

CRYPTOCURRENCY: A NEW ASSET IN PORTFOLIO

Srilakshmi.S

Research Scholar
ISBR, Bengaluru

Dr. Karpagam.T

Dean Academics
ISBR, Bengaluru

ABSTRACT

After the meltdown of all markets in the year 2008, investors were searching for asset classes that would have very little or no correlation with stock market and its volatility. Crypto currency in the form of Bitcoin, came into being in the year 2009 by a process called mining. Block chain technology was used to mine this crypto-currency and since then, more than 1000 altcoins and crypto- tokens have been created and at least of them are traded actively on unregulated exchanges. This entire class of crypto currency have been in some countries recognized as commodities. If crypto currencies are viewed as commodities, their risk and return structures have to be analyzed for it to be incorporated in any portfolio. This paper sets out to understand crypto-currencies and explore the risk and return characteristics using a portfolio currency represented by Crypto-currency Index (CRIX). The pros and cons of Cryptocurrency as an asset class in a portfolio has also been assessed based upon the research conducted worldwide.

Keywords: Cryptocurrency, Volatility, Portfolio management, asset class, Blockchain technology

INTRODUCTION

After the financial crisis of 2008, many financial firms and their clients recognized the importance of asset allocation and the need to diversify client portfolios. This led to an increase in the use of alternative investments into client asset allocation models. A survey in 2015 showed that advisers had 73% of their clients in alternative investments and 70% of advisers planned to maintain their current alternative investment allocations for clients, although half of them feel that alternative investments had underperformed since 2008. The survey shows that in terms of asset allocation, most advisers were recommending a range of 6% to 15% of a client's portfolio in alternatives. Many (18% of advisers) were recommending 16% to 25% of their clients' portfolios in alternatives.

An asset class is simply a grouping of similar types of investments. The traditional general asset classes are as follows, and each of these can be broken down into sub-classes by size, industry, location, etc.

- Equities (stocks): Owning a piece of a company
- Fixed Income (debt): Lending money to a company or government for interest (government bonds, other types of bonds, and certificates of deposit, for example)
- Cash and cash equivalents: Money in savings account
- Real Estate and Commodities: Owning something physical like property, natural resource commodities and precious metals like gold.

Alternative Investments are defined as “noncorrelated assets”, that is their performance doesn't follow that of more traditional asset classes such as stocks and bonds. They are considered an effective way to balance risk in a portfolio and to provide a “cushion” in the case of a stock or bond meltdown and are appropriate in a small portion of overall portfolio. The various types of alternative asset classes can be commodities, hedge funds, real estate, private equity, currencies of different nations, art collections etc. Offlate new generation of alternative asset class in form of Crypto-currencies have been examined world wide for its merits and demerits to be included in Portfolio to hedge against melt down of traditional assets.

This virtual currency or crypto currency has recently attracted the investment community and are traded extensively in high volumes in unregulated and registered exchanges equally and have yielded extraordinary returns. This extraordinary returns offered from crypto-currency has piqued the curiosity of the portfolio managers and has been extensively researched for its suitability as an alternative asset class. Therefore, this paper aims to concentrate on the following question: Are Crypto-currency a favorable instrument for investors that seek for a diversified portfolio?

The main purpose of this paper is to identify whether or not Crypto-currency is a suitable instrument for portfolio diversification. This is done understanding the very nature of crypto-currency as a investing and trading instrument and also by analyzing and explaining the causes of the unusually high volatility, identifying the risk types and measuring the behavior of Crypto-currency returns in relation to global stock markets and traditional asset classes

A crypto-currency is a medium of exchange of a digital asset using cryptography, which is created and stored electronically in the block chain (the underlying technology behind all digital currencies). The process uses encryption techniques to secure transactions and to control the creation of monetary units of currency.

Bitcoin was the first crypto-currency that was conceptualized and created by Satoshi Nakamoto. In 2009 January, the Crypto-currency network came into existence with the release of the first open source and the issuance of the first Crypto-currency.

