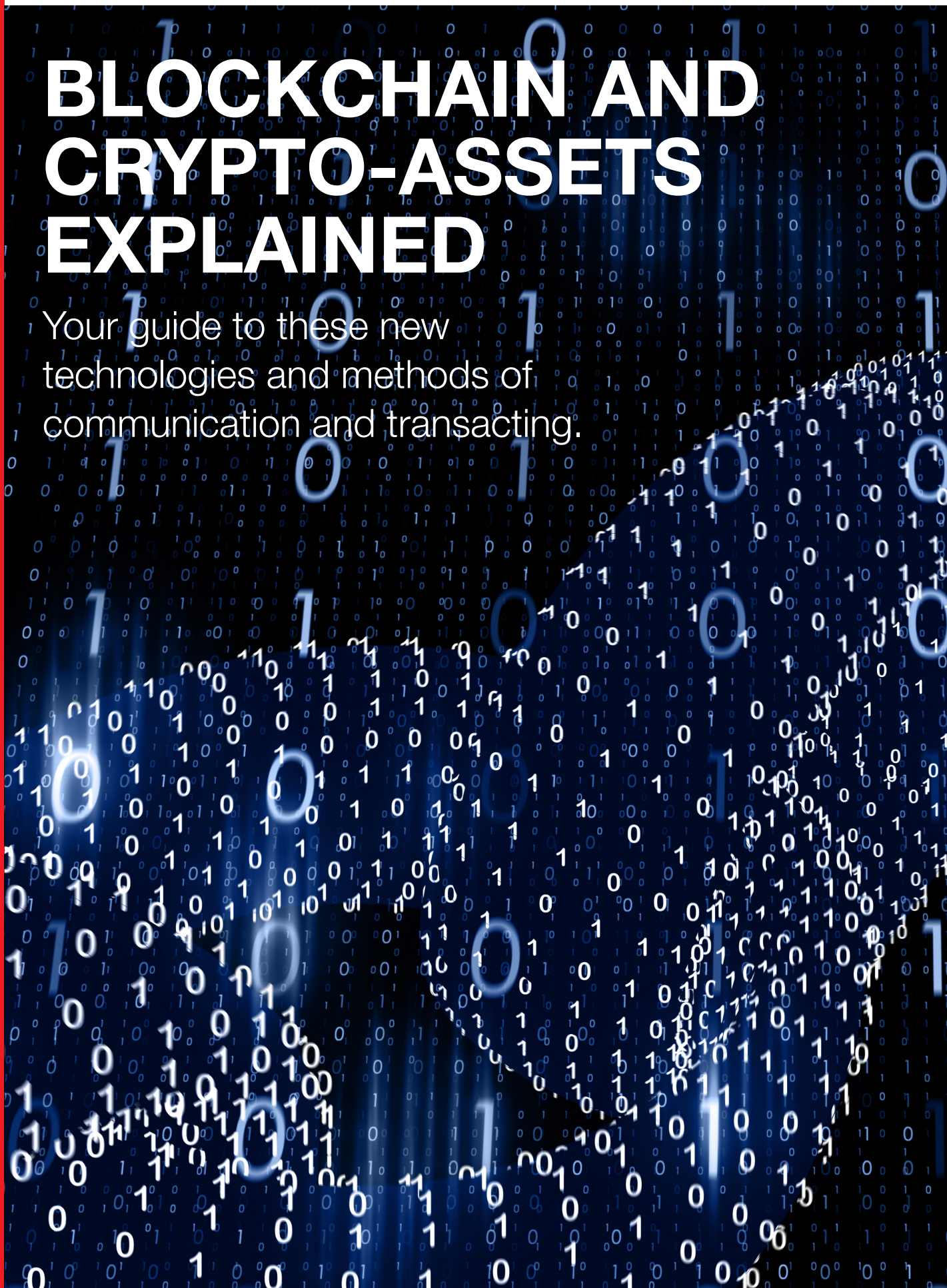
CANADIAN ASSOCIATION OF ALTERNATIVE STRATEGIES & ASSETS

BLOCKCHAIN AND CRYPTO-ASSETS EXPLAINED

Your guide to these new technologies and methods of communication and transacting.



