

# An Overview of Cryptocurrencies for the Savvy Investor

By **Alex Krüger**, [hackernoon.com](http://hackernoon.com)

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"Never invest in a business you cannot understand." -Warren Buffett

The **Blockchain technology is revolutionary**. Yet investors are throwing millions at cryptocurrencies offering terrible value propositions, and despite the recent market drop on the back of the China ban of cryptocurrency exchanges, **cryptocurrencies are still in bubble mode**.

Prices may have risen too far too fast: the aggregated cryptocurrency market capitalization has gone from USD 18 billion to USD 135 billion between the start of 2017 and now, a 650% increase. Many valuations are outrageous; cryptocurrencies with no intrinsic value are currently worth hundreds of millions. Investors' exuberance notwithstanding, the **technology is groundbreaking**, fundamentals are often excellent, and the hundreds of millions poured into strikingly poor investments should become a drop in the bucket once cryptocurrencies undergo **mass adoption**.

Therein lies a seeming contradiction. Investing in businesses with solid fundamentals would typically represent a good investment rather than a poor one. If businesses fundamentals are great, how can there be a problem? The explanation is simple.

Investments in blockchain projects are not going through traditional channels (i.e. stocks, bonds, etc) but rather through a new channel: cryptocurrencies themselves; and **cryptocurrencies often represent seriously flawed investment vehicles.**

This article is meant as an **in-depth overview of cryptocurrencies for the savvy investor.** It covers the following:

- why bitcoin and ethereum have intrinsic value,
- a technical overview of cryptocurrencies and digital tokens,
- Initial Coin Offerings (ICOs),
- why is there a bubble, and
- why bubble notwithstanding prospects are bright.

## Bitcoin

Bitcoin is the **cryptocurrency king**. Its current market cap is USD 65 billion. The Bitcoin blockchain provides a decentralized peer-to-peer electronic cash system. Critics could say bitcoin has no intrinsic value, arguing it is a *financial asset* whose monetary value is entirely derived from people's perception and, unlike fiat currencies, it has no central bank reserves backing.

Critics misunderstand bitcoin. Bitcoin behaves like a financial asset. Bitcoin is used like a financial asset. But bitcoin actually represents *property*, not a financial asset. In other words, **bitcoin is property that trades like a financial asset.** Why do I say bitcoin represents property? Consider the following definition: "A financial asset is a non-physical asset whose value is derived from a contractual claim" (i.e. a financial asset represents a liability for someone else). Bitcoin is a non-physical asset, yet it does not represent any contractual claim. It is an asset that is not a liability of any entity or person.

From this vantage point, bitcoin is similar to gold. Gold also represents property that trades like a financial asset. Gold derives value from people's perception of gold as an alternative to fiat currencies and a long-term store of value. And gold undoubtedly has intrinsic value. It is a metal that conducts electricity, does not tarnish, and has numerous real life uses. About half of gold's demand comes from jewelry and technology (gold is used inside electronics). Similarly, bitcoin's value comes from people's perception of bitcoin as an alternative to fiat currencies and a store of purchasing power. But bitcoin can also be considered to have intrinsic value. Think of bitcoin as an **Unhackable Piece of Electronic Art**, that can only be transferred by holding cryptographic keys. Creating a bitcoin requires advanced coding and massive computing power. Bitcoin is mathematical art that cannot be copied.

Even if one day bitcoin is deemed a dismal technology, given its fixed maximum supply, bitcoin would likely retain value because it was the first of its kind. So **best case scenario, bitcoin remains at the forefront of cryptocurrencies; worst case scenario, it becomes a prized relic**. Unless of course some day someone figures out how to hack the Bitcoin blockchain, in which case bitcoin would go down to zero very quickly.

## Ethereum

Ethereum is the second most popular cryptocurrency and the **king of Blockchain-As-A-Service**. It is a **programmable blockchain** with a Turing-complete scripting language. Like Bitcoin, it provides a decentralized peer to peer electronic cash system. Unlike Bitcoin, Ethereum allows for the creation of **smart contracts** (i.e. programming code that auto-executes once certain conditions are fulfilled). And unlike Bitcoin, with Ethereum developers can build and deploy **decentralized applications** (e.g. an Ethereum-based decentralized Facebook).

