The ABCs of Cryptocurrencies

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A simpler guide to what the hype is all about

Mahatma Gandhi supposedly said, "*Live as if you were to die tomorrow. Learn as if you were to live forever*." A tad less dramatically, the Chinese have a saying to the same effect of "活到老学到老", to learn even as you age. In that spirit, we are launching our *Learning Curve* series, where we delve into topics that may not be traditionally associated with macroeconomic analysis but may nonetheless become increasingly crucial for us to grasp, as we navigate the post-pandemic landscape.

With a humble disclaimer that we are no experts in these areas and will not claim to be – and that we are merely sharing what we learn along the way – we look into the hot topic of cryptocurrencies in this report. Inspired by a toddler's "A for Apples" books, we present this guide in the format of a glossary of terms in alphabetical order. Hope you find it useful and Happy Friday!

Assortment. While Bitcoin and Ether dominate the headlines (and trading volumes) the cryptocurrency complex consists of a bewildering gamut of offerings. According to Coinmarketcap, more than 6700 different cryptocurrencies are traded publicly, with a total market cap of more than USD1.7tn. These include Dogecoin, which started out – literally – as a joke based on a meme of a *shiba inu* dog.

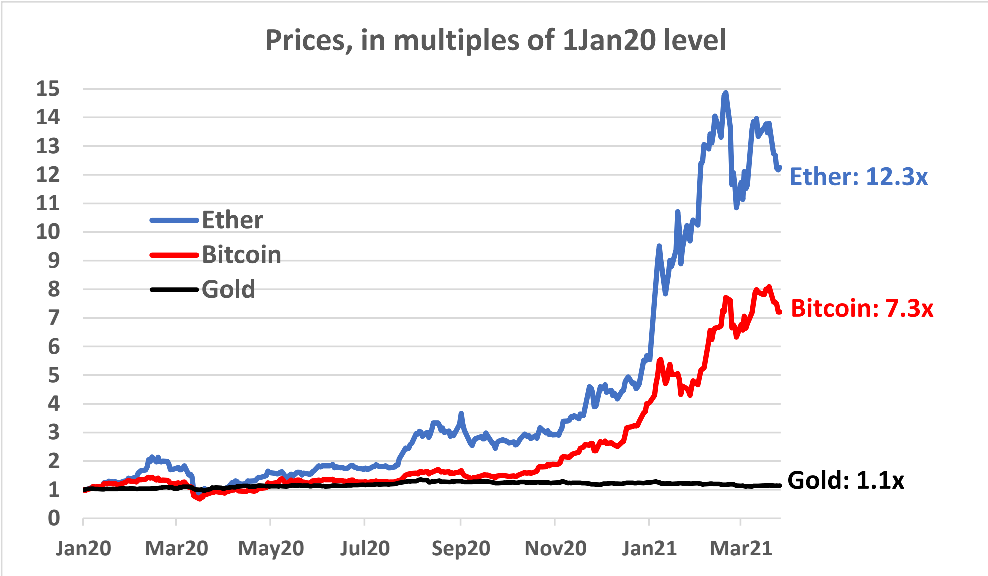
Block. The very foundation of the 'blockchain' technology that underpins much of the cryptocurrency world. In general, each block is nothing but a database, a structured collection of data. Applied to the crypto space specifically, the data recorded on each block consists of information regarding transactions – such as Party A sending X coins to Party B – that have taken place. Such data are recorded on the block once it has been verified via the mining process (*See 'M' for Mining*).

Chain. Different cryptocurrencies have different size limits for each block – see here for extensive discussion on Bitcoin's limits, for instance. Once the new block is filled up with transaction data, it is ready for the 'chaining' process. Each block contains an unique secure code, called hash, which ties it to the next block, forming a long history of all transactions that are now an irreversible, permanent record – a set of blocks that are chained together to form the eponymous blockchain.

Decentralized. A guiding principle behind many cryptocurrencies is the idea of having no central authority to preside over them. In the case of Bitcoin, the blockchain record is held by thousands of computers across the world. These are nodes that are linked together, but essentially operated by separate individuals of groups of people who are engaged in the competitive mining process. To change how the system works, or to alter the information stored within it, a majority of the network has to agree on the changes.

