Cryptocurrency 101

A Primer

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The cryptocurrency market, an estimated $2.4 trillion in size, has attracted a great deal of attention in the media, sparking interest among millions of participants.

Despite the excitement and hype surrounding cryptocurrency, we do not believe it represents an asset class appropriate for inclusion in a diversified portfolio designed for long term returns, for the following reasons:

Unreliable Diversification

Bitcoin, the largest and most established crypto asset, has experienced sizeable price gains over the past five years, but it has exhibited extreme volatility, at a level well beyond what has been experienced by stocks and gold. The evidence to date indicates that Bitcoin does not provide a reliable diversifier to a standard portfolio nor a stable store of value like gold.

Speculative Valuation

Bitcoin and other cryptocurrencies generate no income in the form of interest or dividends. There is no reliable or accepted methodology for valuing cryptocurrencies. Prices are driven by speculation: as the prices rise, it creates a momentum that draws in other investors wanting to participate and ride the wave, and not risk losing out.

Limited Regulation

The cryptocurrency market and the exchanges that intermediate transactions are unregulated and not subject to government oversight from investor watchdogs such the SEC or FINRA. As a result, participants are not afforded the same safeguards that protect them when participating in the traditional capital markets, and fraud, scams and price manipulation are commonplace.

Complex Ecosystem

The cryptocurrency ecosystem is complex with an arcane vocabulary. Thoughtful investing in the market requires a considerable investment of time and technology skills. Balanced and complete information is difficult to obtain or non-existent.