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About CAASA

Inclusive, Active, and Pan-Alternative

The Canadian Association of Alternative Strategies & Assets (CAASA) was created in response to industry requests for a national group to represent the Canadian alternative investment participants, including investors, asset managers, and service providers. CAASA is inclusive in that it welcomes participation from all companies active in the space as well as select individuals (such as those employed by investors) who might want to participate in committees and working groups — or simply attend member events — without their employer being a member of the association.

CAASA is very active, organizing about 50 podcasts and 200 webinars, either as stand-alone or as part of our seven conferences each year. Pan-alternative, for CAASA, encompasses all alternative strategies and assets including hedge funds/alternative trading strategies, private and public real estate (funds and direct), private lending, private equity, infrastructure, development and project finance, digital assets/crypto-assets, weather derivatives and cat bonds, and all aspects of diligence, trading, structuring, dealing, and monitoring alternatives in a stand-alone portfolio and as part of a larger investment strategy.

For more information, please visit www.caasa.ca.

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Thanks to Hill + Knowlton Strategies for their part in interviewing our participating members and drafting this primer.

Hill+Knowlton Strategies

www.hkstrategies.ca

Foreword

Rising from the ashes of the Great Financial Crisis of 2008-2009, when central banks – out of necessity because many of the commercial banks were basically insolvent and the financial system was imploding – issued hundreds of millions of dollars in bail-out dollars over successive weekends, Bitcoin (est'd 2009) is the first widespread (although it took some time) digital currency. Earlier versions include a 1990s Dutch cryptocurrency invented in response to thefts from 24-hour petrol stations (the cards carried by drivers were worthless in others' hands). Another was David Chaum's DigiCash that anonymised user information whilst keeping the trust factor – it lasted until 1998. There was also Paypal's offering, as well as ones called B-money, Bit Gold, and Hashcash, but all fell short and are in disuse today.

One difference with Bitcoin is its escalating cypher-cracking difficulty (equalling "1" for the genesis coin and now approximately a factor of 17 trillion) coincided with a rise in computing power that made it possible only to those mining nodes on the bleeding edge of technology – but with enough of them to support the system. Also, the stated maximum of 21 million Bitcoins, to be achieved in 2140, lends it scarcity value with 1.76% p.a. new coins presently.

Other crypto-assets have come along as well. Ethereum, created by Russian-Canadian Vitalik Buterin, is not a cryptocurrency but, rather, a platform where crypto-assets such as smart contracts and the like can reside and provide safe, secure, inventory lists and action-points for parties to these contracts. Ethereum has many challengers, forcing it to up its game continuously, which is a boon for all.

Circa 2018 found a plethora of ICOs (Initial Coin Offerings), some of dubious distinction, which compelled securities regulators to opine on what is deemed under their jurisdiction and now tax departments are paying the sector heed.

All this is part of the evolution of new asset classes, as we discuss in this paper. Hope you enjoy!

James Burron, CAIA

President, CAASA

What are blockchains & crypto-assets?

Any observer of financial news has heard of cryptocurrencies, the digital tokens famous for their controversy, volatility and – most recently – rapid price appreciation. The first cryptocurrency, Bitcoin, was conceived of by the pseudonymous Satoshi Nakamoto in 2008. In a whitepaper where he laid out the basics of the currency and the system on which it would run. After the failure of traditional financial institutions, it was time for a decentralized alternative – one that would enable trust between parties unfamiliar to each other, but that was not controlled by any central entity.

His solution was the blockchain: a distributed ledger which resides in every single node of the decentralized, peer-to-peer Bitcoin network.

The way the Bitcoin blockchain works – in very basic terms – is by grouping transactions on the network into so-called 'blocks' and using cryptography to make forging transactions impossibly difficult and/or expensive to accomplish.

When the number of transactions conducted reaches an arbitrary block size, that block is 'hashed' by each computer on the Bitcoin network – that is, converted into a unique string of characters. The next block in the series then contains that hash of the previous block. Each node of the network reports its hash to every other block, until consensus is reached. And those operating nodes on the Bitcoin network would receive tokens in exchange for their service operating the blockchain – these are bitcoin "miners".