Smart contracts and decentralized applications enable Ethereum to uproot everything from basic user applications to how business is conducted. Consider a decentralized Facebook built on Ethereum where users control their own data. Consider decentralized self-executing insurance contracts or financial derivatives. Consider decentralized incorruptible voting platforms. Consider decentralized prediction platforms. The list of possibilities is endless. In short, one may think of Ethereum as a **decentralized virtual machine** or supercomputer that could redefine the world as we know it.

Ether is the cryptocurrency of the Ethereum blockchain. It is both a cryptocurrency and the means of payment for accessing the Ethereum network. Ethereum users pay with ether for the computing power they are using. **Think then of ether as the fuel for powering the Ethereum network**. This is the source of ether's intrinsic value. Ether's current market cap is USD 27 billion. It should be noted that even though Ethereum is the blockchain and ether is the currency, most people refer to ether as ethereum.

## A Technical Overview of Cryptocurrencies

*(Heavy lifting in this section—if already familiar with the technical aspects of cryptocurrencies and Ethereum tokens you may skip ahead to the next section)*

— Cryptocurrencies, virtual currencies, electronic coins, digital coins, digital tokens and blockchain tokens are different names for the same thing.

— A cryptocurrency is a **chain of digital signatures** stored on a decentralized public ledger known as a blockchain (for an in-depth explanation, refer to the original Bitcoin whitepaper by Satoshi Nakamoto).

— Having a cryptocurrency means having a **private key** (similar to a password) giving the holder the ability to transfer the cryptocurrency to someone else. Private keys are stored in digital wallets.

— Cryptocurrencies are transferred from one owner to another by adding a transaction to the blockchain (in-depth explanation here).

— Blockchains are kept **secure from hacking through the work of validators**, who validate transactions (in-depth explanation here).

— Validators are given cryptocurrencies as reward/payment every time they validate a transaction (i.e. **cryptocurrencies provide the economic incentive** for people to become validators). Validators may also be awarded transaction fees paid by the sender.

— There are multiple **consensus mechanisms** for validating transactions. The main ones are:

- Proof-of-Work (PoW): validators validate transactions by running an algorithm to **solve a cryptographic puzzle**. This is known as mining. Mining creates new coins. Validators are rewarded with new coins and transactions fees (if any).
- Proof-of-Stake (PoS): validators validate transactions by staking (“depositing”) cryptocurrencies. No new coins are (usually) created. Validators are rewarded with transaction fees only.

— Cryptocurrencies can be created by **mining** (e.g. bitcoin) or by simply allocating coins to an address (e.g. ripple). The latter is known as **pre-mining**. It is convention to refer to non-mined coins as pre-mined, even though doing so is technically incorrect if the coin is not mine-able, such as ripple. The term pre-mined comes from the practice by blockchain developers of creating mine-able coins for themselves before releasing the blockchain’s source code to the public, allowing the public to mine.

— Cryptocurrencies can be defined as **Native Tokens**, which are intrinsic to a blockchain and used for validations (e.g. bitcoin), and **Non-Native Tokens**, which are created on top of a programmable blockchain such as Ethereum, and used for multiple purposes (more on that later).

- Creating a token on Ethereum is as easy as writing 25 lines of code. This has made **Ethereum the most widely used protocol for non-native token creation**. Non-native tokens can be either mined or pre-mined, although they generally are fully pre-mined.
- The name **digital token** is mostly used in reference to cryptocurrencies built on the Ethereum platform (i.e. Ethereum tokens), even though technically all cryptocurrencies are digital tokens.

— Cryptocurrencies can also be classified as **Protocol Tokens or App Tokens**.

- Protocols are sets of rules, while applications are computer programs built on top of protocols.
- There is one native protocol per blockchain. Non-native protocols can be built on top of programmable blockchains such as Ethereum.
- Protocol tokens are required by a protocol to function. Protocol tokens can be both native and non-native. All native tokens are protocol tokens.
- App tokens are not required by an application or protocol. Instead, App tokens are generally used by the application users to access the application's services.

## Initial Coin Offerings

The public can acquire tokens either through mining, by purchasing in secondary markets (i.e. through peer-to-peer transactions or in exchanges), or by participating in an Initial Coin Offering (i.e. purchasing directly from token creators). **Initial Coin Offerings (ICOs) are similar to Initial Public Offerings (IPOs) where investors are buying cryptocurrencies instead of shares**. There are some notable differences between the two:

- Shares give shareholders equity in a company, while cryptocurrencies do not give coin holders any equity.
- Shares are regulated as securities, while coins are not (although this is changing, see for example recent US developments here).
- Cryptocurrencies are usually paid for with other cryptocurrencies, which facilitates participation of international users.