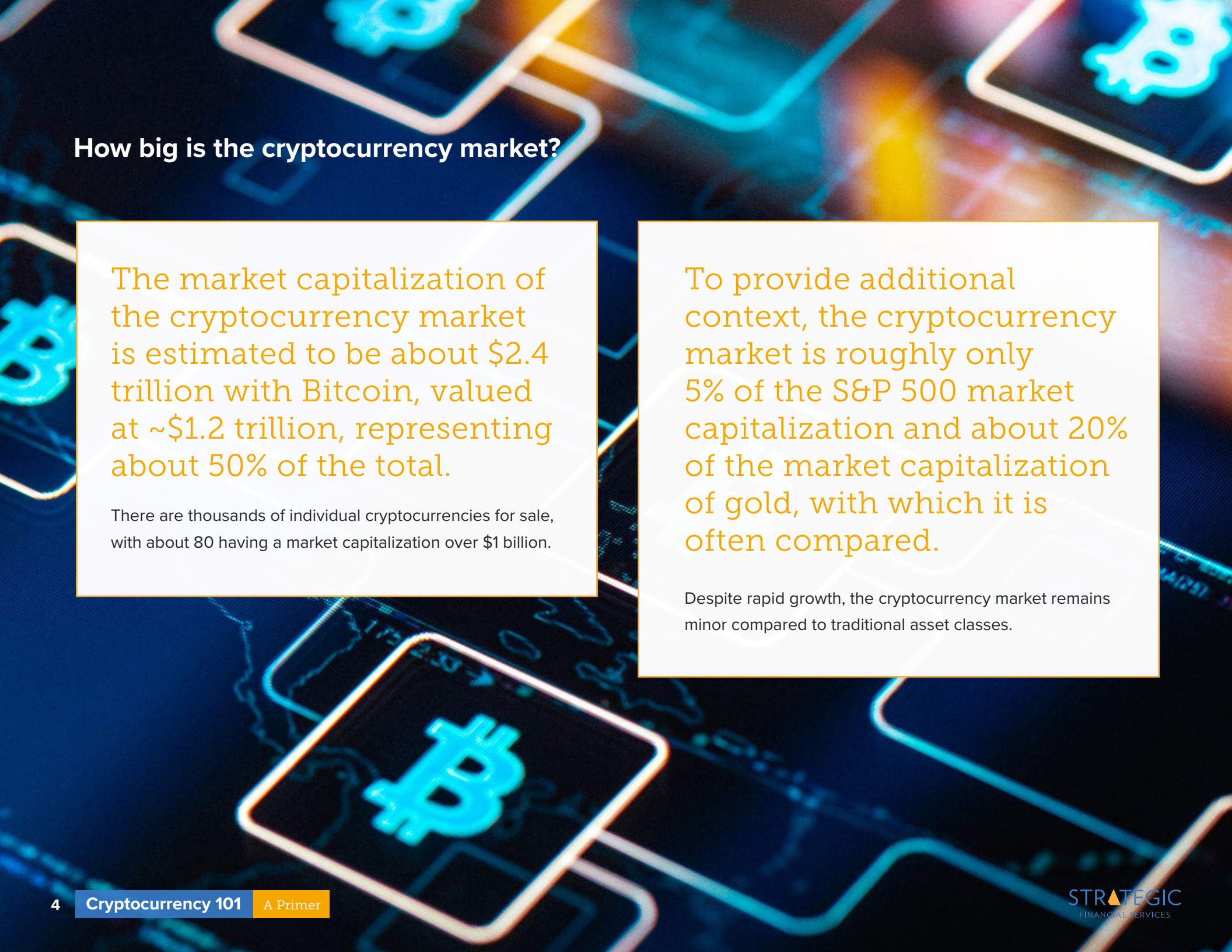
No Safety Net

The uninformed can be subject to unintended risks. Cryptocurrency transactions are irreversible. For example, many individuals have been defrauded into transferring cryptocurrency from their account to fraudulent counterparties or have lost the password to their account and become permanently locked out.

The purpose of this "primer" is to provide a basic overview of the cryptocurrency market and how it works, to define some of the key terms that are part of the cryptocurrency vocabulary, to identify the inherent risks involved in participating as an investor, and to provide our recommendations on how it should be considered.

The cryptocurrency market has garnered tremendous media and investor attention over the past few years; its gyrations are covered daily by CNBC, the *Wall Street Journal*, and other media outlets. Cryptocurrency and its role as an investable asset class are subject to active debate.

Some supporters have called it the greatest technological breakthrough since the internet. The naysayers have termed it a "speculative bubble" that is based on thin air. In any event, the amount invested in cryptocurrencies has grown rapidly, and many traditional financial institutions are evaluating cryptocurrency and its appropriateness as a suitable investment class as the market evolves from what could be considered the infancy stage.



How big is the cryptocurrency market?

The market capitalization of the cryptocurrency market is estimated to be about $2.4 trillion with Bitcoin, valued at ~$1.2 trillion, representing about 50% of the total.

There are thousands of individual cryptocurrencies for sale, with about 80 having a market capitalization over $1 billion.

To provide additional context, the cryptocurrency market is roughly only 5% of the S&P 500 market capitalization and about 20% of the market capitalization of gold, with which it is often compared.

Despite rapid growth, the cryptocurrency market remains minor compared to traditional asset classes.

Introduction to Fundamentals

The first cryptocurrency, Bitcoin, was launched in 2008, and remains the biggest in terms of market capitalization, being the most influential, and best known. “It was first launched based on the principles that first appeared in an eight-page White Paper published online by a person or group named Satoshi Nakamoto. Nakamoto (who has not been heard from since 2010) had solved two riddles that had dogged other technology experts for a couple of decades: first how to move something of value on the internet without a central intermediary; and relatedly, how to prevent ‘double spending’ of that valuable digital token. This innovation spurred development of crypto assets and the underlying blockchain technology.” (Source Gary Gensler, SEC Chair, 8/3/21 Speech).

Put more simply it is a currency designed for the internet, allowing for transactions around the globe without the involvement of banks, credit card companies or governments. Cryptocurrencies are non-governmental forms of digital cash, are not legal tender and have no physical form. Exhibit 1 on the following page shows the steps involved in a Bitcoin transaction.

