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Cryptoassets and blockchain: An investor's guide

ARE BITCOIN AND OTHER CRYPTOASSETS A REVOLUTIONARY INNOVATION, A BUBBLE READY TO POP, OR SOMETHING IN BETWEEN? Can such a new, strange, and volatile creature have a place in the portfolio of an institutional investor? Why all the excitement about the underlying technology, blockchain, and its potential to disrupt a range of industries? We address these questions in three sections: An educational Q&A, an exploration of blockchain, and considerations for investors.

KEY POINTS

- Cryptoassets, invented barely a decade ago, have exploded in visibility in recent years.
- Individual investors, family offices, and small hedge funds have been the main investors in cryptoassets to date.
- Participation by institutional investors has been limited so far by the newness of the asset class, its extreme volatility, a lack of regulation, and custodial, security, and liquidity concerns.
- Many sell-side firms, retail-oriented investment managers, and tech giants have poured research into cryptoassets, while a number of startups are looking to capitalize on the lack of direct institutional liquidity through new exchanges.
- The wisdom of investing in cryptoassets is hotly debated, but there is wide agreement that the underlying technology, blockchain, holds great promise across a range of industries.

The basics: Questions and answers

What are cryptoassets?

Cryptoassets or cryptocurrencies¹ are software-generated units or tokens that rely on encryption and a technology known as “blockchain.” By enabling independent verification of fund transfers, blockchains let cryptocurrencies operate independently of central banks and financial institutions. In many currencies, such as bitcoin, units are created by a process called “mining,” in which computers solve difficult cryptographic problems and their owners are rewarded with currency units. This process

¹In this paper the terms “cryptoassets” and “cryptocurrencies” are used interchangeably.

can consume significant amounts of electricity. One researcher estimates that executing a single bitcoin transaction takes more energy than 200,000 credit-card transactions.²

Bitcoin was the first large-scale implementation of a database technology called blockchain. First proposed in a 2008 paper (along with the blockchain concept) by a person or group named Satoshi Nakamoto — whose identity is still unknown — bitcoin launched in 2009. Since then, many other cryptocurrencies have been created. Taking the concept further, initial coin offerings (ICOs) have been launched to let startup companies fund themselves without having to deal with the initial public offering (IPO) process. Instead, in ICOs coins are issued to the general public, much like crowdfunding campaigns.

What gives cryptoassets value? Why exchange traditional currencies like the US dollar for cryptocurrencies?

Like any asset, a cryptoasset's value is set by the balance of supply and demand. Supply is set by rules for creating units and capping issuance embedded in the asset's software, and influenced by mining costs (in computing gear and energy). Demand is a more complex story, as it is based on intangibles: in particular, a belief that a cryptocurrency has features that make it superior to traditional currencies. For example, bitcoin:

- Allows users to transact directly with each other, without having to depend on a centralized third party.
- Has built-in incentives for good behavior by participants; counterfeiting would likely be extremely difficult.
- Has an issuance cap of 21 million bitcoins, preventing uncontrolled inflation. In contrast, there is no technical limit to the amount of a traditional currency that can be issued by a central bank.

Advocates of cryptocurrencies tout the possibility of greater efficiencies through disintermediation of financial institutions (central and commercial banks, securities exchanges, money-transfer agents, etc.); resistance to debasement by governments creating new money to inflate away their debts; and the potential for “frictionless” transactions with no interference by third parties (for example, government-imposed trade sanctions). Some proponents even envision that an eventual single global currency could greatly streamline all kinds of transactions, giving a huge boost to world economic growth.

Some of these attributes, such as cutting out third parties, may not seem important in reasonably well-functioning countries with independent central banks and generally trusted banking systems. But these attributes can stand out in states where private property rights are weak or hyperinflation is a risk.

Critics point to the other side of these same features: no central authority, and constraints on governments' ability to implement policy (say, monetary stimulus to lift an economy out of recession or imposition of sanctions on rogue states). Furthermore, entries into a cryptocurrency's ledger cannot be changed; mechanisms for error correction and recourse to counterparties have yet to be devised. There are numerous operational hurdles to using cryptocurrencies as payment mechanisms, and regulatory and technical obstacles to making them a readily investable asset class for



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²Source of estimate: Digiconomist.net



Much capital is being expended on overcoming the obstacles to adoption of cryptoassets as means of payment and investable assets.

institutional investors. Perhaps most fundamentally, a cryptocurrency has no claim on a company’s profits like equities or to an income stream like bonds. Its value stems ultimately from trust in its underlying software.