One can think of ICOs as **democratized venture capital**, or venture capital meets crowdfunding. ICOs give blockchain enthusiasts direct and easy access to investing in blockchain start-ups. ICOs enable blockchain start-ups to raise early stage capital bypassing venture capital firms, without even diluting equity ownership. And ICOs can also be great

for venture capital firms willing to give up the equity ownership associated with traditional financing in exchange for a highly liquid investment (typical venture capital investments are illiquid and may take many years for investors to cash out).

The major downside of ICOs is the **lack of regulatory oversight**, which allows those raising funds to offer minimal disclosures for investors, “exaggerate benefits, fail to identify risks, and create unsubstantiated hype”. Fund raisers may even be anonymous, such as is the case with the extremely popular Bitconnect (BCC, market cap USD 910 million—note by definition market cap is not the number listed by coinmarketcap.com, computed using Circulating Supply, but rather the often considerably larger number resulting from multiplying Price by Total Supply).

For further reading about ICOs I recommend this article analyzing ICOs pros & cons, as well as this article covering the lack of ICO disclosure regulations.

## ICOs & Non-Native Tokens

While Ethereum has made it easy for developers to create digital tokens, ICOs have made it easy for investors to *access* those digital tokens. The lax regulatory framework coupled with the ease of matching entrepreneurs with eager investors has resulted in a massive ICO boom. It is in the ICOs of non-native tokens that investors’ **irrational exuberance** becomes apparent.

Uninformed or informed, unsophisticated or sophisticated .... investors of all kinds are participating in ICOs and throwing hundreds of millions at often worthless tokens that offer the investor little beyond possible gains from selling tokens later at a higher price.

Picture Pether Block (pun intended), a sharp entrepreneur seeking to raise funds. Imagine Pether raises funds not by issuing equity (stocks) or legal promises to pay funds back (loans, bonds), but instead by giving out pretty bits of paper with no legal backing saying he plans to pay back. Now imagine Pether actually gets funding by giving out pretty bits of paper that do not even promise to pay back. Furthermore, imagine a case where Pether is actually anonymous, he did not even have to disclose his identity to raise funds. This is happening in some ICOs. **Ponzi schemes** abound. OneCoin is the most famous uncovered Ponzi scheme. Bitconnect, a cryptocurrency that offers guaranteed 149% annualized returns (assuming daily reinvestment) plus variable returns generated by a “volatility trading bot”, is in my humble opinion the most striking Ponzi scheme of present times.

Think about it...

- Buy a share, and get legal ownership of a company.
- Buy a bond, and obtain the right to receive interest payments.
- Buy bitcoin, and receive a liquid asset that derives its value from the computing power dedicated to creating such piece of mathematical art.
- Buy ether, and receive a liquid asset that derives its value from both the computing power dedicated to creating it, as well as its value as means of payment for using the Ethereum supercomputer.
- Buy any native token, and receive a cryptocurrency providing economic incentives for a blockchain to function.
- Buy a non-native token ... and what do you receive?

### There are *eight* categories of Non-Native Tokens:

1. Protocol tokens. (e.g. Augur: REP, market cap USD 200 million).
2. Tokens issued for accessing the platform/services of the issuing company; future services, to be precise, as in most cases tokens are issued when the platform is no more than an idea. Think of them as utility tokens or **Gift Cards**. (e.g. Factom: FCT, market cap USD 160 million).
3. **Asset-backed tokens**, where the blockchain asset represents a claim on an underlying asset, and to claim the underlying one sends the blockchain asset (i.e. the token) to the issuer. (e.g. Tether's USD: USDT).
4. Token issued under the **promise of participation** in future revenues, even though there typically is no legal obligation for companies to honor such promises. Participation percentages and timing are almost always left undefined. (e.g. DigixDAO: DGD, market cap USD 150 million).
5. Tokens **said to represent equity** in the issuing company, giving token holders votes as shareholders, participation in future dividends, and supposedly ownership of the company as well. (e.g. Lykke: LKK, market cap USD 410 million).
6. Tokens issued under the **promise of appreciation** backed by promises from the company to repurchase and destroy tokens once sustainable revenue materializes. (e.g. Populous: PPT, market cap USD 150 million).
7. Tokens issued with no value proposition whatsoever. Think of them as **toy casino tokens**. (e.g. Steemit: STEEM, market cap USD 290 million).
8. Potential **scams** (e.g. Veritaseum: VERI, market cap USD 8.9 billion — note only 2% of coins are in circulation).