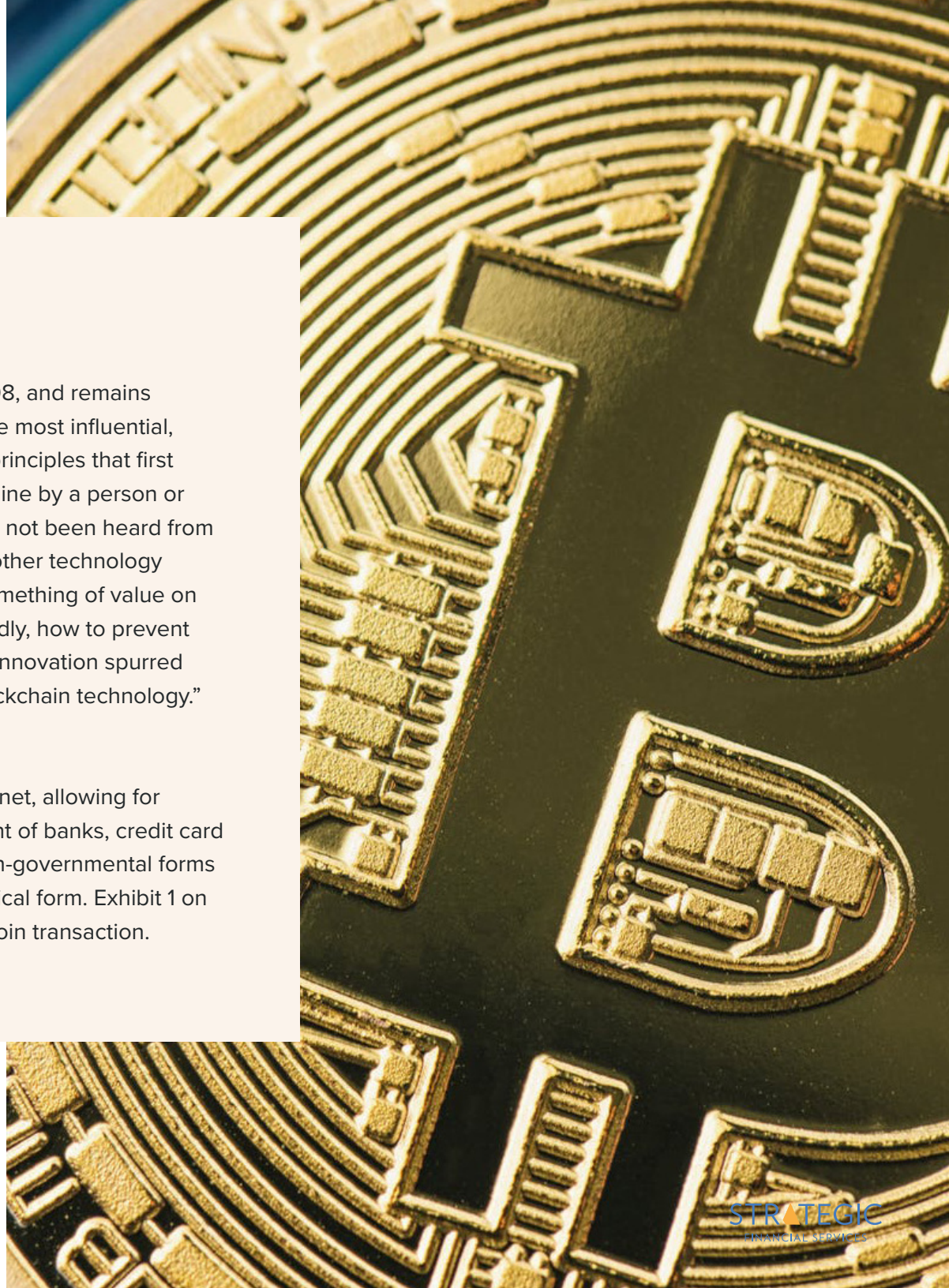
