A study on role of bit coin in global asset class portfolio

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Abstract:

Bit coin is dispersed basic cash that adopts a peer-to-peer accord arrangement to affirm and authenticate contracts. Bit coin works just like currency. It can be acquired or disposed of in currency swaps, and being the most frequently recycled one. The objectives of the study are to measure the performance of Bit coin along with the selected currencies movement, to study the select economic factors influence on Bit coin and to comparison of Bit coin volatility with other selected asset class volatility. The analysis has be explained from the period of January 2009 to December 2015 consider macro level economic variables were consider to measure the impact on global asset Bit coin. It includes Doller index, Crude oil price, Baltic dry index etc., Study is to understand the role Bit coin monopoly in electronic currency system and influence on the gold rate and Currency fluctuations. It also helps us in comparing the performance with the other portfolios and to find the impact of few global economic factors. Granger causality test, Calmar Ratio, Volatility are used for to analyse the data. The various economic variables of macro levels are successfully influencing Bit coin. The traders of Bit coin are taking positions by considering various economic factors fluctuations. In this study secondary data has been used, and this secondary data has been collected from economic variables. Descriptive statistical tools were used for the data analysis.

Key words: **Bit coins, crypto currency, Inflation, calmer ratio, volatility etc.**

INTRODUCTION

Bit coin is dispersed basic cash that adopts a peer-to-peer accord arrangement to affirm and authenticate contracts. The Bit coin chain was arranged and begun in January 2009 by a association of programmers under the pseudonym of "Satoshi Nakamoto," based on the perception of open-source crypto-currency is defined by cryptologist Wei Dai in 1998. Significant to Bit coin is its autonomy from any academy or authority, granting any keen parties to enlist in a direct budgetary contract at a low cost. Rather of believing a financial mediator to intervene and certify an agreement, all authentic agreements are encrypted into a single agreed-upon past or journal of agreements. This completely averts anyone's endeavour to spend the same coin numerous times or to build false Bit coin.

Bit coin works just like currency. It can be acquired or disposed of in currency swaps, and being the most frequently recycled one. It can also serve as premium for commodity or maintenance at a flourishing number of employments. An agreement is built by "sending" Bit coins to the location of the account to be credited. Once an agreement is built, it is advertised honestly among the network, which is convinced of persons, known as "miners," who allot measuring capacity to clear up the agreements. These agreements are "pending" until the bulk of the organization certifies they are accurate. Then, the documented section is set to the public section group, and the network starts to clear up the next contract section. To appreciate anonymity, buyers are cheered to design new locations for each agreement to be accepted, yet the public section group and account balances can be

drawn to channel accounts and buyers. Since the establishment of Bit coin (Nakamoto 2008), proof-of-work has been the main design of peer-to-peer crypto currency. The approach of proof-of-work has been the determination of casting and security model of Nakamoto's study.

The volatility of the price of Bit coin has attracted much media attention. The price is currently approximately $380. At the beginning of 2013 the price was approximately $13. The Financial Times, the Wall St Journal amongst other news sources release stories documenting changes in the price and point to their potential sources. Most recently, there has been a large surge in demand in China with the Chinese Yuan overtaking the dollar as the currency most traded for Bit coin.

Bit coin is part of a much wider class of internet-based currencies and economies that are growing in significance in many parts of the world. The focus on Bit coin in this seminar reflects its influence in establishing a new generation of currencies but should not limit the discussion. The issues raised are easily applicable to different spheres of research, which will provide a good basis for interdisciplinary collaboration.

Although Bit coin seems like a drop in the ocean in comparative terms, there are some distinctive features that make it an interesting object of study. These can be split into three broad categories.
1. Bit coin's design and attributes
2. The behaviour observed on the network
3. Bit coin's interactions with existing institutions

Crypto-currency: - Means money that is made hidden and private and therefore secure by means of encryption or code. All the data or methods of crypto currency are protected by long in the form of code or logics, each of which is unique to the item or person it's protecting. A significant feature of a crypto currency is that it is not issued by any central authority, interpretation it theoretically immune to government interference or manipulation. The unsigned nature of crypto currency transactions makes them well-suited for a host of immoral activities such as money launder and tax avoidance. The first crypto currency was Bit coin, launched in 2009. Bit coin's success has a number of competing crypto currencies such as LIT coin and PP Coin.