**Protocol tokens (#1) and gift card tokens (#2) are certainly valuable.** If the associated blockchain or service becomes popular, their value will rise accordingly. They represent a bet in the success of the underlying technology.

**Asset-backed tokens (#3) are useful** (e.g. it is easier to transfer ownership of 1000 ounces of gold in digital format than in physical format). Their downside is the credit risk of the issuing company (what if they go bust or they run away with the money?).

**Tokens that offer revenue participation (#4) could be very valuable.** Ideally participation conditions (percentages, timing) would be defined prior to the ICO, and the distribution of profits would happen autonomously following instructions hard-coded in a smart contract. Some issuers get creative and define these tokens as “Economic Shares” or “Non-Ownership Shares”, in an effort to convey that tokens are shares, which is not the case.

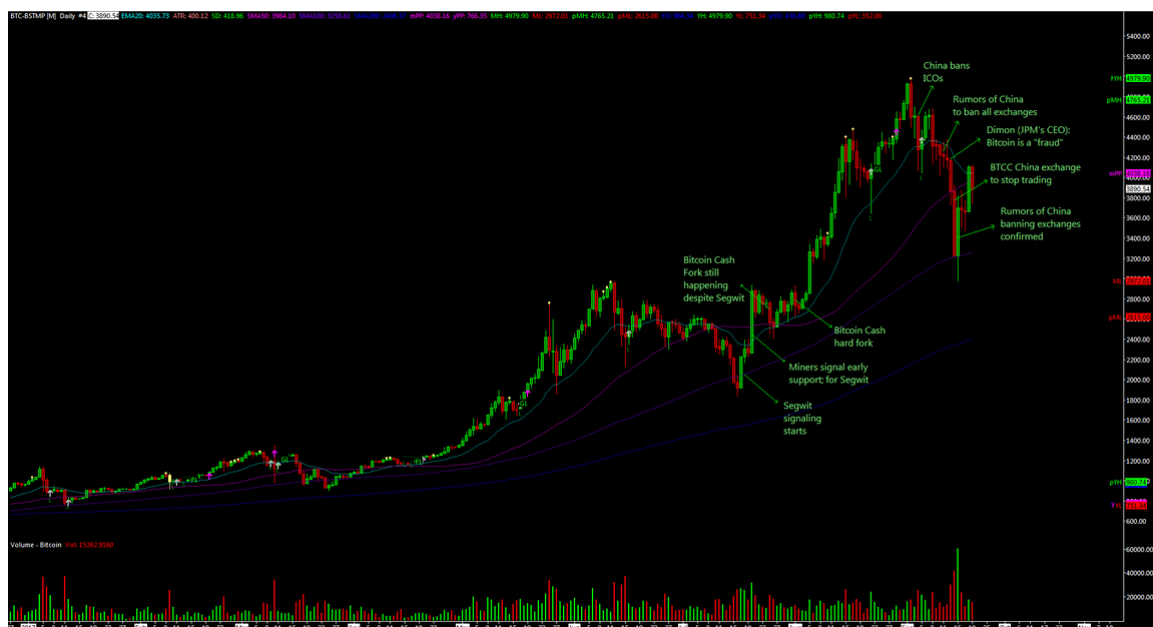
**Equity tokens (#5) are similar to participation tokens** with the explicit mention of “dividends” and/or voting rights. Equity tokens have been mostly avoided by issuers to reduce the probability of regulators classifying tokens as regulated securities. Marketing of equity tokens is generally misleading, because simply calling a token a share does not make the token a share. A token that isn’t backed by equity documentation cannot be equity. Equity placements require documentation filings with a regulator and the publication of a prospectus for investors. Furthermore, even if equity documentation were there, it is not clear equity tokens could legally represent shares (laws are country dependent and subject to change).

**The latter three types of non-native tokens (#6-8) have little if any intrinsic value.** Yet investors gobble them up, often failing to differentiate between a great project and great value. A project may represent a fantastic idea, while the associated investment vehicle may nonetheless offer terrible value for investors. And we are not only talking about great ideas here; one may get any idea (even a terrible one such as the Fuck Coin), bundle it with a no-strings-attached token, and investors’ money will likely follow. Somebody even launched an ICO for the Useless Ethereum Token and raised \$40,000.