In order for a transaction to be forged on the blockchain, a node on the network would not only have to recompute the hash of the block in which the forged transaction resides, but every subsequent hash, as well – and it would have to do it faster, and with enough nodes on the network, to achieve consensus.

This is very difficult, verging on impossible – and it is this security that gives users of Bitcoin their confidence.

For clarity – we must separate the notion that Bitcoin is an equivalent or interchangeable term for blockchain. Though Bitcoin is built upon blockchain technology, the use of blockchain as a distributed ledger platform has many uses.

"Blockchain is the underlying technology associated with tokens, cryptocurrency, and digital assets. It has been around for just over 10 years and is expanding its use in the public domain. Blockchain represents a widespread shift in thinking about technology, trust and value, and that is driving its global momentum. With blockchain, we are encouraged to think differently about how value is stored and transferred between individuals and between corporations. Blockchain is a system that creates trust using technology, and trust in technology is essential as our lives become more digitally enabled and entwined. As blockchain continues to become more commonplace, it demonstrates how the global community is placing value and trust in technology more than ever at an unstoppable rate from individual to individual or from corporation to corporation."

Paul Stapleton
Chief Technology Officer
Fidelity Clearing Canada

"Blockchain is this new layer of functionality on top of the Internet that enables for flows of value in an entirely digital setting, in the way that the Internet was previously just handling flows of information. And so if you think about that, then it makes sense that the companies that will be disrupted in the blockchain era of the Internet will be companies that also themselves deal with transfer of value, like financial services or insurance markets."

Charlie Morris
Managing Partner
CMCC Global

A sampling of crypto-assets

Bitcoin's blockchain was the first, but it was not the last. There are many blockchains, with features intended to differentiate its blockchain – and the tokens which are allocated on its ledger – from others.

Bitcoin remains the dominant player and has the largest market capitalization of all cryptocurrencies. Others include Ethereum, whose blockchain is less a simple register of transactions and more a distributed computing system that developers can use to build a suite of financial applications, and Litecoin, which offers an improved transaction time. There is Polkadot, which aims to build interoperability between discrete blockchains, and Bitcoin Cash, which was produced as a 'fork' – or alternative descendent – of a previous version of Bitcoin.

Each of these blockchains is aimed at a different purpose, and has a different use case. The currencies that operate on some of them, in some cases, ought not even be considered currencies, as that is not their intended use. Instead, the tokens should be considered digital assets – as their value does not come from their use as a medium of exchange, but from something else entirely.

"Cryptocurrency is really a misnomer, because the vast majority of these technologies are not designed to be currencies. Bitcoin is a great example of this. It's the best implementation of a digital store of value, designed to be held through longer-term inflationary periods while ignoring short-term volatility. At the end of the day it's not meant to be a currency, but neither is gold and there are trillions of dollars locked in gold as a store of value. When examining the question of value in digital assets, ask yourself: which blockchain is this asset built on? Is it built on Ethereum or is it a fork of Bitcoin or another chain? Is it designed for speed? Is it designed to represent a particular type of asset class and if so, what asset class?"

Austin Hubbell
Founder & CEO
Consilium Crypto

Valuing crypto-assets

The question of what gives a digital asset value is a complicated and controversial one.

Other types of assets such as stocks or currencies have a simple explanation for their value. A share of Alphabet or Microsoft is valuable because it is part ownership of the company, and the company is valued based on its discounted cash flow. The Canadian dollar is valuable because the Government of Canada mandates that it be legal tender for all transactions within Canada.

There is a fundamental value to these traditional assets. Is there a fundamental value to cryptocurrencies and other digital assets? Unsurprisingly, for a new type of asset, there is considerable disagreement on this front.

