	70,14,949.00	44%
MIN	33,141.00	-35%	24,11,950.00	-37%	27,355.50	-36%	34,57,983.00	-35%

Source : Investing India.com

It is inferred from the Table 4 that for the calendar year 2021 (month on month average returns), amongst the bit coins in USD, INR, EURO and JPY, mean returns offered by USD is 6%, by INR is 7%, by EURO is 7% whereas JPY also offered a return of 8%. Meanwhile volatility is more or less same for all the currencies which lie between 23% to 24%. Among the given currencies, coefficient of variation is also more or less same for all currencies. Maximum return offered by USD is in the month of October that is 40%. Maximum return offered by INR is in the month of October that is 41%. Maximum return offered by EURO is in the month of October that is 40%. Maximum return offered by JPY is also in the month of October that is 44%. Meanwhile minimum return offered by USD was in the month of May that is -35%. Minimum return offered by INR is in the month of May that is -37%. Minimum return offered by INR is in the month of May that is -36%. Minimum return offered by JPY is also in the month of May that is -35%.

Table 5 showing Correlation of Bit coins in 2018

	USD	INR	EUR	JPY
USD	1			
INR	0.881008	1		
EUR	0.996888	0.876066	1	
JPY	0.920799	0.797344	0.925769	1

It is inferred from the Table 5 that there is a positive correlation among all the currencies as the values are higher than 0.75.

Table 6 showing Correlation of Bit coins in 2019

	USD	INR	EUR	JPY
USD	1			
INR	0.997784	1		
EUR	0.986688	0.984271	1	
JPY	0.993278	0.988793	0.994901	1

It is inferred from the Table 6 that there is a strong positive correlation among all the currencies as the values are higher than 0.90

Table 7 showing Correlation of Bit coins in 2020

	USD	INR	EUR	JPY
USD	1			
INR	0.998155	1		
EUR	0.995203	0.996467	1	
JPY	0.999494	0.997949	0.996468	1

It is inferred from the Table 7 that there is a strong positive correlation among all the currencies as the values are higher than 0.90

Table 8 showing Correlation of Bit coins in 2021

	USD	INR	EUR	JPY
USD	1			
INR	0.998071	1		

EUR	0.99757 5	0.99580 7	1	
JPY	0.99751 2	0.99548 9	0.99748 5	1

It is inferred from the Table 8 that there is a strong positive correlation among all the currencies as the values are higher than 0.90

Table 9 showing Anova single factor test results

Group s	Coun t	Sum	Averag e	Varian ce
USD		2.643	0.0550	0.0497
%	48	2	67	6

INR%	48	3.116 9	0.0649 35	0.0465 13
EURO		2.759	0.0574	0.0506
%	48	1	81	21
JPY%	48	2.734 1	0.0569 6	0.0504 06

It is inferred from the Table 9 that average return of Bit coin on monthly basis is 0.05 and above which means that returns offered by the Bit coins by all the chosen currencies are more or less same hence H_0 can be accepted.

H_0 : There is no significant difference in the returns offered by the Bit coins trading on USD, INR, EURO and JPY

Table 10 showing Anova hypothesis test values

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	0.002715	3	0.000905	0.018347	0.996609	2.652646
Within Groups	9.273154	188	0.049325			
Total	9.275869	191				

From the observation of 48 months' data of Bit Coins on USD, INR, EURO & JPY clearly indicates that return offered is similar, which is ranging 5.5% to 6.5%. to check statistical significance of difference in the mean ANOVA test was carried out for all 4 above mention bitcoins on different currencies. It infers the following – test suggest to accept the null hypothesis i.e. there is no significant difference, returns offered by the bitcoins due to F test calculated value 0.018347 is lower than F critical value 2.65.

13. Findings of the study

1. Maximum return given by all the chosen currencies for the calendar year 2018 was in the month of April whereas the minimum return offered for the year was in the month of November. Coefficient of variation is lower in JPY which means speculation amount is very less.
2. Maximum return given by all the chosen currencies for the calendar year 2019 was in the month of May whereas the minimum return offered for the year was in the month of November. Among the given currencies,

coefficient of variation is also more or less same for all currencies for the year 2019

3. Maximum return given by all the chosen currencies for the calendar year 2020 was in the month of December whereas the minimum return offered for the year was in the month of March. Coefficient of variation is lower in INR which means speculation amount is very less.

4. Maximum return given by all the chosen currencies for the calendar year 2020 was in the month of October whereas the minimum return offered for the year was in the month of May. coefficient of variation is also more or less same for all currencies

5. Volatility of Bit coin is more or less same for all the 4 chosen currencies for all the years selected for the study

6. For the calendar year 2018, all the currencies are showing a positive relationship among each other.

7. A strong positive relationship among the 4 chosen currencies has been witnessed in the year 2019, 2020 and 2021

8. Average return of Bit coin on monthly basis is 0.05 and above which means that returns offered by the Bit coins by all the

chosen currencies are more or less same hence H_0 has been accepted.

9. Returns offered by the bit coins due to F test calculated value 0.018347 is lower than F critical value 2.65 as per Anova Test which suggest to accept the null hypothesis

14. Conclusion

World has transformed itself into monetary transactions without cash via revolutionizing and innovative transactions by digital money. Purpose of the study was to scrutinize the return offered, risk involved in trading the Bit coin as well as the impact of trading one currency with other currencies. Finance Minister Nirmala Sitaraman effectively provided legal approval to crypto currencies in India – by categorizing them as “digital assets” but not currency and income earned from its transactions will be taxable at a high 30%. Minister’s statement in the Budget speech mostly ruled out the ambiguity on the future of Bit coins in the country. From the observation of 48 months’ data of Bit Coins on USD, INR, EURO & JPY clearly shows that return accessible is similar, which is ranging 5.5% to 6.5%. to check statistical significance of difference in the mean ANOVA test was carried out for all 4 above mention bit coins on different currencies and test suggest to accept the null hypothesis i.e. there is no significant difference, returns offered by the bit coins due to F test calculated value 0.018347 is lower than F critical value 2.65. Volatility of Bit coin was very less for all the chosen currencies. The RBI Central Board had newly deliberated numerous aspects, as well as the status, of the central bank digital currency. Income from crypto currencies will be taxable and it does not inevitably and explicitly authorize crypto currencies for the reason that income tax is not fretful about the way or means of earning the income. Revenue received from both – legal or illegal deeds – will be levied as per the Income Tax Act. Indian Government has not converted crypto legal in the Finance Bill, nevertheless it made the income from it as taxable. At the same time it is also extremely unlikely that the government can collect tax from the transactions of crypto currency and can then acquaint with a bill to mark crypto currencies illegal.

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