Ether. The second most popular cryptocurrency after Bitcoin, by market cap. Ether itself is the form of payment in Ethereum, an open-ended platform that allows smart contracts and other applications to be built upon it, akin to the Apple and Google App stores. Indeed, Ethereum has increasingly become the basis for a whole gamut of Decentralized Finance ("DeFi") offerings: new asset management start-ups, lending platforms and exchanges that aim to disrupt traditional finance. For instance, Ethereum has also become a platform for creation of new NFTs (*See 'N' for NFTs*).

FOMO. "Fear of Missing Out" refers to the anxiety we might have thinking that others might be enjoying something while we are not partaking in it. That 'something' can be the perceived opportunity to join the seemingly relentless uptick in the prices of cryptocurrencies – which could drive them up further.



Source: OCBC, Bloomberg.

Gold. Until recently at least, the notion that interest rates would stay low, bolstered by major central banks that will extend their quantitative easing for a long time, should have been supportive of gold's appeal; Except that it was not. And, part of the reasons behind its laggard performance might well have been the perceived rise in cryptocurrencies as a whole, and in the likes of Bitcoin as the "digital gold" as the new safe haven, notwithstanding its detracting qualities. (*See 'V' for Volatility*).

Higher and higher? A constellation of factors has been talked about as reasons behind the uptick in the price of cryptocurrencies. For instance, safe haven demand in the face of potential inflationary risk posed by large fiscal and monetary stimulus, including by institutional investors. There has also been broadening of usage of cryptocurrencies in payments, such as by Paypal, Mastercard and Visa. (Indeed, the Pacific nation Vanuatu has allowed purchases of its citizenship by Bitcoin since 2017). The fact that some publicly listed companies – not least Tesla – have invested in the space is seen as another major driver.

ICO. Initial Coin Offering; the equivalent of an IPO in the cryptocurrency world. It refers to the fundraising activity by a company to create a new coin, app, or service. Investors who buy into the offering receive a new token that might proffer a product/service that the company is offering, or a stake in the company. It was especially popular during the 2017 crypto bubble, and has come under fire due to alleged scams and the US SEC has charged a number of players for fraudulence. More recently, **IEOs** (Initial Exchange Offerings) have sprung up as an alternative to ICOs, whereby digital assets are offered to investors directly via online trading platforms. Given the unregulated nature of the avenue, the SEC has issued alerts on these too.

JOMO. "Joy of Missing Out", a direct counterpoint to FOMO. In this context, it perhaps refers to the schadenfreude that people who missed out on the cryptocurrencies boom would feel if and when the bubble bursts again like before. One commonly talked about episode of this boom-bust cycle occurred in 2017-18. The price of Bitcoin ballooned 18-fold to nearly $20,000 throughout 2017, before crashing to less than $2,500 the year after.

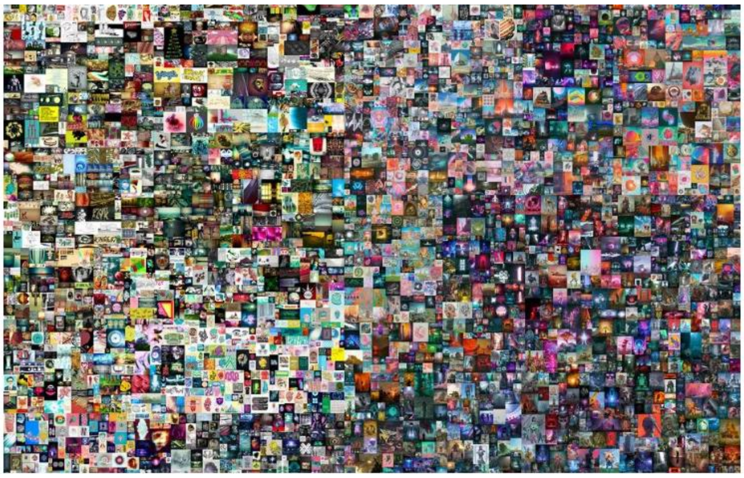
Kyber Network. Think of this as being akin to money changers where we exchange one currency for another, but to swap between cryptocurrencies. It is an Ethereum-based platform that facilitates the exchange instantaneously without any intermediary. It does so by pooling together reserves of over 70 different Ethereum-based tokens. (Star Wars fans might also note that kyber is a reference to the crystal that Jedis and Siths use to construct lightsabers).