Cryptocurrency sceptics claim that whatever the long-term potential of blockchain technology, blockchain tokens themselves have no fundamental value. They are not legal tender, they don't represent ownership of an enterprise, they don't represent debt, and – although it is a potential use case for the technology in the future – they don't represent ownership of real assets, like a deed to a piece of land. Further, they reply that Bitcoin ownership is risky. Possession of a bitcoin relies on possession of the private cryptographic key to a Bitcoin wallet. This key must be stored somewhere – if it is compromised, your Bitcoins can be stolen; and if lost, they are lost forever. Meanwhile, accounts at traditional financial institutions are typically insured to some degree.

Cryptocurrency optimists retort that although Bitcoin does not have a fundamental value, neither does gold – and that has not stopped gold from being used as a traditional store of value, and hedge against inflation. They reply that mathematically, there are a limited supply of Bitcoins, just as there is a limited supply of gold on the planet, and the fact that Bitcoins, and other cryptocurrencies, can be transferred across borders very easily and rapidly gives them a use case that physical gold, as well as traditional currencies, simply do not have.

Further, a store of value (or a medium of exchange) is only one potential use case for digital assets. While Bitcoin may be designed as a store of value, Ethereum, for example, is not. The Ethereum blockchain allows for smart contracts and allows applications to be built on top of it. As Ethereum tokens (called Ether) are required to run the Ethereum blockchain, this gives Ethereum a fundamental value that is differentiated from Bitcoin.

Cryptocurrencies and digital assets – depending on their design – also allow for more control than traditional assets like stocks or bonds. Aside from simple tokens like bitcoins, there are tokens that allow for governance over the blockchain itself, similar to the way a stock may grant a holder voting rights.

"Value comes from a few places: the way the token is used to occupy space on the blockchain, the way it is produced if it is deflationary and some of the tokens are burned throughout the course of their life. And then people obviously are buying it because they believe that it will have future value. As the blockchain network grows, so does the use of the token. So there are a few different ways to think about token economics but it all depends on the overall value of the operating system and how much that is used by people within the community."

> ***Paul Cappelli***
> *Portfolio Manager*
> Galaxy Digital Capital Management LP

"The Bitcoin blockchain is the most powerful secured computer network in the world. How can the most powerful secured computer network in the world be worth zero? It doesn't make any sense. It's kind of like saying live streaming on Netflix is going to disappear. It's never going to be used again, and it's worth nothing. Well, the protocol is worth nothing, but Netflix is worth an absolute fortune."

Fred Pye
President & CEO
3iQ Corp.

"A crypto token provides fundamental exposure to a company's value proposition that self runs via code (smart contracts) on blockchain technology. Company offerings can span the gamut including KYC solutions, video transcoding, borrow-lend platforms, file storage, and marketplaces. Traditional fundamental factors such as revenue generation, operating costs, technology quality, and customer acquisition strategy are key drivers of success. At the end of the day, founders run these blockchain based companies alongside coders, marketers, lawyers, and accountants, and utilize tokens to form a governance structure and/or to help bootstrap their business via incentives."

