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Bitcoin

Digital Gold and the Barriers to Institutional Ownership

Once seen as novel and speculative, bitcoin is growing into its role as a store-of-value subject to the same criteria as traditional currencies. We examine both the investment case and the evolving narrative of bitcoin—along with the current limitations to its ownership.

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DIGITAL GOLD

The prevailing bitcoin narrative had likened the cryptocurrency to tulip mania—in other words, a speculative bubble—but that narrative is shifting from tulip mania to digital gold. Proponents argue that bitcoin possesses and even enhances characteristics inherent in a store-of-value (SOV): durability, portability, fungibility, verifiability, divisibility, and scarcity. The one characteristic that bitcoin clearly still lacks is longevity (compare its 12 years to gold's millennia). Despite this—and despite current limitations to institutional adoption—we believe bitcoin's absolute digital scarcity, which is enshrined in its codebase, could enable it to overtake gold as an SOV.

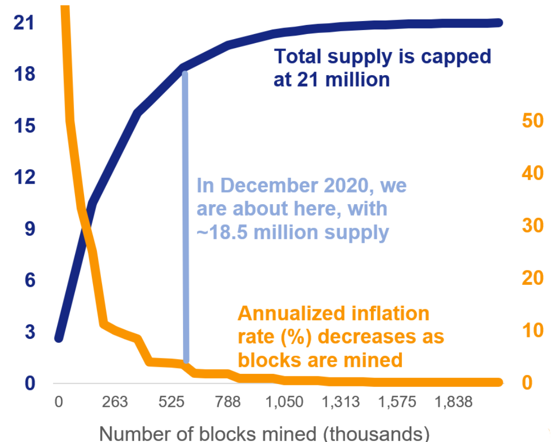
IMPORTANCE OF SCARCITY

A difficult-to-produce asset retains purchasing power. Dr. Saifedean Ammous, the economist who literally wrote the book on bitcoin, promulgated the idea that scarcity is the most important of the characteristics inherent to an SOV. This idea is supported by analyzing the stock-to-flow ratio across commodities. The ratio measures the number of years it will take for incremental production (flow) to exceed the total above-ground supply (stock) excluding production that has been consumed. If you want your asset to maintain its purchasing power, then it should be difficult to produce. If an asset is easy to produce then capital will be invested to increase production, which results in a supply increase and lower prices. Figure 1 depicts the ratios of various commodities against bitcoin and shows that bitcoin is due to overtake gold in this metric.

Bitcoin was designed to be scarce. Bitcoin was programmed to be an absolutely scarce asset with a logarithmic supply schedule and a cap of 21 million. Figure 2 shows this idea of stock-to-flow in another way, charting bitcoin's annualized inflation rate (flow) against the total mined supply (stock). Approximately every 4 years (210,000 blocks), issuance undergoes a planned supply shock known as "the halving" where the total number of bitcoin that can be mined per block is reduced by 50%. A block is a link on the blockchain that processes and stores transactional data. A block is mined, on average, every ten minutes by specialized mining

Figure 1: The **stock-to-flow ratio** measures the difficulty to produce a commodity relative to its existing supply. A higher ratio indicates scarcity.

Figure 2: Bitcoin was programmed to be scarce.



hardware. Due to halvings, the stock-to-flow ratio increases exponentially as the stock approaches the supply limit of 21,000,000 and the flow approaches zero.

Price advances followed past halvings. Following previous halvings, the diminished flow of mined bitcoin pushed the market into a disequilibrium that resulted in significant price advances. This process and the accompanying volatility could only occur with an SOV that is still early in its adoption phase. Thus, bitcoin is viewed as a risky financial asset, but this risk could reap a big reward in the form of an asymmetric return distribution should the aspirational SOV become an entrenched as a form of "digital gold." Fund flows shown in Figure 3 support that this may be increasingly likely as the digitally native millennial generation seeks out a digital SOV. The third bitcoin halving occurred in May 2020, which could explain the recent price advance. If scarcity, as measured by stock-to-flow, is the primary driver of value then one would expect bitcoin to overtake gold's market capitalization by the next halving, which is estimated to occur in 2025. Today bitcoin's market capitalization is approximately 4% of gold's.