Bit coin is the world's first global, decentralized, digital currency which is not controlled by any one person or group, who might be erroneous or partial. The transfer of Bit coin looks like, sending a value like money between any two parties, without a third-party intermediary. This enables extremely low cost international remittances to anyone with an Internet connection or mobile phone. Bit coin is an assured payment, like a check. If you receive Bit coins, that transaction cannot be reversed at a later on date by a criminal looking for to commit fraud. This has noticeable advantages for merchants selling or buying goods over the Internet. In addition to the various credit cards envelop only about 61 of the world's nearly all countries. Bit coin enables any person in any country for the secure pay, without any risk.

In a hypothetical world, Bit coin meets the needs of money and debates on possible regulation of crypto currencies, where Bit coin is the principal medium of exchange, are being addressed all over the world. These observations mostly related to such issues as depreciation environment, possible tax collection in crypto currencies etc. It is apparent that recessions arising in correlation with natural disasters or conjunctures based on innovations cannot be eliminated in a market economy.

Initially, Bit coin was adopted by tech enthusiasts and libertarians. The first known Bit coin purchase for real goods took place on 21st May 2010. A pizza was purchased by a volunteer in England to be delivered to Laszlo Hanyecz, a programmer living in Florida. Laszlo sent the volunteer 10,000 BTC in exchange for $25 worth of pizza. In May 2010, there were approximately 230 transactions taking place on the network on any given day. Over the past three years, there has been substantial growth in the number of transactions. The average number of daily transactions in October 2013 was 53, 1242.

The basics for a new user:
As a new user, you can get started with Bit coin without understanding the technical details. Once you have installed a Bit coin wallet on your computer or mobile phone, it will generate your first Bit coin address and you can create more whenever you need one. You can disclose your addresses to your friends so that they can pay you or vice versa. In fact, this is pretty similar to how email works, except that Bit coin addresses should only be used once.

Balances - block chain:
The block chain is a shared public ledger on which the entire Bit coin network relies. All confirmed transactions are included in the block chain. This way, Bit coin wallets can calculate their spendable balance and new transactions can be verified to be spending Bit coins that are actually owned by the spender. The integrity and the chronological order of the block chain are enforced with cryptography.

Transactions - private keys:
A transaction is a transfer of value between Bit coin wallets that gets included in the block chain. Bit coin wallets keep a secret piece of data called a private key or seed, which is used to sign transactions, providing a mathematical proof that they have come from the owner of the wallet. The signature also prevents the transaction from being altered by anybody once it has been issued. All transactions are broadcast between users and usually begin to be confirmed by the network in the following 10 minutes, through a process called mining.

Review of literature

Michael Bedford Taylor (2013) Recently the Bit coin crypto currency has been an international sensation. This paper tells the story of Bit coin hardware: how a group of early-adopters self-organized and enhanced the creation of an entire new industry, leading to the development of machines, including ASICs that had orders of magnitude better performance than what Dell, Intel, NV idia, AMD or Xilinx could provide.

Dini Amalia Dewi and SubiaktoSoekarno (2014) The purpose of this study is to analyse the risk and return on Bit coins, as an alternative investment, and how the Bit coins' performance compared with other investment instruments such as gold and stock index in Indonesia, which is LQ45 index. The risk and return, performance evaluation and optimum portfolio formulas is applied to find the result. The finding result shows that Bit coins was good for short–term period investment and it is good for investors who are risk seekers.

MihaelaIavorschi (2014) He innovation in the field of monetary freedom takes shape in the virtual communities. Developed and implemented through a decentralized algorithm, the Bit coin project has so far proved itself a success in the field of virtual currency. Beyond the technical part of operation, in this paper we will analyse the theoretical principles underlying the Bit coin. This study shows that the

Bit coin largely meets the role of natural money of gold and silver, in compliance to the free market's behaviour. This allows us to observe the fact that people are aware of the negative implications the state's intervention has in the monetary filed, thus deciding to create and use their own currency in online transactions.

Jerry L. Jordan (2014) with full restoration of the protection of property and enforcement of contracts by the U.S. judicial system, a gold-backed, market driven private currency would not suffer the same vulnerabilities to political whims as gold backing of the official currency. The Founders' vision of a just, and minimal, government that serves the people, we have evolved to a government bureaucracy that believes, "If it moves, tax it; if it keeps moving, regulate it; if it stops moving, subsidize it". The first two policies taxation and regulation must be dealt with for any currency competition to be available.

Marc Gronwald (2014) the economics of Bit coins in two ways. First, it broadens the discussion on how to capture Bit coins using economic terms. Center stage in this analysis takes the discussion of some unique characteristics of this market as well as the comparison of Bit coins and gold. Second, the paper empirically analyses Bit coin prices using an autoregressive jump-intensity GARCH model; a model tested and proven by the empirical finance community. Results suggest that Bit coin price are particularly marked by extreme price movements; a behaviour generally observed in immature markets.