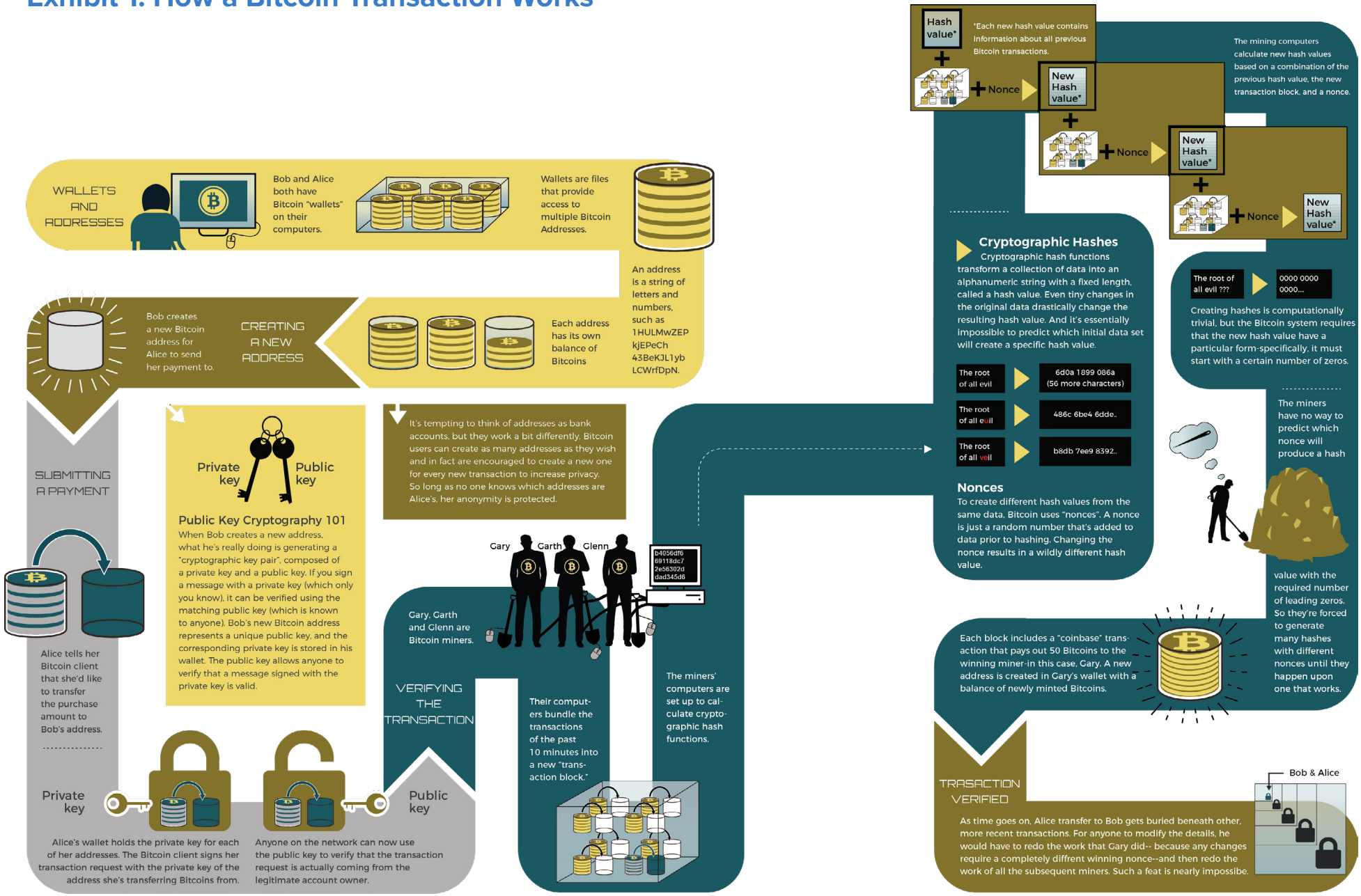