BARRIERS TO ENTRY

Entrenched network security differentiates bitcoin. It is desirable for an SOV to be held without risk of seizure and transacted with the assurance that when it leaves your hands, it will safely reach the intended recipient. The process for mining bitcoin is known as proof-of-work and requires computations called hashes to solve for each block. The total computational power, or hash rate, of miners assures network users that they can send their wealth securely through time and space. The larger the network's hash rate, the more secure the network.

Over $7 billion has been invested in Bitcoin network security since 2013. This massive and distributed capital investment in security can be observed in the advance of the Bitcoin hash rate in Figure 4, which has grown at a faster rate than the bitcoin price since inception. These real-world mining assets are unique to the Bitcoin network and cannot be copied and pasted, nor can they be utilized to mine most competing cryptocurrencies. This combination of digital scarcity and entrenched network security differentiates Bitcoin from competitors.

Bitcoin is a distributed and opensource protocol. A lack of centralization facilitates immutability of the ledger. Bitcoin is an opensource protocol that lacks a figurehead or foundation capable of altering the code without the support of its userbase. This was best exemplified in 2017 when entrenched bitcoin companies attempted to hard fork the network (put most simply, change the protocol) but failed to implement the Segwit2x code upgrade due to user pushback. This is not true of competing cryptocurrencies such as Ethereum where hard forks have been coordinated by a figurehead to reverse transactions.

FIAT MONEY IS NOT SCARCE

Bitcoin halvings stand in contrast to the recent surge in U.S. money supply. The COVID-19 pandemic served as a trigger for unprecedented policy response as economic stress forced central bankers and

Figure 3: Late-2020 fund flows into Bitcoin and out of Gold may support the theory that bitcoin could become entrenched and therefore a less risky SOV.

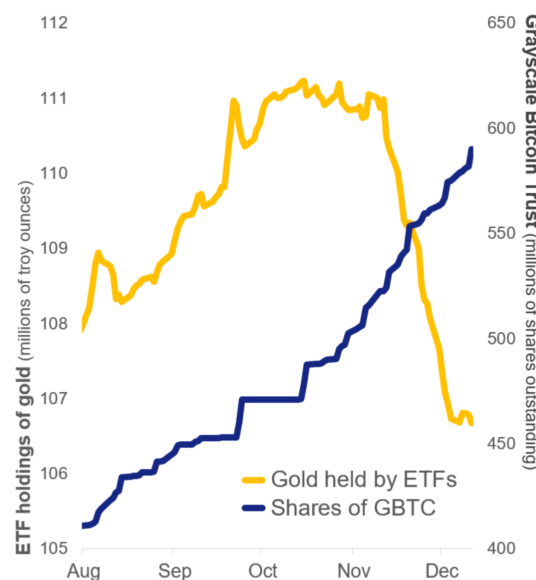
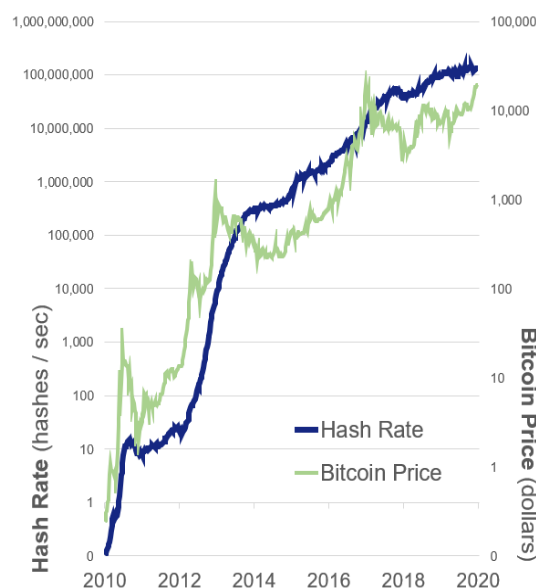


