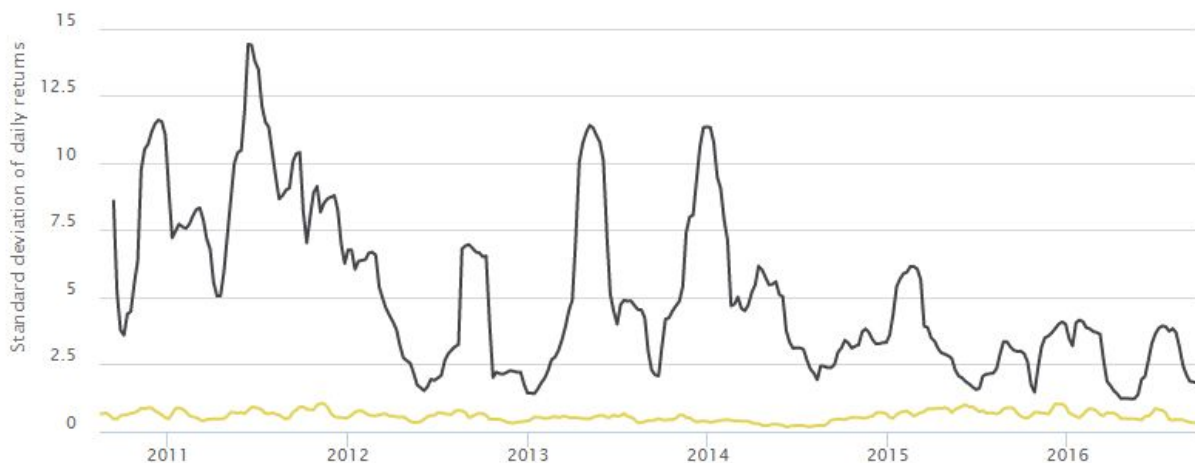


# CURRENCY MARKET VOLATILITY

## I. Overview:

By definition, a cryptocurrency is “a digital or a virtual currency that uses cryptography for security” (Investopedia, 2013). Since bitcoin’s first appearance in 2009, it has emerged to be a significant market. While being accountable for more than \$9 billion market capitalization (which, according to would define it as a large cap company in American stock market), bitcoin is capable of “volatility in the form of 10x changes in price versus the U.S. dollar, in a relatively short period of time” (Barker, 2014). This essay would, hence, attempt to look into its volatility in order to find a proper explanation. However, opposed to other articles, this essay would approach the bitcoin market as a complex system, based on its unique characteristics that only complex systems possess, namely the large number of agents involved, their independence and interdependence, as well as the signature emergent properties.

## II. A closer look into the phenomenon:



Bitcoin price is highly volatile compared to other commodities, which is indicated through the graph above. A quick comparison between the black line (BTC/USD standard deviation by day) and the yellow line (EUR/USD standard deviation by day) clearly shows the vast volatility difference between bitcoin and its physical resemblance, two major currencies.

Understanding the volatility of bitcoin could be extremely important, especially for the newly-emerged fin-tech field. While more and more campaigns are devised to push the use of cryptocurrencies in place of physical currencies, explaining the volatility of bitcoin could help us look for more tangible solutions to help stabilize it and turn it into a practical choice.

### III. Break it down (relations):

In order to fully understand the changes in bitcoin market, we need to break it down into multiple levels, each containing various agents as follow:

#### 1. Cultural: Bitcoin market as a notion.

Society's belief of bitcoin may really affect its perceived value, hence its price. When the society does not fully know about bitcoin or does not acknowledge its role as a means of transaction similar to any other kinds of money, bitcoin could not attract large enough institutions (hedge funds, investment banks or even central banks) to step in and either conduct transactions or reserve bitcoin. The lack of these "big players" accounts for, as a result, the lack of control that bitcoin deserves, thus leading to its current level of volatility.

#### 2. Social: Bitcoin market as a combination of agents.

By "social", I mean the interaction among agents in the bitcoin market, whose frictions cause the most emergent properties.

One significant agent that needs mentioning is traders/speculators. Being introduced to the market during the algorithmic trading era meaning that any discretionary trader could easily take part in the bitcoin market day and night (due to no regulations on bitcoin trading hours). Similar to how algorithmic traders have partially led to the 2007 crash, the bitcoin market also falls victim to the interaction of these traders. Intrinsically, many traders choose to use the same arbitrage strategies, which buy and sell at the same time, thus increasing the continually creating of bubbles and worsening the bursts.

Another influencer is hackers. As bitcoin is operated on virtual platforms and has no regulators, it lies in the grey area where minimal protection is available. Recently, the hack of Bitfinex, one of the largest bitcoin brokers in the world, has triggered the downward trend of bitcoin price (Boivaird, 2016) as not only that halts trading sessions, the hack increases selling volume and prevents brokers from covering stop loss (the line where traders would like to automatically sell their bitcoin) due to weakened fiscal capability.

The nature of the brokers themselves may also severely affect bitcoin price. Normally, in foreign exchange or stock market, a broker would have a backup bank to secure their trade. However, in bitcoin market, where bitcoin is generated through "mining" activities, there are no banks to affirm the credibility of brokers. Thus, some brokers may attempt to manipulate their listed prices. If such acts are discovered, the withdrawal waves alone may cause the price to drop sharply.

Last but not least, money laundering and illegal money exchanging activities also play a huge part in determining bitcoin price. Due to its anonymity nature, bitcoin becomes a favorable way to launder money and to conduct discrete transactions, which saves the participants millions of dollars from taxes. Such a wave of transaction happened recently in August, tripling bitcoin price in a day.

#### 3. Individual:

Each participant's emotion, when taken as a whole, can make a huge impact to the volatility of price. Just like participants in the stock market, bitcoin traders, intrinsically,

have similar personalities and principles that if followed, would trigger similar bullish and bearish movements.

IV. Emergent properties:

Emergent properties that involved in bitcoin market would first and foremost be the escalating of emotion, which is the reason leading to irrational decision making mistakes. Another property is holes in the security systems that give rise to hacking, which in turn triggers a complicated chain of reaction, driving down the price. Essentially, it is possible that the lack of public recognition leads to less efforts putting into regulating and protecting the bitcoin systems, which leads to more “unfortunate events”, or emergence. In turn, more emergence leads to less public recognition. This reveals a vicious cycle in the bitcoin system.

V. Why this way:

This practice of breaking down the problem and analyzing it in multiple levels give light to more in-depth realizations. Unlike other methods, which treat the bitcoin market as merely an environment to invest. This analysis takes a step back and take into account the complex nature of bitcoin as a system, thus dig deeper into interactions that might lead to change, producing more insights as a result.

VI. Conclusion:

Bitcoin market is a complex system involving agents, each driven with a unique purpose. By analyzing the system, we find that such purposes combine and create a vicious cycle that may drive the volatility of the system.

VII. References:

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