Garima Chaudhary (2014) The Bit coin transaction is a digitally signed message to take effect it must be recorded in a public ledger or public transaction database called the block chain. Approximately every ten minutes a bundle of transactions, called a "block", is added to the block chain. The incentive for this accounting process, known as "mining", carries a reward of 25 Bit coins per block added to the block chain. This 25 Bit coins reward maintains the integrity of the Bit coin system by allowing the computers that confirm transactions to also mint new Bit coins in the process. Bit coin payment processing fees are optional, and generally substantially lower than those of credit cards or money transfers.

CharalambosTsanidis& Dafni-Maria Nerantzaki (2015) Bit coin the online virtual currency relies on a combination of cryptographic protection and a peer-to-peer protocol for witnessing settlements. In spite of this burgeoning usage, research on users' attitudes towards Bit coin is very limited. The paper aims to fill this gap by investigating consumers' attitudes towards online payments and adoption of Bit coin in Greece. An empirical study was conducted via an online survey tool. Internet users have been chosen to be surveyed as non-users haven't favourable attitudes towards the use of Bit coin.

K. Shruthi, Mynampati Uma Devi (2015) The focus of this analysis has been done from currencies and global assets class perspective, This analysis had proven that crude oil and dollar index are having impact on Bit coin but at the same point of time Global economy impact not been observed on the fluctuations of electronic currencies. With the volatility formulae Bit coin has been compared with the global assets classes and BDI the risk level is found to be ignorable amount i.e., less than Global equity, Gold, but more than bond instruments. The performance measure calmer ratio has proven that the Bit coin vs. Yen, Great Britain Pound and Canadian Dollar, are found to be stronger when it is compared with other select currencies.

Joseph Bonneau, Andrew Millerx, Jeremy Clark, and Arvind Narayanan (2015) Bit coin has emerged as the most successful cryptographic currency in history. This enables a more insightful analysis of Bit coin's properties and future stability. We map the design space for numerous proposed modifications, providing comparative analyses for alternative consensus mechanisms, currency allocation mechanisms, computational puzzles, and key management tools. Finally we provide new insights on what we term disintermediation protocols, which absolve the need for trusted intermediaries in an interesting set of applications. We identify three general disintermediation strategies and provide a detailed comparison.

RESEARCH GAP

Many studies had done research on Bit coin momentum and its performance but no research has been found by considering the Bit coin as global financial asset, which can be part of global asset portfolio. Study is to understand if Bit coin can replace the monopoly system that influences the Currency fluctuations. It also helps us in comparing the performance with the other portfolios and to find the impact of few global economic factors. It gives you the insight on the behaviour of Bit coin during different economic situations; also lets us understand if Bit coin can emerge as a global electronic currency.

OBJECTIVES OF THE STUDY

1. To measure the performance of Bit coin along with the selected currencies movement.
2. To study the select economic factors influence on Bit coin.
3. Comparison of Bit coin volatility with other selected asset class volatility.

HYPOTHESIS

Null Hypothesis – H0– Inflation is not influence the Bit coin
Null Hypothesis – H1 –Inflation is influence the Bit coin
Null Hypothesis – H0 – Dollar index is not influence the Bit coin
Null Hypothesis – H1 –Dollar index is influence the Bit coin
Null Hypothesis – H0 – Gold is not influence the Bit coin
Null Hypothesis – H1 –Gold is influence the Bit coin
Null Hypothesis – H0 – Gold volatility is not influence the Bit coin volatility.
Null Hypothesis – H1 –Gold volatility is influence the Bit coin volatility.

SCOPE OF THE STUDY

The analysis has be explained from the period of January 2009 to December 2015 consider macro level economic variables were consider to measure the impact on global asset Bit coin.

Empirical study

1. Doller index
2. Crude oil price
3. Baltic dry index
4. Inflation
5. Global equity index
6. Gold price
7. Bit coin
8. Global bond index

NEED OF THE STUDY

Study is to understand the role Bit coin monopoly in electronic currency system and influence on the gold rate and Currency fluctuations. It also helps us in comparing the performance with the other portfolios and to find the impact of few global economic factors. It gives you the insight on the behaviour of Bit coin during different economic situations & also let us understands that the Bit coin can emerge as a global electronic currency.

LIMITATIONS

- Inflation data has been considered in consumer pricing index methodology.
- Pimco has been considered has a global bond index.