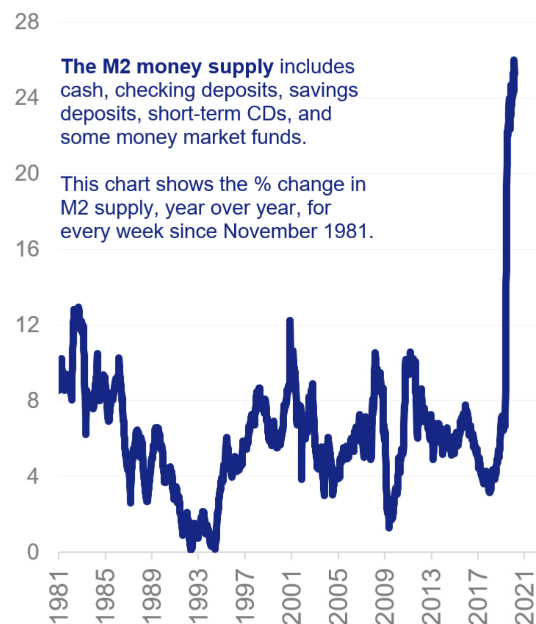
Figure 4: The Bitcoin hash rate has outpaced the bitcoin price since inception. Hash rate measures the processing power available to perform computations that ensure security.



government policymakers to stave off deflationary pressures by implementing expansionary policy financed through debt creation. The Congressional Budget Office projects a federal budget deficit of $3.3 trillion in 2020 with central bankers largely on the hook to foot the bill. The broad stock of U.S. money, M2, grew by 25% in one year (Figure 5). M2 has not grown at such a rate since WWII when growth peaked at almost 27%. Using history as a guidepost, investors may question the efficacy of unorthodox monetary policy as a solution to cure debt-ladened deflationary pressures.

The stock-to-flow ratio highlights the inability of fiat currencies to preserve purchasing power. There is a dichotomy between the quantitative easing taking place across most developed markets and the quantitative tightening occurring due to bitcoin's supply schedule. It appears there is no upper limit to the supply of fiat money created by governments. As a result, the flow of fiat can approach infinity, which leads the stock-to-flow ratio to 0. In fact, it is often an explicit goal of central bankers to inflate the money supply and thereby destroy purchasing power. Would you rather keep your savings in an asset designed to be scarce and maintain its purchasing power or to lose its purchasing power? That is one way to frame the choice between bitcoin and fiat currencies.

Figure 5: The supply of fiat money in the U.S. has grown since 1981.



LIMITATIONS FOR INSTITUTIONAL INVESTORS

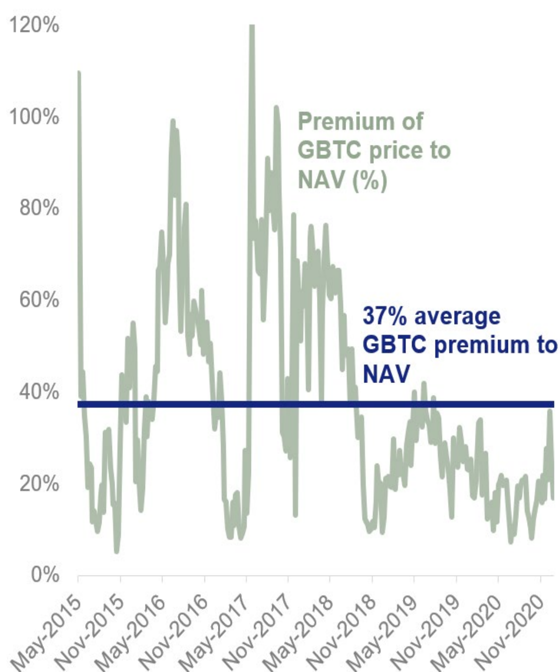
To this point we have shown how bitcoin possesses the qualities of an SOV that we listed in the first paragraph: durability, portability, fungibility, verifiability, divisibility, and scarcity. But that leaves longevity—and with a lack of longevity comes a lack of institutional participation.

Few investable products reliably track the value of bitcoin. While many asset managers have taken cracks at it, few-to-no products exist that track the price of bitcoin cleanly, making ownership and custody onerous for financial service firms. Bitwise CIO Matt Hougan recently stated, "There are no live filings for crypto ETFs, and specifically for a bitcoin ETF at this time. There are a number of filings that received disapproval orders from the SEC staff, which […] are sort of sitting on appeal." The SEC has mainly shot down bitcoin ETF proposals, citing the potential for market manipulation.