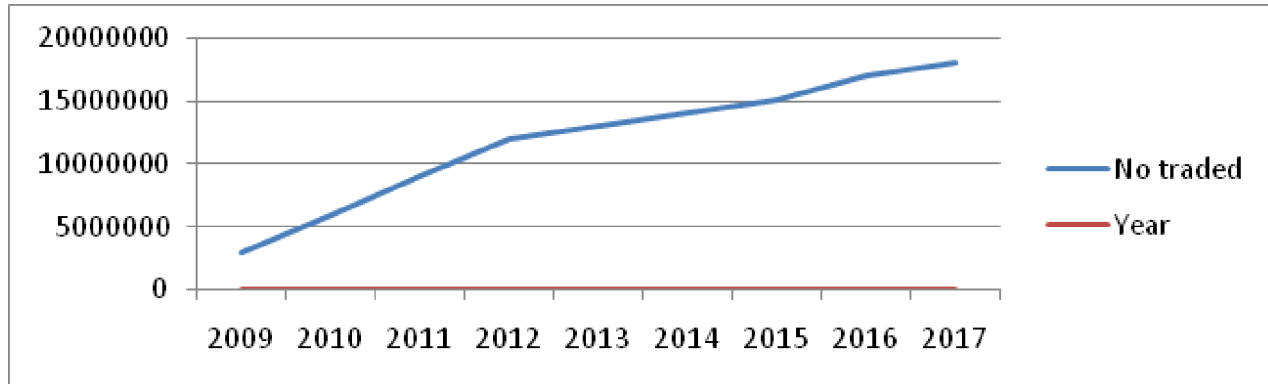


Figure 1: This figure shows the number of Bitcoins in circulation (circulating supply) from January 2009 to May 2017. Source: Coindesk.com

Bitcoin is a digital currency created by the mysterious Satoshi Nakamoto. Like other currencies, bitcoin can be used to buy items locally and electronically. Novices can use Bitcoin also without understanding all its technical details. Once Bitcoin wallet is installed on mobile phone or computer, it will generate the first Bitcoin address and the user can generate more whenever they need them. After creating Bitcoin, they can be used for all types of real transactions. The popularity of Bitcoin, led the invention of many more crypto-currencies. The below data shows the different types of Cryptocurrencies and the amount traded in the market as of today

1	Bitcoin	\$14,848,287,980	\$920.58	16,129,275 BTC	\$117,925,000	0.11%	
2	Ethereum	\$931,078,269	\$10.54	88,315,811 ETH	\$7,135,770	-0.24%	
3	Ripple	\$236,207,935	\$0.006409	36,856,524,148 XRP *	\$884,513	-4.54%	
4	Litecoin	\$190,312,752	\$3.84	49,532,106 LTC	\$4,123,840	0.25%	
5	Monero	\$167,494,671	\$12.11	13,834,874 XMR	\$4,445,430	0.61%	
6	Ethereum Classic	\$113,756,337	\$1.29	88,279,014 ETC	\$1,339,340	-3.82%	
7	Dash	\$108,352,711	\$15.36	7,055,178 DASH	\$1,283,520	2.06%	
8	MaidSafeCoin	\$55,489,714	\$0.122615	452,552,412 MAID *	\$205,095	-0.95%	
9	Augur	\$47,813,370	\$4.35	11,000,000 REP *	\$199,572	5.20%	
10	NEM	\$44,989,830	\$0.004999	8,999,999,999 XEM *	\$526,314	-7.66%	

Figure 2: This figure shows the top 10 crypto currencies traded and are arranged according to their trade volume and market capitalization Source: Forbes.com

Technology behind the crypto-currencies:

Block chain is the technology framework under which the current crypto-currencies are formed and transacted. Block chain uses decentralized technologies that allow users to make secure payments and even store funds without using their organizations' logo or personal names. They run on a network of public ledger referred as block-chain that holds information or all updated transactions and data of currency holders. Crypto-currency units are created using data mining (a process involving complicated computing algorithm to solve mathematic problems that generate coins). Users can also purchase coins from the current brokers, store them, and spend in various cryptographic wallets.

The decentralization allows the block technology to have increased capacity, better security and faster settlements which some of the traditional financial systems lack or fall short as of now.