Exhibit 1: How a Bitcoin Transaction Works



"Cryptoasset Investment Thesis- Blockchain.com"

How a Bitcoin Transaction Works

Nakamoto devised a pair of intertwined concepts: the Bitcoin private key and the blockchain ledger. When you hold a Bitcoin, you control it through a private key - a string of randomized numbers and letters that unlocks a virtual vault containing your purchase. Each private key is tracked on the virtual ledger called the blockchain and stored in a virtual wallet. Wallets do not actually store the cryptocurrency itself; rather they store the cryptocurrency private and public keys - something like a PIN code to access a bank account. No two wallet addresses are the same. A private key provides a unique individual password to the individual crypto wallet address. The public key adds an extra level of security to ensure the wallet cannot be hacked. However, there have been cases where a wallet ID was intercepted and changed, and funds went to the wrong wallet.

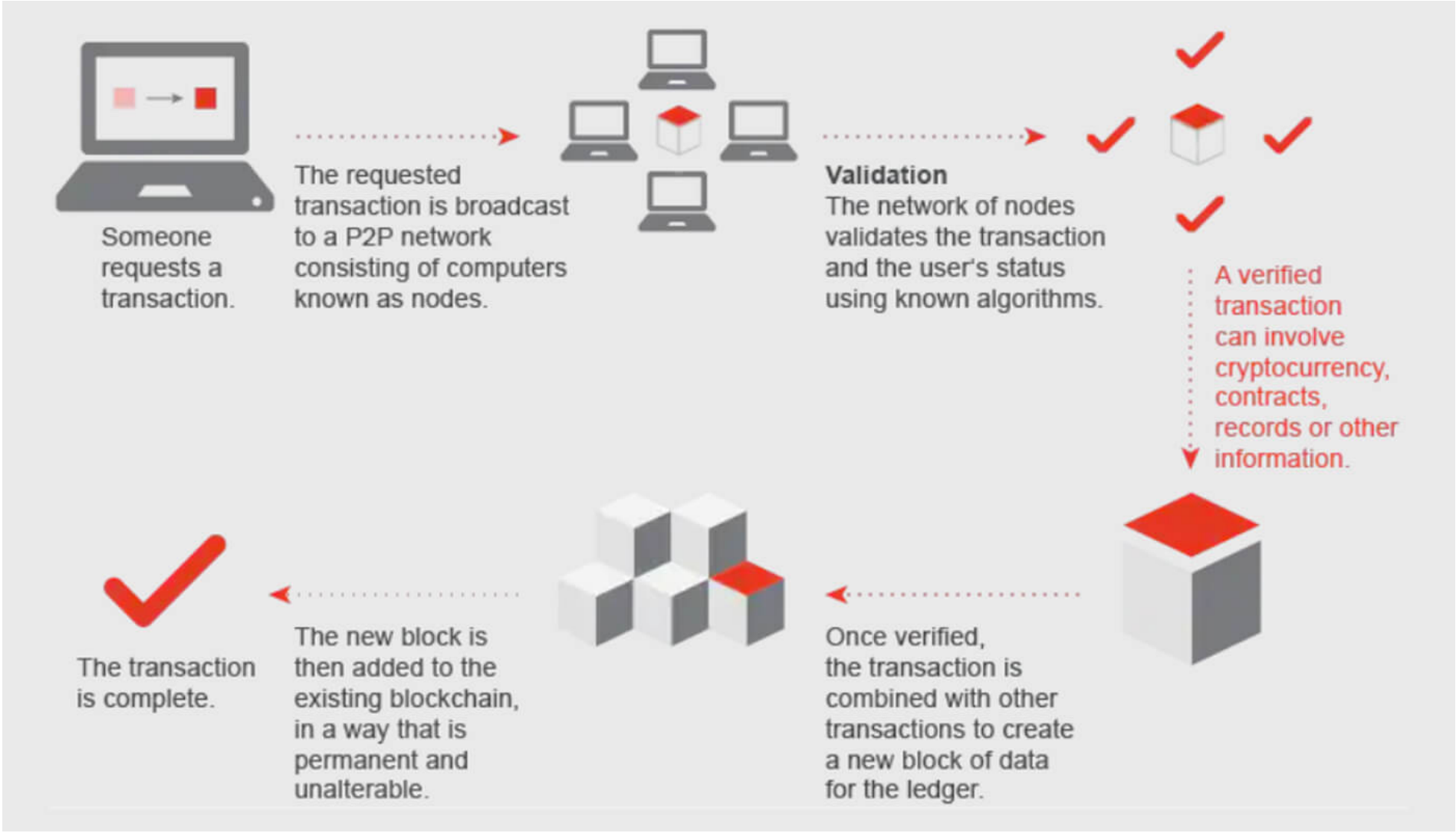
To be able to use any cryptocurrency you need blockchain, the underlying technology that is the foundational support. Using an analogy, the relationship between cryptocurrency and blockchain is like the relationship between email and the internet: to be able to receive email you need the internet. Similarly, to be able to use any cryptocurrency you need blockchain technology that supports cryptocurrencies. It is an open source, public recordkeeping system operating on a decentralized computer network that records transactions between parties in a verifiable and permanent way. Blockchain provides accountability, as the records are intended to be immutable, which presents applications for business beyond its role in cryptocurrency. The diagram shown in Exhibit 2 illustrate how blockchain works.

The cryptocurrency blockchain is maintained by a community of “miners” that are backed by millions of computers around the world. Every Bitcoin transaction must be added to the blockchain, the official public ledger of all Bitcoin transactions, to be successfully completed or valid. The work of validating transactions and adding them to the blockchain is done by miners, who operate powerful computers that make up and connect to the network. They compete to solve the equations required to validate and enter the new transaction.

Miners spend vast amounts of computing power and energy doing this for financial reward: with every block (a collection of transactions not exceeding 1MB in size) added to the blockchain comes a bounty called a block reward (currently 6.25 Bitcoin, as an example), as well as fees sent with the transactions that were included in the block. For this reason, miners have a financial incentive to prioritize the validation of transactions that include a higher fee. For someone looking to send funds and get quick confirmation, the appropriate fee to include can vary greatly, depending on several factors. While the fee does not depend on the amount being sent, it does depend on network conditions at the time and data size of the transaction.

In general, cryptocurrency transaction costs and commissions, including the miners’ cut, are significant and lack the transparency of more developed markets. Fees can be charged by the exchange, brokers, or other intermediaries where transaction costs can vary widely, in addition to network fees.

Exhibit 2: How Blockchain Technology Works



"Source- PwC"

How are cryptocurrencies valued?

The answer is that there are no reliable or accepted methodologies for valuing cryptocurrencies. Uncertainty over their classification complicates crypto valuation efforts. Debate has ensued as to whether they are currencies, commodities, securities, a hybrid, or none of the above.

> Bitcoin has often been compared to gold and even been given the name "digital gold." Some investors have used Bitcoin as a replacement for their gold allocation. However, gold has important investment properties not shared by Bitcoin: for example, a physical nature, industrial uses driving demand, and a long history as a store of value and medium of exchange.