Much capital (financial and human) is being expended on overcoming the obstacles to adoption of cryptoassets as means of payment and investable assets.

How many cryptocurrencies exist?

There were well over 1,000 cryptocurrencies in circulation as of February 2018, and more are constantly being created. They vary in many ways — for example, mineable versus non-mineable, capped versus unlimited supply, and open versus closed. More broadly, cryptoassets (including cryptocurrencies) can be divided into three groups:

- Stores of value/mediums of exchange. Examples: bitcoin, Litecoin, Monero, Dash, Zcash
- Platforms on which other applications can be built, e.g., Ethereum, Ripple, NEO
- Applications run on top of platforms, e.g., Filecoin (data storage), Augur (prediction markets)

As cryptocurrencies have proliferated, the market is fragmenting and bitcoin’s share has been declining (FIGURE 1).

FIGURE 1
As cryptocurrencies proliferate, bitcoin’s market share has been shrinking (%)



Weekly data through 6 February 2018. Source: Fundstrat Global Advisors, LLC

Isn’t the value of any specific cryptocurrency threatened by low barriers to entry?

Barriers to entry are low, but barriers to scale are high. Cryptocurrencies are basically open-source software that anyone can write. However, to scale and gain acceptance a currency needs three groups to invest resources: developers (who build a currency’s code), miners/validators (who unlock/verify new coins in the blockchain), and coin holders. Engaging all three groups is the hard part and should separate the serious projects from the also-rans.



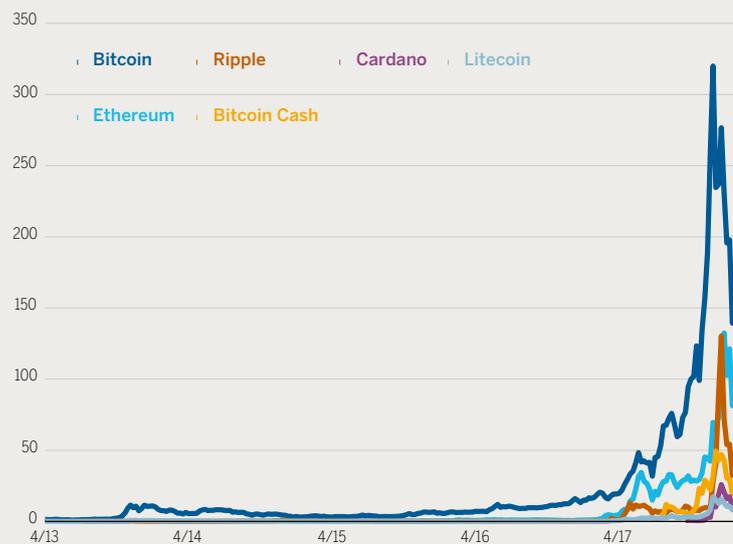
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The currencies that survive and prosper are likely to be those that provide utility exceeding their cost. The winners would probably be led by a core developer team that can create value for the key stakeholders. In this scenario, developers hope to profit from appreciation in the currency and by creating applications that can be sold to users in that cryptocurrency’s ecosystem (similar to selling an app in an online app store). Holders would buy currencies they believe are likely to appreciate because of widening adoption. Miners/validators have the clearest yardstick of success: return on their investment in mining gear and energy. Programs are already available to automatically switch mining gear to the most profitable currency for mining so as to get the best return on investment.

The wild ride so far

Since their inception, cryptocurrencies have experienced extreme fluctuations in market value (FIGURE 2).

FIGURE 2
Market capitalizations of select cryptocurrencies
 (US\$ billions)



Weekly data: 29 April 2013 – 12 February 2018. Source: Fundstrat Global Advisors, LLC

Advocates of cryptocurrencies contend that volatility will subside once the market has shaken out, establishing clear winners, and the regulatory and operational kinks impeding widespread adoption have been worked out.

How “hackable” are cryptocurrency accounts? What about security?

Owners of cryptocurrencies access their holdings by matching a private alphanumeric key (password) to a public key on the blockchain ledger. The same sorts of security measures that owners of any important digital data should take — encryption, multi-factor authentication, installing antivirus software, safeguarding passwords, etc. — are relevant to protecting cryptocurrency accounts.