## The Cryptocurrency Bubble

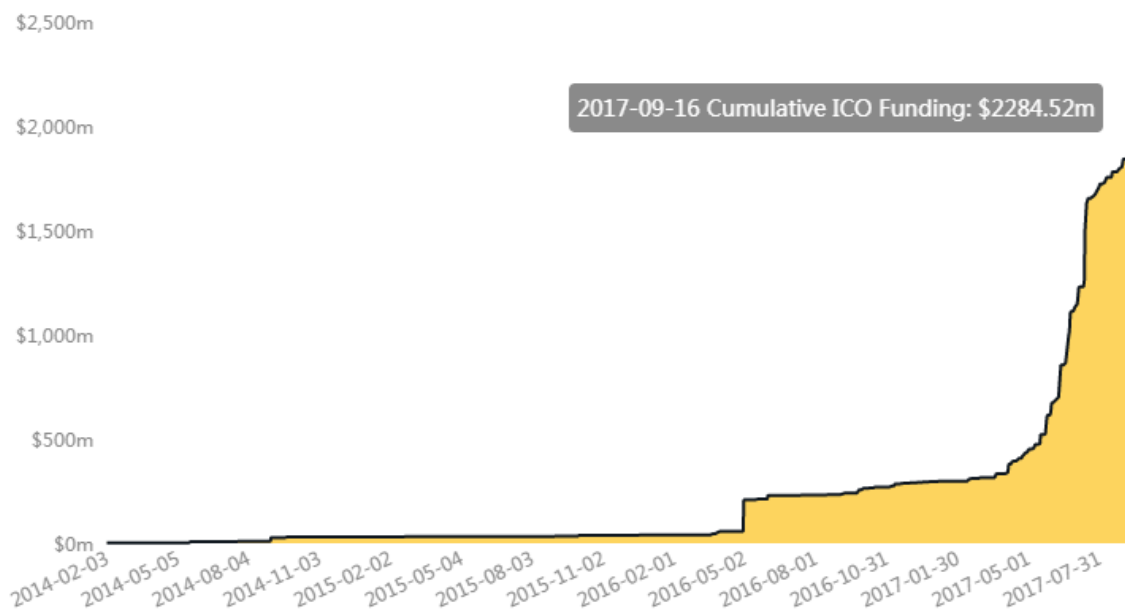
Despite the recent market correction following China’s ban of cryptocurrency exchanges, Bitcoin is still up 305% this year. Ether is up 3400% this year. Does this represent a bubble? Not necessarily. ICO volume is up 675% this year: the all-time cumulative ICO funding is \$2.3 billion, it was \$295 million by January 1st. If you start the count on May 1st, then bitcoin is up 190%, ether is up 240%, and ICO funding is up by 420%.





Why do ICOs matter that much? After all, bitcoin and ether represent two-thirds of the combined cryptocurrency market cap. So why do ICOs matter? Because ICOs are mostly paid for in bitcoin and ether, and also a great number of tokens are Ethereum tokens. **ICOs are driving prices!**

### All-Time Cumulative ICO Funding



Given that it is real projects driving prices, one could then argue there is no bubble. Right? Now remember how investors are throwing hundreds of millions into ICOs in which the tokens are gift cards at best and goodwill promises at worst. Many of these projects would not receive a penny from investors without shiny coins involved. Companies' are getting

funding with tokens that represent no liability, yet investors *convince themselves* those tokens give investors the *right* to participate in the growth of the business. Investors are behaving irrationally. **Investing in an asset whose value depends on the goodwill of the company's management represents bubbly behavior, allowing one to conclude that there indeed is a bubble.**

Publicly traded bitcoin investment vehicles are visible proof of the bubble. In the absence of bitcoin exchange traded funds (ETFs) in which to invest (the SEC is yet to approve any), US asset managers and investors seeking exposure to bitcoin without having to buy bitcoins have flocked to the Bitcoin Investment Trust (GBTC), a publicly quoted security supposed to track the performance of bitcoin as its fully backed by bitcoins. Demand for GBTC is so high that GBTC currently trades at 90% premium over its net asset value (i.e. GBTC does not track bitcoin well at all).