Some crypto participants believe the value of cryptocurrency is derived from the security of the underlying blockchain technology, the lack of governmental control and the technology that limits the creation of additional units. For example, there are 18.5 million Bitcoin tokens in existence (they are divisible out to 8 decimal points), and only 21 million will ever exist, with all Bitcoins to be mined by 2140. This is based on the work of Nakamoto, who set this artificial scarcity at Bitcoin's inception. However, beyond Bitcoin, the supply of most cryptocurrencies is determined by insiders, based on random rules that can be used to increase supply. Many individuals have become drawn to cryptocurrency as an alternative to traditional investments, given the opportunity for significant returns despite highly volatile price performance and innumerable risks not encountered in stocks and bonds. The possibility of large gains has fueled speculation.

As the prices of these cryptocurrencies rise, it creates momentum that draws in others wanting to participate in an evolving field and ride the wave.

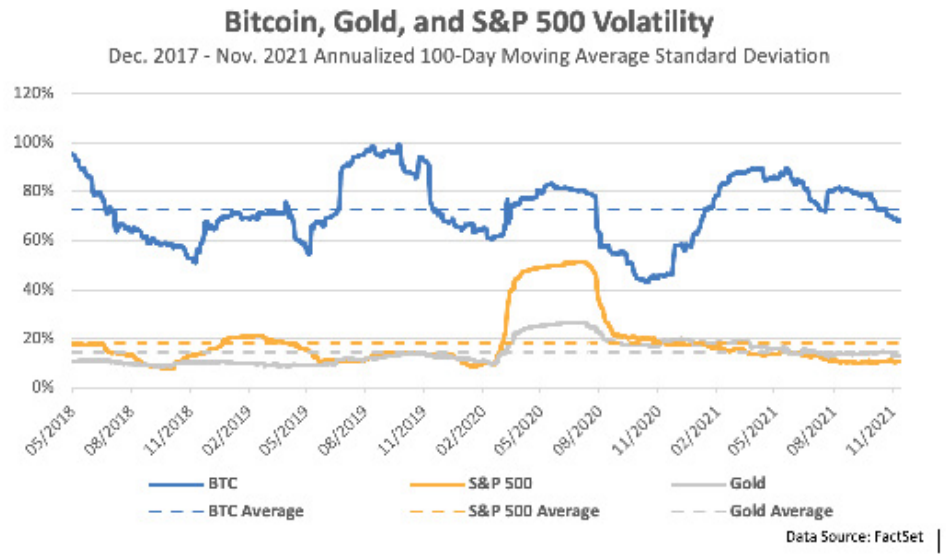
The Cryptocurrency Market: Our View

Despite the excitement and hype surrounding cryptocurrencies, with tens of millions of participants, we do not believe it currently represents an asset class appropriate for inclusion in a diversified portfolio designed for long term returns. The market has been compared to the "Wild West" by the Chairman of the SEC. Regulatory oversight which provides the safety net that underpins the traditional securities markets does not yet exist in the cryptocurrency space. However, the SEC is studying the market, requesting comments on various areas of operation, and most likely will be introducing regulatory measures over the next year to better protect investors. The major risks we have identified are described as follows.

The prices of Bitcoin and other cryptocurrencies are extremely volatile as shown in Exhibit 3. Only a fraction of the Bitcoin supply actually trades on exchanges; most of it is kept off the market in what are termed "cold wallets" for secure storage. In effect, due to the limited supply, it has the characteristics of a thinly traded stock. There is some evidence that ownership of cryptocurrency wealth is highly concentrated, with less than 0.5% of the addresses owning 85% of all Bitcoins. There is also evidence based on SEC pronouncements, press articles and chat rooms that those holding large concentrations of Bitcoins and other cryptocurrencies participate in price manipulation.

Cryptocurrencies are subject to significant underlying liquidity risk given thin trading markets, and the fact that, unlike traditional currency, no individual or company is required to accept it for payment. They also generate no cash flow and, as discussed previously, there are no reliable or accepted methods for valuing cryptocurrencies.

Exhibit 3: Volatilities of Bitcoin, S&P 500, and Gold (2017-2021)

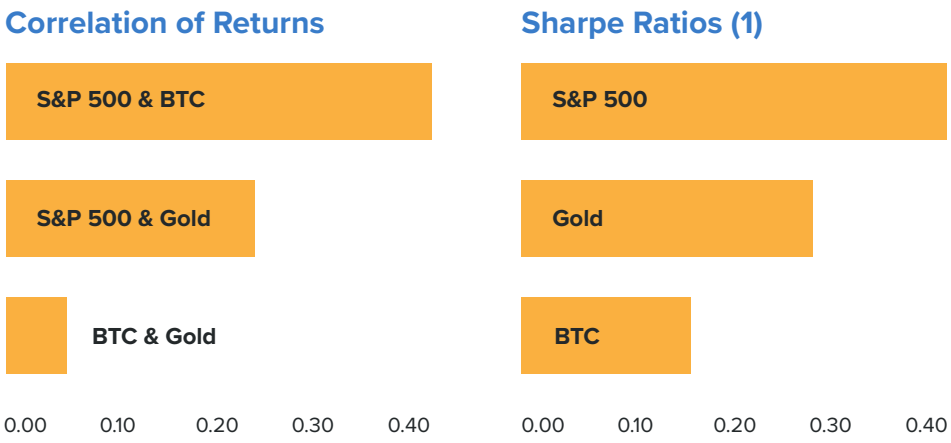


"Data Source: FactSet"