Ledger. A record-keeping system that underpins the working of the cryptocurrencies, the ledger is a running record of all transactions that have taken place in the system, in a decentralized and tamper-proof manner. Broadly speaking, apart from its usage in the crypto world, the distributed ledger process itself has seen rising application elsewhere. Indeed, one area of utilization is in vaccination certificates. Malaysia and Singapore are discussing how to authenticate Covid vaccinations using the technology, for example.

Mining. The process through which transactions are verified and blocks are added to a blockchain. In Bitcoin's case, for instance, miners compete to 'audit' 1-megabyte worth of transaction data – making sure the same coin has not been used in other transactions, etc. – and to solve complex mathematical problems to arrive at a 64-digit, Base-16 number that is close to a set target. The miners are incentivized by rewards of new bitcoins, pushing them to enter a perpetual rat race of using ever-more powerful computers with ever-more advanced chips – that demand ever-more electricity. (*See 'P' for Pollution*).

NFTs (Non-Fungible Tokens). Strictly in the crypto space, NFTs refer to tokens that are not interchangeable or not fungible; where one coin does not equal another coin. The NFTs that you have heard a lot of lately refer to how they are being used to represent an unique digital version of 'something'. That something can literally be anything, ranging from a photo collage that is somehow worth $69mn to a Singapore-based investor, to a bunch of toilet papers for those feeling particularly flush with extra cash. Befuddling as it may be, it is increasingly real-money business for some established enterprises. The NBA has raked in hundreds of millions of dollars from selling digital footages of dunk shots from the likes of LeBron James, for instance.

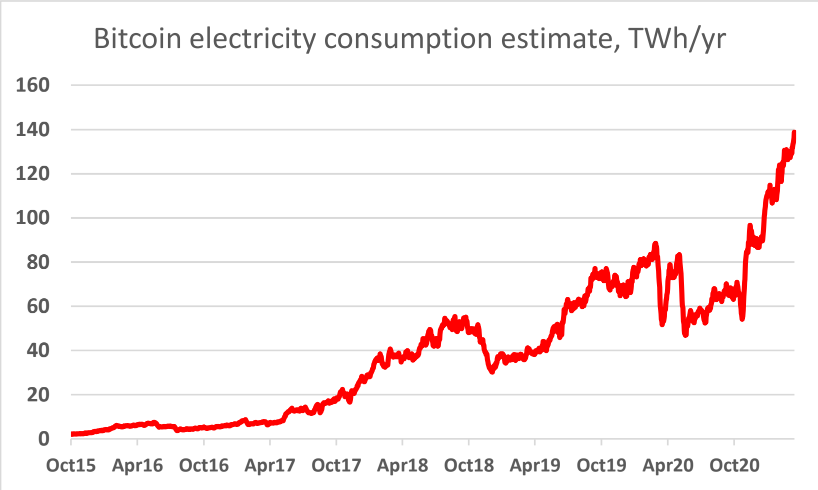
The photo collage that was sold for US$69 million



Source: Beeple, accessed via the Verge.

Options. Just like how the options markets for traditional assets such as equities and bonds provide investors with another way to express their views on the underlying prices, there appears to be an increasing appetite for trading options on cryptocurrencies. While the space offers opportunities for upstarts such as Deribit, more traditional players such as the Chicago Mercantile Exchange may not be far behind. The CME launched its trading platforms for Bitcoin options in Jan 2020 and for Ether futures in Feb 2021. The increasing role of the derivatives market could inadvertently add to the volatility, as well. Indeed, today marks the expiry of a record-high amount of $6bn worth of Bitcoin options that could potentially add further gyrations.

Pollution. Due to the increasingly exacting electricity needs to power the mining of cryptocurrencies, the rising power consumption and resultant pollution impact have brought increased scrutiny. According to a Cambridge study, the mining of bitcoins alone requires nearly 139 terawatt hours every year – more than the annual electricity consumption of countries like Ukraine and Sweden, and just below that of Malaysia and Egypt. About two-thirds of all bitcoins are said to be mined in China, and especially in the coal-rich region of Xinjiang.



Source: OCBC, Cambridge Centre for Alternative Finance.