Jake Brukhman
Founder & CEO
CoinFund

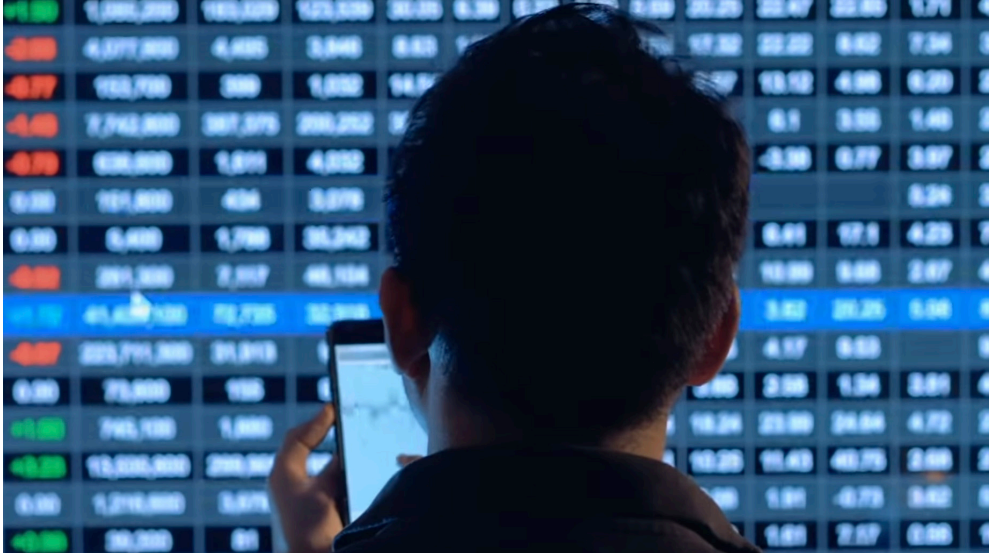
A highly speculative asset class

Whatever side of the debate you fall on, it is clear that since blockchain is still a young technology, investments in blockchain tokens are highly speculative. The value of even the flagship cryptocurrencies like Bitcoin and Ethereum is extremely volatile. This is true both in the long term and the short term.

Long-term volatility is easily observed: after a substantial ramp-up in price in Q4 2020 and Q1 2021, the value of Bitcoin dropped from approximately $58,000 USD to approximately $35,600 in the month of May. However, short-term volatility can be just as significant. Within that month of May, rapid dips – and recoveries – were observed with the value of Bitcoin fluctuating as much as 30% within a single day.

This volatility can be profitable – particularly for sophisticated investors and investors that trade at a high frequency. Products exist on public exchanges that track the price of the major cryptocurrencies like Bitcoin and Ethereum - allowing traders to take long or short positions and enter and exit those positions relatively quickly.

Investors that are long-term bullish on crypto and on the potential of blockchain technology, may also choose to buy and hold cryptocurrencies. However, these investors will have to accept significant volatility – and also recognize that despite their optimism, cryptocurrencies and blockchain remain risky investments and ensure that only a portion of their portfolio is allocated to them.



Who invests in these assets?

Investors in digital assets are often stereotyped as brainy software engineers or people with fringe politics. While this stereotype is not entirely untrue for a portion of these investors, the vast majority of allocations to crypto come from High Net Worth individuals. But institutional capital is beginning to enter the space with even more sitting on the sidelines.

According to the third annual PwC Global Crypto Hedge Fund report, although 79% of traditional hedge funds surveyed said they had not made any crypto investments yet (their allocations are not significant: 1-2%), 86% saying that they intend to deploy more capital into cryptocurrencies by the end of 2021.

These institutional investors employ a range of strategies to achieve returns from their allocations to crypto. Both discretionary and quantitative funds have made allocations, with potential returns attracting funds taking long positions, and volatility attracting both quantitative funds and those discretionary funds that mix long and short positions.

Beyond investors who purchase blockchain tokens – and derivatives thereof – themselves, there are also investors like venture capitalists, who look to fund enterprises with innovative blockchain ideas. These investors believe in the power of blockchain technology and look to push it further, digging deep into the code, into the design of the smart contract system, into whether the token economics make sense. In doing so, they are able to gain exposure to the sector in a unique way.

"The crypto markets trade 24/7, so it can make more sense to have algorithms executing trades rather than a team of humans. There are also many inefficiencies in this market and no law of one price. There isn't any single consolidated best bid and offer feed used by all brokers. This is really still a little bit of the Wild West, and I think it's a great place for algorithms to take over. Another thing to consider is that from an analytics perspective, the time series and historical patterns in crypto can contain more valuable information for modeling than a lot of other asset classes. For all of these reasons, it makes a lot of sense to pursue quantitative and/or systematic strategies in these markets."

Austin Hubbell
Founder and CEO
Consilium Crypto

"Cryptocurrencies are transforming the financial world. Canadian regulators have taken a leading role in democratizing access to this asset class by approving the ETF structure, which reduces the friction points that investors have traditionally faced in buying and holding cryptocurrencies. As market validation of cryptocurrencies continue to accelerate, we believe that retail investors and advisors will continue to increase their portfolio allocations to crypto. It is important for simple, convenient and secure ETF solutions to exist in order to increase the cryptocurrency investor base and its adoption as a mainstream asset class."

Kurt MacAlpine
Chief Executive Officer
CI Financial Corp.