The Cryptocurrency Market: Our View (Continued)

Some proponents of bitcoin have made the argument that its inclusion in a traditional portfolio of stocks and bonds provides greater portfolio diversification. However, Exhibit 4 indicates that since 2017 Bitcoin has exhibited a much higher correlation to the S&P 500 than gold, and risk-adjusted returns (using a Sharpe Ratio) are lower than both the S&P 500 and gold.

Exhibit 4: Correlation and Risk Adjusted Returns



(1) The Sharpe Ratio is a measure of returns adjusted for risk. The higher The Sharpe Ratio for a particular asset class, the better it's returns have been relative to the risk taken.

Cryptocurrency exchanges that intermediate buying and selling are not regulated and have been subject to hacking.

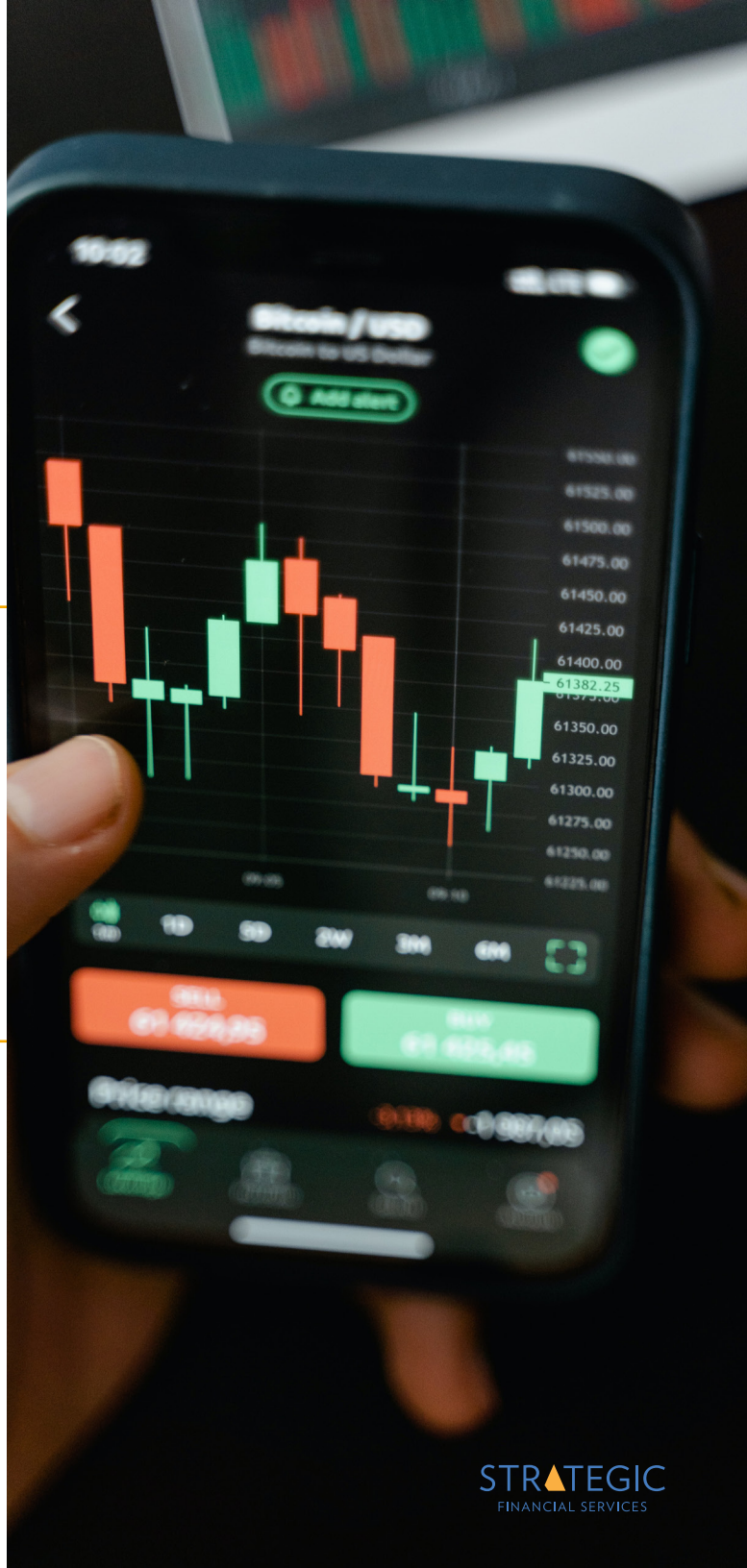
A 2020 European Union report on the topic disclosed that users had lost cryptocurrency worth hundreds of millions of U.S. dollars in security breaches at exchanges and storage providers. In 2019 thefts were reported to have exceeded $1 billion.

