# EVAI Academic Review

**The cryptocurrency market is coming of age and has come a long way since the heady days of 2017 when almost any ICO, despite its merits or lack thereof, was a roaring success.**

Fund Token investors today are far more discerning and quite rightly are asking probing questions before committing capital to a project. Clearly the business underlying a token funded opportunity must be viable and create liquidity within the new token to enable investors to take prospective profits.

We believe that EVAI does just that. However, in order to ascertain an unbiased view as to the viability of the EVAI business opportunity, we commissioned a leading academic to provide an in-depth Academic Review of the current crypto market, with a view to highlighting gaps in the existing research that need to be addressed.

In response to this review, the EVAI 'use-case' has been constructed around the need to enhance cryptocurrency liquidity through the application of an unbiased ratings system to provide clarity to would-be investors.

The importance of our business cannot be overstated, as evidence is mounting that Blockchain is the future of our financial systems. It has been reported that around 7 undisclosed central banks, representing 20% of the world's population, are likely to launch CBDCs in 3 years, according to Bank for International Settlements (2018).

The number of Cryptocurrencies and their market capitalisations are rapidly growing and have attracted significant attention from financial markets since Bitcoin's inception in 2008 by Nakamoto (2008).

Cryptocurrency is a complex eco-system of peer-to-peer electronic cash systems which allow online trading directly between investors without going through a financial institution (Nakamoto, 2008). Unlike traditional financial assets, the value of cryptocurrencies is not functioning of tangible assets, companies or the macroeconomy.

They are instead based on the security of an algorithm which can trace all transactions (Corbet et al., 2019). The popularity of cryptocurrencies has arisen because of their transparency, speed, simplicity in use, low transaction and foreign exchange costs, peer-to-peer system and governmental free design. Cryptocurrencies provide investors with a new instrument for portfolio allocation (Zargar and Kumar, 2019).

Today, there are more than 5000 cryptocurrencies trading in a 24/7 market, which contribute to a total market capitalisation of more than $247 billion. The daily trading volume of this market exceeds $114 billion (extract from coinmarketcap.com on 28 Jan, 2020). Bitcoin is the first digital currency and remains the cryptocurrency market's leader. For the period from October 2015 to Jan of 2020, the market capitalisation of bitcoin increased from $3 billion to $163 billion dollars (assessed on 28 Jan 2020, coinmarketcap.com), while the price jumped from $237.55 dollars to $8996.30 dollars.

Due to the popularity of cryptocurrencies, the topics of interest have moved closer to the traditional economics and financial issues, e.g.: returns and volatility (Dwyer, 2015), returns and trading volume (Bouri et al., 2019), informational efficiency (Urquhart, 2016; Nadarajah and Chu, 2017), portfolio diversification across cryptocurrencies (Liu, 2019), informed trading (Feng et al., 2018), speculation (Yermack, 2015; Blau, 2017) and interdependencies between cryptocurrencies (Corbet et al., 2018).

The market share of cryptocurrencies other than Bitcoin, has gathered momentum in recent years. According to (Stosic, et al. 2019), the market share of other cryptocurrencies (hereafter, altcoin) have shown a strong growth during recent years, increasing from 5.5% of total market share in 2013 to around 33.9% (assessed 28 Jan 2020, coimarketcap.com). Ethereum is the largest altcoin with a market share of around 7.6%.

Unlike traditional markets, the cryptocurrency market has some unique features. For example, investors in the cryptocurrency market are mostly individuals whereas most traditional markets are dominated by institutional investors. Therefore, the non-institutionalized cryptocurrency market's price movements reflect retail investors' opinions and behaviors. Furthermore, cryptocurrencies are traded on independently operated trading platforms, and accessible to a global clientele 24 hours a day, 7 days a week.

Mass internet information and social media news spreading immediately affects trading prices. When new information arrives, it is incorporated immediately without waiting for the trading time (Ciaian et al., 2016). Corbet et al. (2018) indicates that cryptocurrencies are uncorrelated with all other major assets, such as gold, oil and equity indices. Koutmos (2018), consistent with Dwyer (2015) suggests that cryptocurrencies are independent of government authority and their prices cannot be explained on the basis of economic fundamentals.

To ensure a viable growth, cryptocurrencies needs to be efficient so that different market participants can quickly enter and exit. The less efficient the cryptocurrency market is, the more illiquid the cryptocurrency (Wei, 2018). Urquhart (2016) finds that the inefficient characteristics of the bitcoin market may become more efficient as it matures. In contrast, Nadarajah and Chu (2017) report that this market immediately reacts to the arrival of new information and can therefore be characterized as efficient. Feng et al. (2018) examine informed trading in cryptocurrency markets via 42 unexpected events. They find that the lack of supervision and the continuous trading mechanism encourages informed trading in the market, leading to some strong form inefficiency.

Brauneis and Mestel (2018) show that the improvement of liquidity leads to the cryptocurrency market becoming more efficient. Cheah and Fry (2015) believe that the ability to transfer the asset from cryptocurrency into flat currency is essential for market participants, since the speculation is the main purpose for investors holding cryptocurrencies. However, Kristoufek (2018) reveals that it does not ensure that an investor would be able to sell a large amount of the cryptocurrency for the given price, since the liquidity level is relatively low compared to the traditional markets. After examining the liquidity of five Bitcoin exchanges from 2014 to 2015, Loi (2018) also reports that Bitcoin is less liquid than stocks, and the liquidity of Bitcoin depends on the choice of the Bitcoin exchanges. Furthermore, by examining more than 450 cryptocurrencies, Wei (2018) show that many illiquid cryptocurrencies incur greater costs for investors to buy and sell due to higher spreads and transaction costs.