Bullish or bearish?

So, should investors be bullish or bearish on the long-term potential of cryptocurrencies? That question, like many others, is controversial. Blockchain bulls will argue that blockchain is a disruptive technology; arguing that since it enables trust through mathematics, it is superior to existing financial systems and systems of account like traditional property registries and will eventually displace them.

This position is because use as a currency, or as a store of value, is not the only use case for blockchain tokens. A potentially more interesting application is to use these tokens as representations of actual assets such as real estate. This is a use case that is just beginning to be seen in the marketplace with Non-Fungible Tokens (NFTs) on a bespoke blockchain being designated as ownership certificates for artwork and other cultural products. These NFTs have been sold for many thousands – sometimes millions – of dollars.

"An interesting future use case will be tokenization – where we move away from tokens as stored values into tokens representing actual assets. Even if we are talking about Bitcoins or Ether coins today, this is where future discussions are headed."

> ***Paul Stapleton***
> *CTO*
> Fidelity Clearing Canada

It is true that trust is not a big problem in developed countries with strong institutions. But in much of the world, there is a need for a system that can be trusted even if official institutions are corrupt. Blockchain technology fits that niche: although it is not invulnerable to regulation, as Bitcoin transactions are entirely public, it is beyond the control of any one entity.

Further, since blockchain technology can enable smart contracts and value transfer in the absence of formal financial institutions, there is considerable room for growth in so-called "underbanked" parts of the world, where traditional financial institutions have little penetration – but where everyone has a phone.

In jurisdictions like Canada, cryptocurrencies and their transactions and associated financial products are increasingly being brought under regulatory oversight. Crypto boosters say that this will increase transparency and increase investor confidence, leading to an overall stronger sector.

"When people think about ESG in relation to crypto, high energy consumption tends to overshadow immense social value creation. A notable portion of the world is frankly underbanked with no access to capital. Just imagine how crypto innovation can change people's lives. The global access and open source benefits fuel higher competition and innovation ultimately putting the consumer back in the spotlight without discriminating across socioeconomic statuses. Additionally, crypto may just be the driving force behind further research and adoption of renewables. Renewables power roughly ~40% of Bitcoin mining today, compared to roughly 20% for the U.S. power grid."

> ***Seth Ginns***
> *Head of Liquid Investments, Managing Partner*
> CoinFund

But if there are long-term tailwinds at crypto's back, there are also headwinds. Jurisdictions vary in their approach to crypto, with some being more open to including it as part of a regulated investment portfolio than others. Indeed, El Salvador is proposing Bitcoin as legal tender! Canada is one such country: fully compliant Exchange-Traded Funds (ETFs) that track the price of various cryptocurrencies are openly traded on the TSX, which enables their use in registered accounts like TFSAs and RRSPs.

But there are also significant regulatory risks – particularly when the global context is considered.

China – a rising economic superpower – takes a dim view of existing cryptocurrencies and has repeatedly tried to crack down on their use. In 2017, China banned banks from processing crypto trades, as well as Initial Coin Offerings. In May 2021, the Chinese government re-affirmed its stance, causing a significant one-day decline in the value of every major cryptocurrency.

China is just one jurisdiction, but it is a major one. The risk is obvious but cryptocurrency boosters reply that the Chinese government's motivation is not to ban cryptocurrencies entirely, but instead to bring the sector – or parts of it – more within its control, meaning that the sector as a whole has a path forward.

"The Chinese government is one of the first governments to be using blockchain technology. They've created the digital Yuan and they are aggressively pushing that out to the public. There are over two million trial users of this and in Shenzen – just across the border from Hong Kong – it is legal tender. Another thing that China is doing, which you won't read so much about in the media, is that they have created the 'Blockchain Service Network', which is a government level smart contract platform where they're trying to integrate lots of different enterprises in China and abroad."

Charlie Morris
Managing Partner
CMCC Global

Cryptocurrencies also face long-term climate risk. ESG (Environmental, Social, & Governance) factors are increasingly considered when making investment decisions, and carbon emissions are among the most important Environmental factors an investor can consider. In this respect, cryptocurrencies (Bitcoin specifically) face substantial risk. The Bitcoin blockchain consumes a substantial amount of electricity – as much as a small country – and even cryptocurrency fans such as Elon Musk's Tesla have started to distance themselves from Bitcoin over environmental concerns.