Another great example of the bubble is First Bitcoin Capital, a publicly traded Canadian company (BITCF) that claims to be a vertically integrated Bitcoin entity. This is a company that pays dividends with coins itself makes up (i.e. TeslaCoinCoin). Check this Bloomberg article for a fun read on the subject. It's a lot of fun, for as long as you are not of those who bought BITCF in August just because it was one of the few publicly traded alternatives to invest in bitcoin. On August 24 the SEC suspended trading on BITCF for 10 days "because of concerns regarding the accuracy and adequacy of publicly available information about the company". On September 8 BITCF resumed trading, opening 69% lower.

Still need convincing? The latest **Oaktree Capital memo** by Howard Marks features a list of nine necessary conditions for a bubble to occur— it states "a few [of these conditions] will give us a bull market; all of them will deliver a boom or bubble". It's a noteworthy read. It's also noteworthy that all conditions are undoubtedly present in the cryptocurrencies market.

## Market Outlook

**Will the bubble continue? I believe it will.** China ban notwithstanding, the ICO gold rush is nowhere near its end. Most institutional investors have yet to participate in the asset class. There are large sums of money from institutions and high net worth individuals about to enter the market through newly minted hedge funds. Most retail investors don't know how to get their hands on bitcoins and ether. Relatively few people understand how Bitcoin works, let alone Ethereum. And polls indicate extremely few women are participating in the bitcoin rush (coin.dance publishes a weekly poll called "Bitcoin

Community Engagement by Gender”, with the percent of male participants consistently above 95%). Bitcoin was created eight years ago, yet the blockchain industry is still in its infancy and mass adoption is yet to happen. Prospects are bright.

**The main market risk is the potential of government intervention.** China just banned all cryptocurrency exchanges, and nothing stops other countries from following that route. Governments are not precisely ecstatic with cryptocurrencies ability to avoid capital controls, nor with its use by tax evaders and money launderers. Furthermore, you can rest assured even the most pro free-markets Western governments would be quick to ban or heavily regulate cryptocurrencies if they were to grow large enough to have an impact in central banks’ ability to dictate monetary policy.

That being said, one may then ask, **do current levels represent a good price to buy?** Look into the following for answering that question:

1. On September 4 China banned ICOs, and on September 15 **Chinese regulators announced cryptocurrency exchanges must stop trading** by September 30. This has caused a significant price drop. Bitcoin fell from \$4400 on Sep/4 to \$2970 on Sep/15, before bouncing up around 30% on record volume on that same day. The ban is shutting out a fifth of current worldwide demand (for example BTC/CNY volume stands at 18% of worldwide volumes, per bravenewcoin.com). This will diminish capital flows into cryptocurrencies, but will not affect long-term fundamentals.
2. **Ether has a history of flash crashes:** on Jul/18/2017 ether dropped and bounced back a full 20% in just 3 seconds (it happened on the now defunct BTC-e exchange), and on Jun/21/2017 ether dropped from \$319 to \$0.10 in seconds, to almost fully recover in less than two minutes (it happened on the GDAX exchange; note GDAX did not cancel trades, those who profited from buying the crash kept their profits, yet GDAX compensated out of pocket those who lost money during the crash). An investor could use limit orders to take advantage of flash crashes.
3. **The key determinant of prices is capital flows.** The information for most upcoming ICOs is publicly available, and future ICO volumes can be estimated. Furthermore, institutional money is on its way. The day the SEC approves a cryptocurrency ETF, funds will pour in. Consider that current total cryptocurrencies market cap represents just 0.17% of assets managed by the top 400 institutional asset managers.
4. Think of **market penetration**. Some estimates indicate there are three million cryptocurrency users, which represents 0.14% of the 2.1 billion people in the world between 14 and 65 who have internet access. Can you imagine market penetration increasing to 5% within five years? That would mean 105 million users. What would happen with price then? Jeremy Liew, Snapchat’s first investor, thinks bitcoin could hit 400 million users by 2030, taking its price to \$500,000. Would that be outrageous?

5. **Bitcoin is expected to hard fork again by mid-November**, bringing significant uncertainty regarding governance of the Bitcoin protocol and even greater 2-way price volatility. By itself, this is good reason to be bearish in the short term.

Patience, decisiveness and skepticism are crucial tools in the toolkit of the savvy investor. Is it time to buy? You decide.

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