Q*Coin. Asia is home to a burgeoning number of digital currency initiatives too. An example of that is Q*Coin, which powers the Quube online market place that was set up by Qoo10, a Singapore-based platform. Launched in 2019, Quube utilizes Ethereum-based blockchain technology to verify and settle payments between merchants and customers. Merchants are incentivized to use the platform through the waiver of 7-12% service fees.

RSI (Relative Strength Index). A commonly used technique in technical analysis that tries to deduce whether an asset is overbought or oversold, by looking at price history with more weights given to more recent data points. In the crypto context, RSI has become one of the more popular tools in investors' toolkit to apply *some* form of analysis on these assets, especially because of the lack of applicability of the traditional fundamental analysis.

Satoshi Nakamoto. The 'person' who began it all, by publishing a 9-page paper entitled "Bitcoin: A Peer-to-Peer Electronic Cash System" in October 2008 – paving the way for the first cryptocurrency. No one knows who he or she is, although various media reports have claimed they have found this or that person being the most probable. Whoever it is, one cannot help but wonder how many bitcoins he/she has retained – and how much they are worth now.

Transaction. One of the current major roadblocks for a more widespread adoption of cryptocurrencies as a payment platform is the fact that it can take a long time for the transaction to go through. On average, it takes up to ten minutes for Bitcoin transactions to get validated, for instance, because they have to go through the 'audit' process via mining activities mentioned earlier. There are ways to circumvent this, including by paying larger transaction fees to jump the queue, but that undercuts the egalitarian founding principle of Bitcoin. Attempts to speed transactions up – by increasing the block size to 8MB instead of 1MB – have resulted in a 'forking' of the original Bitcoin into Bitcoin Cash in August 2017, for instance.

Unconfirmed. It refers to a transaction that has not been appended to the blockchain; i.e. the 'waiting zone' before a Bitcoin transaction goes through.

Volatility. The prices of assets fluctuate – and the prices of crypto assets can fluctuate exponentially more on news flow. The earlier days of bitcoin were replete with negative news about its sordid use in drug transactions as well as bankruptcy of key exchanges, including the 2014 demise of Mt Gox – which once accounted for over 70% of bitcoin transactions. Such events dampened the enthusiasm of investors back then. More recently, the underlying shortfalls of cryptocurrencies continue to, well, gain currency. For instance, Fed Chair Powell's statements on March 23 that bitcoins are but "an asset for speculation" and "not particularly in use as a means of payment" and the fact that they are not backed by anything" drove the price down.

Wallet. Analogous to a physical wallet, a cryptocurrency wallet is where you can store your coins. It can take the form of electronic wallets such as those on desktop computers, mobile phones, or in the cloud. It can also be a physical manifestation in the form of hardware wallets that are essentially USB-based equipment. Technically, there is no need for such wallets, as long as you can remember the 51-alphanumeric "private keys" that allow you access. And there is also a need to remember the password to such wallets, with horror stories such as the one involving $240mn worth of 'stuck' bitcoins as inspiration. It is spawning a whole new locksmith industry too.

XBT. Cryptocurrencies tend to have an 'X' as the starting alphabet in their ISO 4217 codes. XBT refers to Bitcoins and XET refers to Ether, for example. This has to do with a naming convention using X for either supranational currencies such as XDR for IMF's SDR or for assets that are similar to currencies, such as XAU for gold and XAG for silver.

YOLO. "You Only Live Once" philosophy that is said to be embraced by the younger millennial generation, to live life to the fullest extent – even if it means embracing a little more risk than is deemed acceptable by traditional norms. Alongside the FOMO anxiety, it has helped to bolster daring forays into more exotic trades, including in the cryptocurrency space.

Zzz…? Even with all the inherent volatility and big unknowns ahead for cryptocurrencies, perhaps the biggest lesson we should note is to not be falling asleep at the wheel. The underlying blockchain technology has garnered increasingly widespread use across different fields. Within the investment world, the entry of more institutional players into the crypto space might well engender a virtuous cycle via which better governance structure lowers the barrier of entry for more investors, as well. News flow about how central banks are increasingly keen in exploring the potential adoption of digital currencies could have considerable ramifications too. In short, we will have to continue watching this space closely.

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