Cryptocurrency bulls reply that bitcoin mining – that is, operating a computer that is a node on the Bitcoin blockchain – is a business like any other, and that less expensive energy will improve a miner's margins. Bitcoin mining is therefore sensitive to the long-term trends in the cost of renewable energy – namely, that it is falling quickly, with more emissions-intensive energy sources subject to policies like carbon taxation that increase their price.

Further, they reply that ESG goals involve both Environmental and Social components – and blockchain technology, with its democratic bent, delivers on Social goals.

"If you look at all the Bitcoin mining in Canada, we're either using clean energy through natural gas or using renewable energy through hydroelectric power, such as what's done in Quebec. I think the number is something somewhere in excess 58% of all Bitcoin now is renewable or clean energy. … You want to use renewable energy because your cost of Bitcoin mining with renewable energies a lot less expensive than decommissioning or reopening a coal mine. It's not happening in Canada to power Bitcoin. Nobody is going to be interested in that cost – it's too expensive. Bitcoin will always go to where the lowest cost is."

Fred Pye
President & CEO
3iQ Corp.

Further, Bitcoin is only one cryptocurrency among many. It uses a system called ‘proof of work’ to achieve consensus on its blockchain wherein every computer on the node performs the hashing function, and in doing so achieve consensus. But other blockchains have shifted to a much less resource-intensive system called ‘proof of stake’ where authority in a blockchain is based on how many coins, or tokens, a given miner holds.

Finally, there is the question of fundamental value. Even if an investor accepts that blockchain technologies can overcome regulatory and climate risk, if you do not believe that cryptocurrencies have fundamental value it is difficult to be a long-term bull.

“If you invested in Bitcoin, or you invested in Ethereum, and you own it, either physically or through futures or through an ETF or mutual fund, you have done very well from an underlying performance perspective. But you’re taking on a significant amount of risk when you’re owning something like that, because there is no underlying real demand for it. You can only sell it for what somebody else is willing to pay for it. When you’re dealing with an underlying commodity like oil or gold or natural gas, there’s a completely different value proposition for them. Generally speaking, I’m short term pessimistic on Bitcoin and long term, optimistic about blockchain technology and cryptocurrencies. But it really is going to take a long time before we get to the point where cryptos are used as a real cross border currency without government regulation.”

Steve Hawkins
President & CEO
Horizons ETFs

Tread carefully

Whether you are a bull or a bear, it is undeniably true that at present, cryptocurrencies are a risky asset. As such, an investor should only allocate as much of their portfolio as they are willing to lose.

Investors who do not wish to hold cryptocurrencies directly through an exchange may choose to invest in an ETFs that tracks the price of one or more cryptocurrencies. There are ETFs that track the price of Bitcoin, Ethereum, and a portfolio of coins – and interestingly, there are also ETFs which are *short* bitcoin, so crypto bears can bet against the currency and still participate in the space.

Some investors may be long-term bullish on the sector, but do not wish to guess which blockchains, and which tokens, will become widely adopted. These investors may consider an alternative approach: invest in the infrastructure of cryptocurrency itself, such as exchanges like CoinBase. In doing so, these investors will gain exposure to the sector without making a more idiosyncratic bet on an individual coin.

"People need to understand what it is they own at the end of the day. And what is the real value proposition with the cryptocurrencies? Short term, I believe that this is a highly volatile, highly speculative asset class, although I'm long term bullish on from a blockchain technology perspective. At some point in time, that might be good for Bitcoin and that's great. And if you're taking a flyer at this point in time, that's great, too. But you have to understand, you're betting on something that really does not have any real value at any point in the near future. You're taking a flyer, you're rolling the dice: it is a bet. And if you want to bet on a number on a roulette wheel, then that's great. But that is from my perspective, what it is to invest in cryptocurrency right now."

Steve Hawkins
President & CEO
Horizons ETFs

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