Key participants in the cryptoassets ecosystem

- **Buyers/sellers** — People and merchants exchanging cryptoassets for goods or services, as well as pure speculators. When a buyer purchases a bitcoin, it is stored as an encrypted alphanumeric key in a digital wallet.
- **Miners** — In traditional fiat money systems, governments simply create more money as needed. But cryptoassets aren't created out of thin air — they are "mined." Computers around the world mine for coins using their computing power, to verify the transfer of coins between parties, and calculate what gets written in the blockchain ledger. Not all cryptoassets support mining.
- **Validators** — Verify the transactions computed by other miners. Verification requires consensus; validators can reject a transaction if their own computation does not match what a miner published.
- **Exchanges** — Marketplaces that allow people to buy or sell cryptoassets using either traditional fiat currencies or other cryptoassets. These platforms look a lot like a typical market maker. At this writing there are well over 100 exchanges globally.

Although there have been no known cases to date of a hacked cryptocurrency blockchain ledger, there have been cases of crypto exchanges being hacked and cryptoassets stolen from them. (This could be likened to a bank robbery: The dollars or yen or euros retain their value but possession changes.) For example, an estimated ¥60 billion (approximately US\$530 million) in tokens of NEM, a cryptocurrency, were stolen from Coincheck, a Tokyo-based exchange, in January 2018. And if an account holder's private key is stolen, the thief could access the account.

How are governments and regulatory agencies thinking about regulation?

Financial authorities around the world are grappling with how to deal with cryptoassets. Responses have ranged from encouragement (Japan) to various stages of bans and loosening (China, South Korea). In the US, an interagency group of regulators is reviewing the impact of cryptocurrencies on the country's financial system and considering measures to prevent anonymous transactions. The International Monetary Fund has called for global coordination among regulators given the potential for money laundering, terrorist funding, tax evasion, and fraud.

Blockchain: The real deal?

While the viability of cryptocurrencies as a replacement for traditional currencies is vigorously debated, there is a much more widely held belief that blockchain, the underlying technology, holds great promise for a range of applications beyond currencies. Blockchain technology has become a developer platform, allowing it to be used beyond the creation of digital cash to build new kinds of decentralized apps and cryptoassets.

Activities now burdened with high transaction and reconciliation costs — for instance, cross-border trade and financial recordkeeping — could be meaningfully streamlined. Governments could use blockchain to issue licenses, record mortgage deeds, and collect taxes. Health care organizations could store and manage patient records. Logistics and transportation firms could coordinate activities in real time via distributed spreadsheets.

What is a blockchain?

A blockchain is a peer-to-peer electronic network that relies on computational proof instead of a central authority to authenticate transactions. Verification is decentralized across the network and does not reside in any single location or authority. In other words, software replaces a central authority as the source of trusted validation. In currency applications, blockchain technology performs the authentication, validation, and transfer functions of banks, without the need for clearing houses or independently maintained ledgers. Unique, encrypted passwords identify each party in a transaction.

A less technical way to describe blockchain is as a database or ledger that maintains a continuously growing list of data records or transactions. It's like a spreadsheet, but one with special qualities that potentially improve on traditional databases. Although many details still need to be worked out for broader adoption, advocates cite the following as advantages:

- **Transparent** — Servers, or nodes, maintain the entries (known as blocks) and every participant can see the transaction data.
- **Secure** — The database is designed to be an immutable and irreversible record. Posts to the ledger cannot be revised or tampered with — not even by the database's operators.
- **Efficient** — Entities unknown to each other can transact directly, without the costs and friction added by an intermediary. Conflicting or double transactions do not become written into the data set and transactions occur automatically within a single shared ledger; there is no need for manual reconciliation.

Potential applications of blockchain beyond currency: A sampling

- Management of health care records
- Transaction platforms (e.g., securities trading, cross-border payments)
- Asset custody
- Global trade tracking and management
- Decentralized database for global identity verification, real estate titles
- Distributed accounting ledger for core bank operations, enterprise-wide resource planning
- Computing infrastructure
- Development platforms
- Peer-to-peer networks

Leading the way in blockchain implementation: Financial institutions

Organizations across many industries are exploring how blockchain might improve their operations and profit margins, but activity has been particularly intense in the financial services sector. Although no “killer app” has yet emerged for large-scale use of blockchain technology, many financial institutions are excited about its potential to reduce both operating and capital costs. Industry analysts estimate potential reduction of 25% – 30% in back-office clearing and settlement costs related to trading businesses.³ Implementation of blockchain could also speed up settlements. T+3 (or even T+30 for some kinds of transactions) could go to T+0. Capital costs may also drop if automation of settlements reduces the collateral that middlemen hold on behalf of banks.