PERIOD OF THE STUDY

The period of the study has been considered from 2009 to 2015.

SAMPLING:

All scheduled commercial bank deposit has been taken as sample.

RESEARCH METHODOLOGY

1. Granger causality test: Granger causality test is a statistical hypothesis test for determining whether one time series is useful in forecasting another. A time series X is said to Granger-cause Y if it can be shown, usually through a series of t-tests and F-tests on lagged values of X (and with lagged values of Y also included), that those X values provide statistically significant information about future values of Y.

i. **Null hypothesis:** The null hypothesis refers to a general statement or default position that there is

No relationship between two measured phenomena. Rejecting or disproving the null hypothesis- and thus concluding that there is a relationship between two phenomena.

ii. **Alternative hypothesis:** In statistical hypothesis testing, the alternative hypothesis is applicable when probability is > 0.5. Alternative hypothesis is that the quality is poorer in the second half of the record.

2. Calmar Ratio: The ratio is very similar to the MAR Ratio, which was formulated much earlier. The only difference is that the MAR Ratio is based on data produced from the inception of the investment, whereas the Calmar Ratio is typically based on more recent and shorter-term data. Regardless of which ratio is used, investors gain better insight as to the risk of various investments.

$$= \frac{\text{Compound Annualized Rate of Return}}{\text{Maximum Drawdown (Absolute Value)}}$$

3. Volatility: Volatility is a measure for variation of price of a financial instrument over time. Historic volatility is derived from time series of past market prices. The symbol σ is used for volatility, and corresponds to standard deviation.

SOURCE OF DATA

In this study secondary data has been used, and this secondary data has been collected from economic variables. Descriptive statistical tools were used for the data analysis.

DATA ANALYSIS

1. To know the performance of Bit coin along with the selected currencies movement.

Currencies With Dollar	Euro	Japanese yen	Canadian dollar	British pound	Swedish krona	Swiss franc
Years	Yearly average	CAGR	**MAR ratio**	CAGR	Drawdown	**Calmer Ratio**
2009	0.928607					
2010	1.179428					
2011	0.371563					
2012	1.387898	3.852464	2.94462	3.852464	44.85001	-162.640667
2013	-0.16887					
2014	0.106373					
2015	0.047461					

Interpretation:

To measure the performance of Bit coin with the select currencies movement the above analysis of performance measure depicts that long term performance means “Mar ratio” had given superior result but short term performance measure calmer ratio had given inferior result on Bit coin. Hence this analysis proves that long term investors can gain with minimum risk but short term investor’s risk level is unknown.

2. To study the select economic factors influence on Bit coin.

3.

Information Criteria by Rank and Model

Data Trend:	None	None	Linear	Linear	Quadratic
Rank or No. of CEs	No Intercept No Trend	Intercept No Trend	Intercept No Trend	Intercept Trend	Intercept Trend
	Log Likelihood by Rank (rows) and Model (columns)				
0	-201.8063	-201.8063	-199.3427	-199.3427	-192.4229
1	-187.6801	-187.6734	-185.4218	-180.1789	-173.4261
2	-178.8721	-175.6366	-173.3850	-166.5477	-159.8030
3	-175.4760	-169.4606	-167.5927	-155.0452	-149.7887
4	-175.1950	-166.8303	-166.8303	-149.3958	-149.3958
	Akaike Information Criteria by Rank (rows) and Model (columns)				
0	16.75433	16.75433	16.87251	16.87251	16.64792
1	16.28309	16.35949	16.41706	16.09069	15.80201
2	16.22093	16.12589	16.10654	15.73444	15.36946
3	16.57508	16.34312	16.27636	15.54194	15.21452*
4	17.16885	16.83310	16.83310	15.79968	15.79968
	Schwarz Criteria by Rank (rows) and Model (columns)				
0	17.52854	17.52854	17.84028	17.84028	17.80924
1	17.44441	17.56920	17.77194	17.49395	17.35044
2	17.76936	17.77109	17.84852	17.57319	17.30499*
3	18.51061	18.42382	18.40545	17.81619	17.53716

Interpretation: The above analysis of Johansen co-integration has been applied on the select economic variables to Bit coin. The log likelihood values are observed in decreasing mode in both none leaner and quadratic intersect trend. Hence the data is started to be co-integrate between inflation, crude oil price, dollar index, Baltic dry index, with Bit coin.