Several studies have investigated the cryptocurrency market around news events. Yaya et al. (2019) examine the performance of cryptocurrencies around their great crash in December 2017. They find lesser price shock persistence in the pre-crash than in the post-crash sample. Momtaz (2019) focuses on the performance of cryptocurrencies issued in initial coin offerings (ICO) over a 3-year period.

They observe an average abnormal return of 14.8% for the first day, and that returns on the first trading days depend on liquidity, market capitalization and high-low price ratios. Gunay (2019) concentrates on the association of Ripple, one of the main cryptocurrencies, with Twitter post news. He finds that in the bull market, positive public news has a positive influence on Ripple's value. In the bear market, however, even if the company releases good news, it does not stop the downward trend of Ripple.

Zhang and Gregoriou (2020) provide empirical liquidity effects around one of the most significant negative news in the cryptocurrency markets, the Chinese government banning ICOs in September 2017. The ICO rules impose restrictions on the cryptocurrency trading platforms, they are prohibited from buying or selling cryptocurrencies, setting prices, or other related agent services. They are also forbidden from converting legal tender into cryptocurrencies or vice versa. China was one of the most important cryptocurrency trading places all over the world, from less than a 10% share in January 2012, to almost all bitcoin trading occurring in China from 2016 (bitcoinity.org).

Using event study methodology and a large sample which contained the 100 largest cryptocurrencies in the market, they provide evidence that from two days before the IOC banned news announcement, the liquidity of cryptocurrencies start to decrease, the trading price and return falls and bid-ask spreads increase. These effects are significant in the short run however they do not persist in the long run, implying efficiency in the cryptocurrency market.

Also, in the existing literature there are many debates about the extreme volatility of cryptocurrencies. Katsiampa (2017) concludes that the high volatility may be the reason for the high returns in cryptocurrencies. Katsiampa (2019) shows that the cryptocurrencies volatility dynamics are found to be responsive to major news. Bariviera et al. (2017) highlight that even though Bitcoin volatility is high, it is declining over time.

Yermack (2015) finds that Bitcoin is more of a speculative investment than a currency as the market capitalization of Bitcoin is very high in comparison to its economic transactions. Baur and Dimpfl (2018) investigate the 20 largest cryptocurrencies and report that volatility is increased more by positive than negative shocks. Stosic et al. (2019) find that large and small fluctuations dominate multifractal behaviour of price and volume changes respectively, and the price changes are more complex than volume changes. Cheikh et al. (2020) observe that the volatility in cryptocurrency markets tends to rise in reaction to good news and falls in response to bad news.

As a unique asset, the investment in a cryptocurrency delivers exceptionally high diversification benefits when its included into a portfolio (Brière et al., 2015). This is due to low correlations not only with traditional financial assets but also with alternative investments.

For holders of well diversified portfolios, high risk is compensated by remarkably low correlations with other assets. Cryptocurrencies are free from any central bank intervention and have low transaction fees. The cryptocurrency returns are internally driven by buyers and sellers and are not influenced by fundamental economic factors (Baek and Elbeck, 2015). Including even a small proportion of Bitcoins in a well-diversified portfolio may significantly improve risk-return characteristics (Brière et al., 2015). Corbet et al. (2018) suggest that cryptocurrencies are effective diversifiers for short-term investors.

Guesmi et al. (2019) indicate that Bitcoin exhibits effective diversification characteristics in emerging stock markets, which can diversify the risk of different financial assets including equities. Dyhrberg (2016) provide evidence that Bitcoin can be used for hedging purposes against FTSE index shares. Bouri et al. (2017) document that Bitcoin hedges effectively against Asia Pacific stocks. Gregoriou (2019) concludes that including cryptocurrencies into portfolios can improve the overall performance of the portfolio.

Corbet et al. (2018) imply that cryptocurrencies are connected, however, Gil-Alana et al. (2020) show that there are no bilateral linkages between Bitcoin and other cryptocurrencies. Ciaian et al. (2018) discover in the short-run, the Bitcoin-altcoin price relation is stronger than the long-run. Katsiampa (2019) explains that prices of Bitcoin and other cryptocurrencies are interdependent, due to Bitcoin's dominance within the market and the fact that most altcoin orders are executed in Bitcoin.

Credit Rating Agencies (CRAs) play a crucial role in financial markets by providing credit information about sovereign bonds. CRAs' assessments are responsible for affecting international capital flows, especially in developing countries (Kim and Wu, 2008). There are three major CRAs that are used to determine default risk in the bond markets, namely the Standard & Poor's, Moody's Investor Service and Fitch Ratings. CRAs use a combination of quantitative and qualitative factors to assess a sovereign bond rating. However, sovereign credit information is disclosed not only by rating changes, but also by credit watch and outlook announcements. Sy (2004) report that outlook and credit watch status are significant factors that affect markets.

There are no credit ratings for cryptocurrencies now. This is a major problem for investors as there is no unbiased rating to determine which cryptocurrencies they should be investing in. We have developed our own unique Comprehensive Credit Rating (CCR) system for cryptocurrencies. Our CCR uses the latest financial techniques including returns per unit of risk, risk adjusted returns using multiple factors and long-term financial stability measures. The CCR is updated on a monthly basis for investors. In our opinion, this will enhance the credibility and investor confidence of cryptocurrencies.

EVAI, are developing EVAI Ratings under the direction of Professor Andros Gregoriou in an effort to provide a standardised, universal and unbiased ratings system that can be easily accessed by all and that is not dependent on funding from the institutions that are to be rated.

Thus, by removing all elements of potential bias we aim to contribute to the health of the crypto ecosystem and as we grow our ratings capability, to the whole financial system.

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