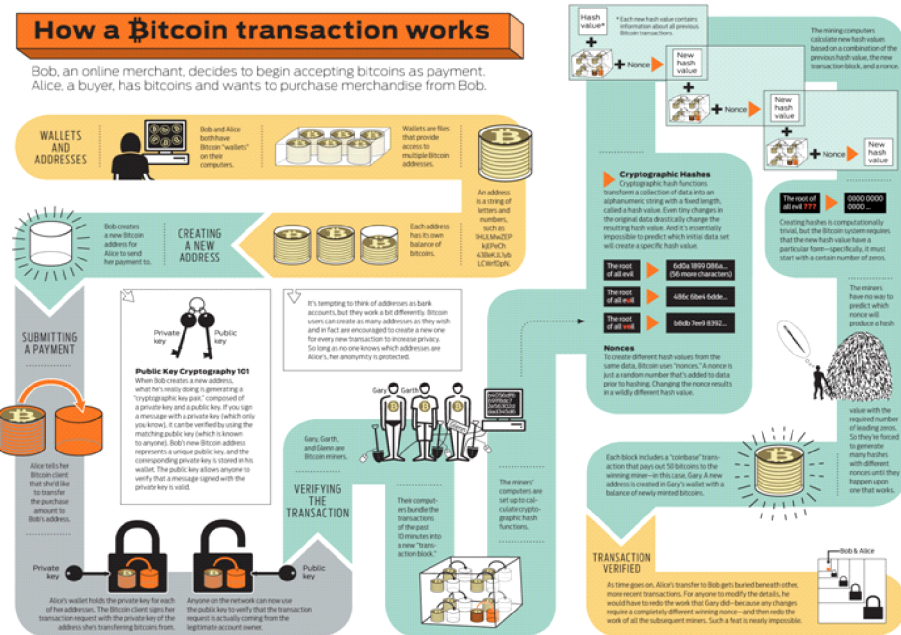


Figure 3: This figure shows the mechanism of Bitcoin transaction Source:Cryptocoinnews.com

Features of Crypto currencies that makes it so attractive:

- (i) **Irreversible:** Once a specific transaction has been confirmed, it is irreversible. This means that nobody, whether the user or miners can make changes. If cash is sent to the wrong person or a scammer, it is gone forever!
- (ii) **Pseudonyms:** Unlike the common bank accounts that have links to owners, Cryptocurrencies' transactions and accounts have no link to real world entities.
- (iii) **Rapid and international:** Once a transaction is propagated and confirmed, it is instant within the global networks.
- (iv) **Permission-less:** This is not like the common capital market trading where your trade account has to be confirmed and permitted by relevant authorities. Rather, all one needs with Crypto-currency is having the software installed on their computer to start receiving and sending coins. No authorization is needed.
- (v) **Controlled supply:** Many cryptocurrencies limit tokens supply. In most of the cases, the supply decreases over time and has a predicted timeline so that the monetary supply at any one point can be calculated today.

Features of Crypto-currency that makes it unattractive:

- (i) **Difficult to understand:** Other than mathematicians, cryptographers, or individuals that spend a significant amount of time learning how the system works, not many do truly grasp the magnitude of what has been accomplished with the blockchain. This has been a huge barrier to entry for new users.
- (ii) **Unreliable and risky:** Online wallets are either not very user friendly or not very secure. Offline wallets on the other hand offer more security and have stronger encryption passwords. But there is still a long way to go before everyone can trust the online wallets.
- (iii) **Scandals and fraud:** Scandals and fraud are rampant in Crypto currency ecosystem, such as cloud mining driven by bitcoin mining farms, gambling websites, pre-sold altcoins, and many others have vanished with their customer's coins, or lost their bitcoins due to poor security and/or skilled hackers. Exchanges are now undergoing audits to proving solvency, offering multi-signature wallets to protect customer's funds, and working toward becoming properly licensed in their home countries, but this process takes time.
- (iv) **Erratic conversion rates:** The crypto currency to USD conversion rate is volatile and erratic, which has made some people millionaires, and bankrupt others.



Figure 4: This figure shows price movement of Bitcoin against USD. Source: www.trader.exposed.com

Crypto currency as an alternative asset class:

Crypto-currency as an asset class cannot be considered unique without observing its behavior in relation to traditional classes of assets: Gold, Oil, Private equity and S&P 500.

The Crypto-currency Index (CRIX) is a benchmark for the crypto-currency market. With the growing amount of crypto-currencies and the diminishing domination of Bitcoin in the market, an index became necessary to track its development on the exchanges like the S&P500 does the same for the US stock market. To accommodate the same, a team of researchers from Humboldt University at Berlin developed a methodology to amend the number of constituents in case the current market situation requires more crypto-currencies for an adequate representation of the market development.

The CRIX is realtime computed by the Ladislaus von Bortkiewicz Chair of Statistics at Humboldt University at Berlin, Germany. The development was a joint work together with SKBI at Singapore Management University and CoinGecko, who provide the data for the computation.