Granger Causality Test

Null Hypothesis:	Obs	F-Statistic	Prob.
DBITCOINS does not Granger Cause INFLATION	20	0.27824	0.7609
INFLATION does not Granger Cause DBITCOINS		1.49993	0.2548
DBITCOINS does not Granger Cause DDDIA	20	1.04411	0.3762
DDDIA does not Granger Cause DBITCOINS		0.59678	0.5631
DBITCOINS does not Granger Cause DCOP	20	0.04799	0.9533
DCOP does not Granger Cause DBITCOINS		0.28543	0.7557
DBITCOINS does not Granger Cause BDI	20	3.90975	0.0430
BDI does not Granger Cause DBITCOINS		0.62755	0.5473

Interpretation

The Granger causality test has been applied on Johansen co-integration data the null hypothesis result has been regulated with all select economic variables to Bit coin and H1 alternative hypothesis has been accepted. The probability significant values were observe grater then 0.05.

4. To study the Gold price volatility influence on Bit coin volatility.

Dependent Variable: DBITCOINS
Method: ML ARCH - Normal distribution (BFGS / Marquardt steps)

Variable	Coefficient	Std. Error	z-Statistic	Prob.
DGPA	0.003025	0.001052	2.876012	0.0040
DGPA	0.003200	0.001442	2.218475	0.0265
DGPA	0.005458	0.001341	4.070647	0.0000
DGPA	0.020567	0.000609	33.78599	0.0000
DGPA	0.035380	0.000825	42.86141	0.0000

Interpretation:

The above analysis of multy regression mode has been applied to measure the volatility of gold price influencing on Bit coin volatility. The arch, garch, tarch, e-garch & partch models probability value is observed significance which are less then>0.05. Hence the model proves that Bit coin volatility is getting influenced by the global price volatility.

FINDINGS

1) This stud observed that global inflation, dollar index, crude oil price and Baltic dry index influenced the Bit coin.
2) Bit coin performance of returns in long term is found to be stronger.
3) Short term investors of Bit coin got negative performance. The risk level of short term investment in Bit coin is not known.
4) The volatility of select economic variables are influencing the Bit coin volatility in the analysed period.
5) The global economic movement is having the strong inflation on Bit coin momentum.

SUGGESTIONS

1. The study suggests that position in Bit coin is advised when global equity indicesand reality are moving upside.

2. Bit coin is in nascent stage and has less history. Investor's fraternity is a need toencourage this modern crypto currency which is having its own advantages.

3. Global traders can consider Bit coin for exchanging of currency so that they canprotect their business from currency fluctuations.

4. Across the globe all the central banks are facing to protect their currency fromdollar ups and downs. If people are started using Bit coin they will be less stresson every country foreign reserves and which interns strengthen country'scurrency.

CONCLUSION

It is concluded that title of "A study on role of Bit coin in global asset class portfolio for the period of 2009~2015 since the inspection of Bit coin global investors got attracted to keep this crypto currency as their part of global asset class portfolio. The various economic variables of macro levels are successfully influencing Bit coin. The traders of Bit coin are taking positions by considering various economic factors fluctuations. This analysis prove that volatility of Bit coin is getting influenced by the various factors fluctuations. The study had proved that the Bit coin is having all the standards to be called as global asset. So that global investors cannot be ignored from the investments. Hence further study is recommended in this area by considering various countries regulatory guidelines so that Bit coin can replace dollar in future.

REFERENCE

1. Bit coin: A Peer-to-Peer Electronic Cash System - S Nakamoto -https: // Bit coin. org/ Bit coin.pdf
2. Bit coin: An Innovative Alternative Digital Currency - R Grinberg - http://papers.ssrn.com/ sol3/ papers.cfm? abstract id=1817857
3. Bit coin: Network Based Currency and Its Self-Organizing Emergency - Michael Paetau - https://isaconf.confex.com/isaconf/wc2014/webprogram/Paper48144.html
4. Information propagation in the Bit coin network - C Decker– ieeexplore .ieee. org/ xpls / abs all.jsp.

Websites:

- http://www.coindesk.com/price/
- http://www.msci.com/products/indexes/performance.html
- http://www.mcxindia.com/sitepages/HistoricalDataForVolume.aspx
- http://www.pimcoindex.com/Pages/indexdata.aspx?ticker=GLAD
- http://www.investing.com/currencies/
- https://www.quandl.com/OFDP/INDEX_BDI_1-Baltic-Dry-Index
- http://www.mcxindia.com/sitepages/HistoricalDataForVolume.aspx
- https://Bit coin.org/en/how-it-works
- https://en.wikipedia.org/wiki/Bit coin
- https://Bit coin.org/en/Bit coin-for-individuals
- https://Bit coin.org/en

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