In August 2021, the cryptocurrency platform PolyNetwork briefly lost $600 million in customer assets to hackers. The SEC is seeking comments on cryptocurrency custody arrangements, with a goal of putting in place more protection for the cryptocurrency they hold for clients.

The exchanges and platforms involved in trading and securing investor assets typically do not have robust or easily accessible customer support. For example, Coinbase, the country's largest cryptocurrency exchange, with 68 million users, has been subject to over 11,000 complaints filed by its customers with the Federal Trade Commission. These complaints reveal a pattern of account takeovers by bad actors where customers see money suddenly vanish from their accounts. They are often unable to reach customer support and instead forced to communicate by email to determine recourse, if any. Once money leaves an account there is no governmental agency like the FDIC insuring the loss.

Cryptocurrency transactions are irreversible and once completed cannot be cancelled. If an individual enters into a transaction with an unethical counterparty, there is little recourse to recovering the funds. Many individuals have been tricked into transferring cryptocurrency out of their accounts by fraudulent email "phishing" schemes. Also, with many crypto exchanges, a user can be locked out of their account if they log in too many times with the wrong password. This is not a minor problem, and some customers have lost millions in cryptocurrency as a result. In fact, a cryptocurrency watchdog estimates that 20% of all outstanding Bitcoin is currently stranded in inaccessible accounts.

Given the complexity of the cryptocurrency ecosystem, its evolving nature and arcane vocabulary, investing in the market requires a considerable investment of time and an above average level of technological skill. It is also difficult to get rigorous, balanced, and complete information. The uninformed can be liable to considerable unintended risks.



The recent launch of the first U.S. Bitcoin linked exchange traded fund, BITO (the Fund), illustrates why investors need to understand the risks they may be taking in the crypto market arena. The debut was highly successful with $980 million shares traded the first day. It is important to note, however, that BITO invests in Bitcoin futures and does hold or invest in Bitcoin directly. It is our belief that some investors did not understand this important distinction. The BITO prospectus identifies several significant risks to be considered by potential investors including the dire warning to be prepared to lose the entire investment. Bitcoin futures are relatively new investments and have been subject to significant price volatility. In addition, the Bitcoin market is still developing and does not provide the same level of liquidity as more established futures. The fund has a high 95 basis point expense ratio as well. Investors are also subject to the cost of what is called "roll yield," the positive benefit or negative contribution caused by rolling shorter dated contracts to longer dated contracts. Since the launch of BITO other investment firms that were planning to introduce comparable products have decided not to go forward, calling ETFs like BITO too expensive, and citing the lack of liquidity in the Bitcoin futures market, as reasons.

> We will continue to follow product introductions and developments in the cryptocurrency market as regulation evolves and the market matures. As the sector continues to increase in size, more pressure will fall on regulators to ensure greater consumer and investor protections and to police market integrity.

However, in the current environment, given the extreme volatility, the lack of valuation guidelines, the absence of comprehensive regulation, complexity and the risk of multifaceted fraud, we consider purchasing cryptocurrencies to be a speculative endeavor. Those investors choosing to participate should put strict limits on their exposure.

Author: Robert Hanft, Senior Strategic Advisor

Robert (Bob) Hanft joined Strategic ten years ago and currently serves as a Senior Strategic Advisor, where he focuses on the firm's investing activities. Bob worked for J.P. Morgan over a span of thirty years, where he was a Managing Director in the Global Equities division and held a variety of roles including Co-Head of Global Equity Research. He has also had senior management positions with AIG International and Trinsum Group, an investment banking and consulting firm. He serves on several not-for-profit boards including the Bassett Healthcare Network, Pathfinder Village and the Fenimore Art Museum. Bob has a Bachelor of Arts degree in Economics from Hartwick College and Master of Business Administration in Finance from Long Island University. In 2018 he was awarded an Honorary Doctor of Laws degree by Hartwick College.

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