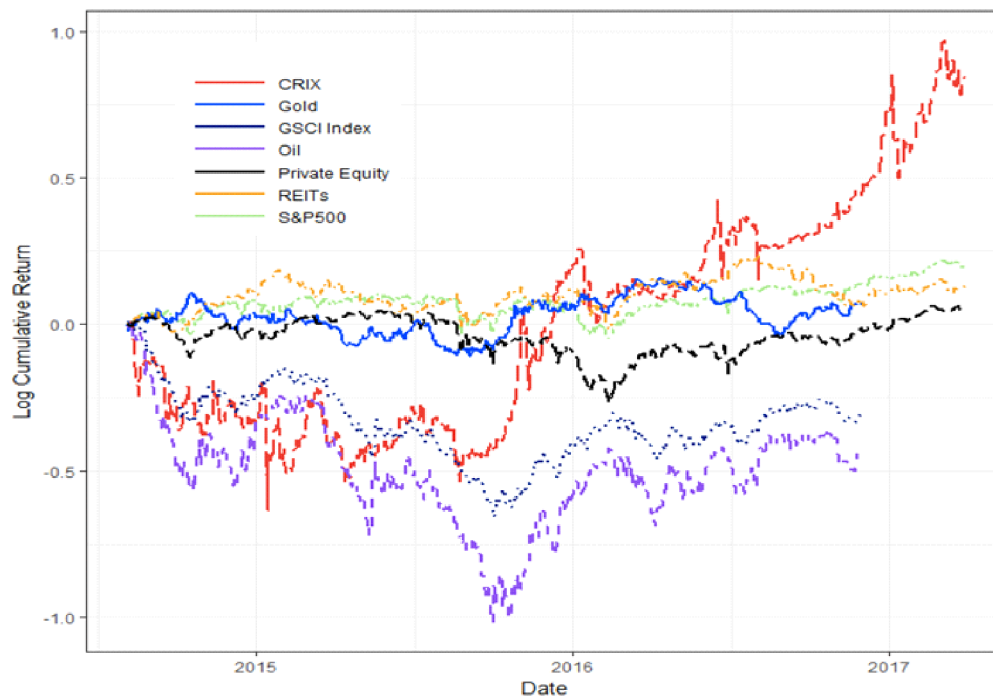


Figure 5: This figure depicts log cumulative daily returns of CRIX index and traditional asset class. As traditional class, Gold, GSCI Index, Oil, Private Equity, REITs and S&P 500 are taken into consideration. The data ranges from 11 August, 2014 to 27 March, 2017. Source: Cryptocurrency: A new investment opportunity?

The above figure indicates that the volatility levels of Crypto currency is very high compared to other conventional asset class like Gold, Goldman Sachs commodity index, Oil, Private Equity, Real estate investments and S&P 500. It can be noted from the above graph that other asset classes usually follow a somewhat similar pattern but Crypto currencies have their own pattern.

Crypto-currency is the only asset that maintains low correlations consistently with every other asset: gold, S&P 500, U.S. bonds, U.S. real estate, oil and emerging markets.

The inclusion of Crypto currency as an asset class today can be examined by looking at the parameters like:

Investability

Crypto currency as of now may not be considered as a widely approved investable asset class. But as it matures, the number of investors holding crypto currency will expand and provide a positive tailwind for investability. As block chain network's infrastructure grows, crypto-currency could become the most accessible and secure asset available to the

Politico-Economic Profile

The politico-economic profile for an asset is mainly mainly by its governance, basis of value and use cases. Crypto-currency is distinct from major asset classes. Crypto-currency's basis of value is unique, but its governance is more of an anomaly. No asset has evolved from concept to billions of dollars in stored value as fast as crypto-currency. Nor has any asset followed such a predictable supply trajectory. In comparing crypto-currency's trading volume to its transactional volume, crypto-currency's use as an investment medium is expanding faster than its transactional applications.

Transaction/Trading Balance

Crypto-currencies have been used more for transaction rather than trading purpose. It has been found that when people use crypto-currency, they are more likely to use it to transmit value for goods and services than as a speculative investment.

Various organizations like Coinbase and ARK view crypto-currency's increased trading volume as a healthy sign for decreasing volatility, further catalyzing transactional volume. Crypto-currency trading in the more regulated currencies has been rising at the same rate as its transactional volumes. It has been also observed crypto-currency's price movements has been distinct from other asset classes in the last five years.

Risk-Reward Profiles

In examining risk-reward profiles, crypto-currency's volatility has declined. It has been observed that the value of Bitcoin has been constantly rising in many folds. The volatility decline is due to stable and liquid spot exchanges, more regulatory approval, broader ownership and more reliable price discovery data.



Figure 6: This figure depicts artistic representation of reward profile of bitcoin vs USD .Source:Internet

Absolute Returns

In examining absolute returns, crypto-currency has provided investors returns beyond that of any other asset class. They recounted the history of crypto-currency's price changes.

Discussion

Crypto-currency demonstrates characteristics of a unique asset class. It meets the bar of investability, and it differs significantly from other assets in price independence, politico-economic profile, and risk-reward characteristics. Its value as an asset class in portfolio management as of today is debatable due to various factors like:

1. The intrinsic value of any crypto-currency is extremely hard to assess;
2. Existing cryptocurrencies are very volatile and this lack of stability might cause investors to experience a permanent loss of capital;
3. Digital currency schemes are not (yet) regulated and not closely supervised or overseen by any public authority, and this lack of oversight reduces investor confidence;
4. Cryptocurrencies lack transparency, clarity of legal status and certainty of continuity;
5. Their functioning is highly dependent on IT, developer and community support;
6. Anonymity of the economic agents involved increase counterparty risk and create a market that can be used for illegal activities;

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