This trend seems to be shifting, though the pace differs depending on who you ask. The CME Group, a leading financial derivatives marketplace, began offering futures contracts tied to bitcoin within the last few years. Further, SEC chair Jay Clayton has said that his agency is working on regulations that might one day permit crypto versions of ETFs. While advances have been made in legitimizing the space, there is much work to be done.

One product claims to provide bitcoin exposure, but it has its share of issues. Grayscale Bitcoin Trust (GBTC) is an open-ended trust that provides titled, auditable bitcoin exposure through a traditional investment vehicle. It is the one product that is widely accessible to mainstream investors. The Grayscale Bitcoin Trust is not an ETF, despite coverage that often lumps it in with traditional exchange-traded funds. GBTC is a grantor trust, a structure often

Figure 6: GBTC has tended to trade at a premium to its underlying value (NAV).



used for investment vehicles that hold physical commodities or currencies. In this case, GBTC is a trust that only holds bitcoin.

A lack of regulatory guidance from the SEC makes it difficult for regulated firms to hold or custody bitcoin

Firms like Baird cannot recommend bitcoin, including GBTC. (Baird is technically able to purchase and hold GBTC, but only on an unsolicited basis.) Unlike ETFs and mutual funds, grantor trusts are not covered by the Investment Company Act of 1940, which requires a slate of investor protections. GBTC also trades on the over-the-counter market, which has less stringent participation rules than exchanges. Finally, unlike most ETFs, GBTC charges a high annual fee of 2% of assets. Though the exorbitant fee is noteworthy for the wrong reasons, it might be the requisite charge for the services Grayscale provides, which include storage, custody, and protection of bitcoin.

GBTC trades at unstable premiums to its underlying value. One of the biggest issues with GBTC is that it's the only liquid game in town for traditional financial services firms seeking exposure to bitcoin. Because of this, it often trades at massive and unstable premiums to its underlying value (NAV). As of this writing, a share of GBTC costs $39.41 but represents $30.49 in bitcoin holdings, a 23% premium. This premium can spike higher on surges in demand—on December 18, 2017, for instance, GBTC traded at a 101% premium to NAV.

Regulatory requirements make limitations difficult to overcome. One of the draws to bitcoin is the fact that it is not backed by a government. As a result, there is currently little regulatory guidance from the SEC, which makes it difficult for regulated firms (like Baird) to recommend or hold (custody) the asset. Under current rules and regulations, broker dealers are required to meet certain financial responsibility requirements that are intended to protect customers.

Custodial solutions are complex. Unlike traditional assets, such as stocks and bonds, custodial solutions for bitcoin are complex. Whoever possesses the digital private keys controls the assets. To hold and protect the digital keys, a firm needs to create a complex and cryptographically secure system, which is more difficult than custodying a traditional financial asset. Regulatory requirements make it difficult for advisors and brokers to do what is necessary to keep bitcoin and other crypto assets safe.

Virtual wallets pose a novel risk to the financial services industry. Outside of traditional banks and broker dealers, firms have created systems to hold bitcoin and other crypto currencies in a virtual wallet. In the past decade, hackers have stolen over $800 million worth of bitcoin from these wallets. Because these platforms are not governed by traditional banking systems, they do not have the same customer protections that clients often assume are in place.

Holders of bitcoin send their coins to an incorrect address either by mistake or due to a phishing attempt, which is impossible to reverse due to the immutability of the digital ledger. As a result, all transactions are final, and a holder is responsible for storage and sending.

 please see important disclosures on page 5

AN EVOLVING LANDSCAPE

We are closely following the investment case for bitcoin. We will continue to track ways to responsibly gain exposure to bitcoin. There seems to be a material demand for this as the investment case deepens. As the landscape for digital currencies evolves, we are hopeful that an ecosystem can be created that allows for custodial services comparable to what clients have become accustomed to across traditional assets like stocks and bonds. New products for separately managed accounts have been launched by firms such as NYDIG and Fidelity, and we believe that market demand for a bitcoin ETF will eventually result in the creation of an investable product.

Market demand for a bitcoin ETF may eventually result in the creation of an investable product

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