Although blockchain could disrupt many parts of today's financial system (see sidebar), we think it is unlikely to disrupt payment networks in the near to medium term. Currently, incumbents in this space provide much cheaper and faster execution of transactions, as well as transaction guarantees, and are widely accepted by merchants globally.

Many of the best-known ledgers — Bitcoin, Ethereum, Ripple — are open to the public, but non-public chains may be more appropriate for use by banks. The regulatory and privacy aspects make purely public chains difficult. In most cases banks need to know the other participants in the chain for compliance reasons and to protect trade secrets. For their part, regulators want a system that facilitates auditing of financial activity. Private blockchains could be built to include specific regulatory requirements for banks.

Considerations for investors: Q & A

Are institutional investors investing in cryptoassets and blockchain?

From our vantage point, institutional participation in cryptoassets appears to be limited at this point. Some adventurous asset owners are dipping their toes in the space and gaining limited exposure through venture-capital and hedge-fund allocations. A few hedge funds and small asset managers are beginning to launch funds dedicated to cryptoassets.

³Source: Autonomous Research



The infrastructure for investments by institutional asset owners is gradually falling into place.

About the authors

As a member of Wellington's Finance team, **Matt Lipton** conducts fundamental analysis of global equity investments. His focus is on nonbank companies in the financial technology, payment, business service, and consumer financial subsectors. **Ranjit Ramachandran**, a member of the Growth Opportunities team, conducts fundamental analysis on small- and mid-cap global equity investments across various sectors, including information technology. **Matt Ross** researches a broad range of investment opportunities and currently works on the Technology Team with a specific focus on payments, financial technology, business services, and IT services. **Lee Saba** leads teams responsible for the firm's electronic trading functions.

How would an institutional investor gain exposure?

The infrastructure for investments by institutional asset owners is gradually falling into place. Funds dedicated to cryptoassets have been created. Futures contracts were launched by the Chicago Mercantile Exchange and Cboe Global Markets in December 2017. And starting in January 2018, Weiss Ratings began to assign ratings to several cryptocurrencies. Clearly, though, cryptoassets markets have a long way to go before their regulation, depth, breadth, and liquidity approach those of the markets for stocks, bonds, and derivatives.

How might investors leverage this theme, besides direct exposure?

Potential beneficiaries of wider adoption of cryptocurrencies and blockchain technology include computer chipmakers, coin exchanges, IT consultants, energy producers, and businesses investing in blockchain to improve their operations. Potential candidates for underweighting include transaction intermediaries such as money-transfer firms.

How might cryptoassets fit into an asset allocation framework?

Investors considering an allocation to cryptoassets must deal with the same classification challenges as regulators: Are cryptoassets a currency, a commodity, or an asset class like equities and bonds? How would they be custodied, accounted for, and insured? Given the extreme volatility to date, how might cryptoassets' returns correlate with those of other allocations?

What is Wellington doing?

Our stance on cryptoassets is cautious, given the newness and volatility of the space and the many security and investing-infrastructure questions still to be resolved. That said, some of the firm's investment teams are evaluating the potential inclusion of cryptoassets in client portfolios, and our trading systems have been updated to enable trading in bitcoin derivatives. Portfolio teams would only invest in cryptoassets if explicitly permitted by client guidelines.

Various Wellington teams are already positioning portfolios to take advantage of mining and blockchain implementations by, for example, investing in select chipmakers making components for mining equipment.

As Wellington analysts dig deeper into the investment potential of cryptoassets and blockchain implementation for client portfolios, we anticipate sharing their insights in future publications. ■

All investing involves risk.

If an investor is in any doubt as to the suitability of an investment, they should consult an independent financial adviser.

Risk to capital

Investment markets are subject to economic, regulatory, market sentiment, and political risks. All investors should consider the risks that may impact their capital, before investing. The value of your investment may become worth more or less than at the time of the original investment.

Past performance is not a reliable indicator of future results and investments can lose value.



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