

STATE STREET DIGITALSM

Digital Digest

January 2022

STATE STREET[®]

Preface

An important discrepancy exists today in the financial services world; one that might be described as the difference between knowledge and wisdom. If knowledge is another word for awareness, wisdom is about applying experience and perspective toward that awareness to make sound judgments. I'm alluding to the digital economy divide, excitement around the space has some serious catching up to do with basic understanding.

To help us understand the current industry state-of-play around all things digital, State Street recently launched a survey of global institutional investors in partnership with Oxford Economics. The findings, equal parts surprising and instructive, point to an overarching theme: While enthusiasm around digital finance is running high, understanding and education remains relatively low (even among financially sophisticated audiences).

In fact, while 70 percent of respondents reported they would increase their digital allocation next year — and an overwhelming 81 percent will increase their allocation over the next two to five years — just under half (49 percent) of those surveyed said they have either moderate or expert knowledge about how blockchains underpin cryptocurrencies.

Our survey yielded several areas of interest in the digital finance space, among them:

- Misperceptions and the need for “myth-busting” around digital assets
- What will digital custody look like
- The transparency and liquidity potential of tokenization
- Regulatory harmonization
- Risk as a primary area of concern

We launched State Street DigitalSM to empower institutional investors, and their clients, to transition and thrive in the new digital economy. Our mission is to offer and operate the most digital and frictionless enterprise outsourcing platform in our industry. To realize that goal we

are working to help build the digital rails for the future — taking the broadest definition of digital assets, whether that means digital cash, central bank digital currency, stablecoins and crypto-currency, smart contracts, distributed ledger technology, or tokenization. And we are confident that State Street's size, scale and tradition of sound stewardship make us uniquely qualified to deliver a secure, safe and scalable digital ecosystem.

This investment marks a big move for State Street and is about vastly more than just cryptocurrency. Our ever-expanding team of company veterans and new hires were delighted in November to be recognized by *Asset Servicing Times* as the 2021 Industry Excellence Digital Asset Custody Initiative Award Winner. We endeavor each day to live up to that recognition as we strive to build the most innovative financial markets of the 21st century by leading the digital revolution in our industry. And we firmly believe that effort begins with education.

We hope you will think of this, State Street's first Digital Digest — a compendium of our best, most recent, and noteworthy thinking on all things digital — as something of a New Year's offering. In addition to sharing high-level findings from our survey, in these pages you'll find insight into what we know (and don't know) about

crypto assets, a guide to understanding the token economy, what digital custody may look like, a path to regulatory harmonization, as well as a useful digital finance glossary of terms everyone in our space should know.

Our intention is that this resource will help close the gap between enthusiasm and understanding as all of our stakeholders — clients, shareholders, employees, partners and communities — look ahead in 2022. The digitization of finance holds the promise to be the most transformative change our industry has experienced since the commercialization of the internet. That is, a once-in-a-generation opportunity.

Thank you for partnering with us as we help to bridge the digital economy divide together.

Sincerely,



NADINE CHAKAR
Executive Vice President and
Head of State Street Digital

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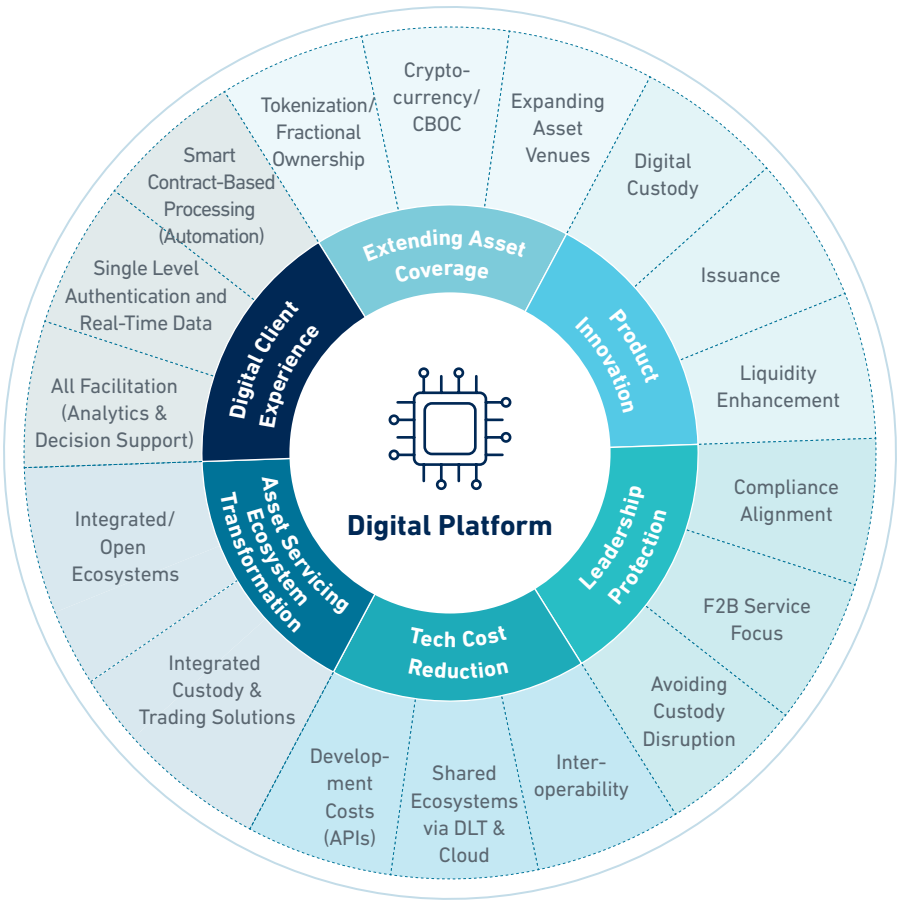
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Understanding the Rapidly Emerging Digital Ecosystem

The financial industry is fast digitizing, but knowledge may not be keeping up with activity — creating uncertainty and increasing risk (See Figure 1 “The rapidly emerging digital ecosystem”). That was among the key findings from a digital assets survey State Street recently conducted of global institutional investors with between \$1 billion and \$500 billion in AUM, which included asset management firms, insurance companies, pension/retirement funds, endowments, charities or foundations, private equity managers and hedge funds.

This qualitative survey of some 300 CEOs, heads of corporate strategy, technology and operations executives, and investment managers captured current state-of-play thinking around all things digital finance, and looked to identify and unpack misconceptions from actionable sentiment. Below are five key themes and client takeaways underscored by the survey findings. To view the survey data in its entirety, please click [here](#).

Figure 1: The Rapidly Emerging Digital Ecosystem



1 While Misperceptions Abound, There's an Opportunity for Education

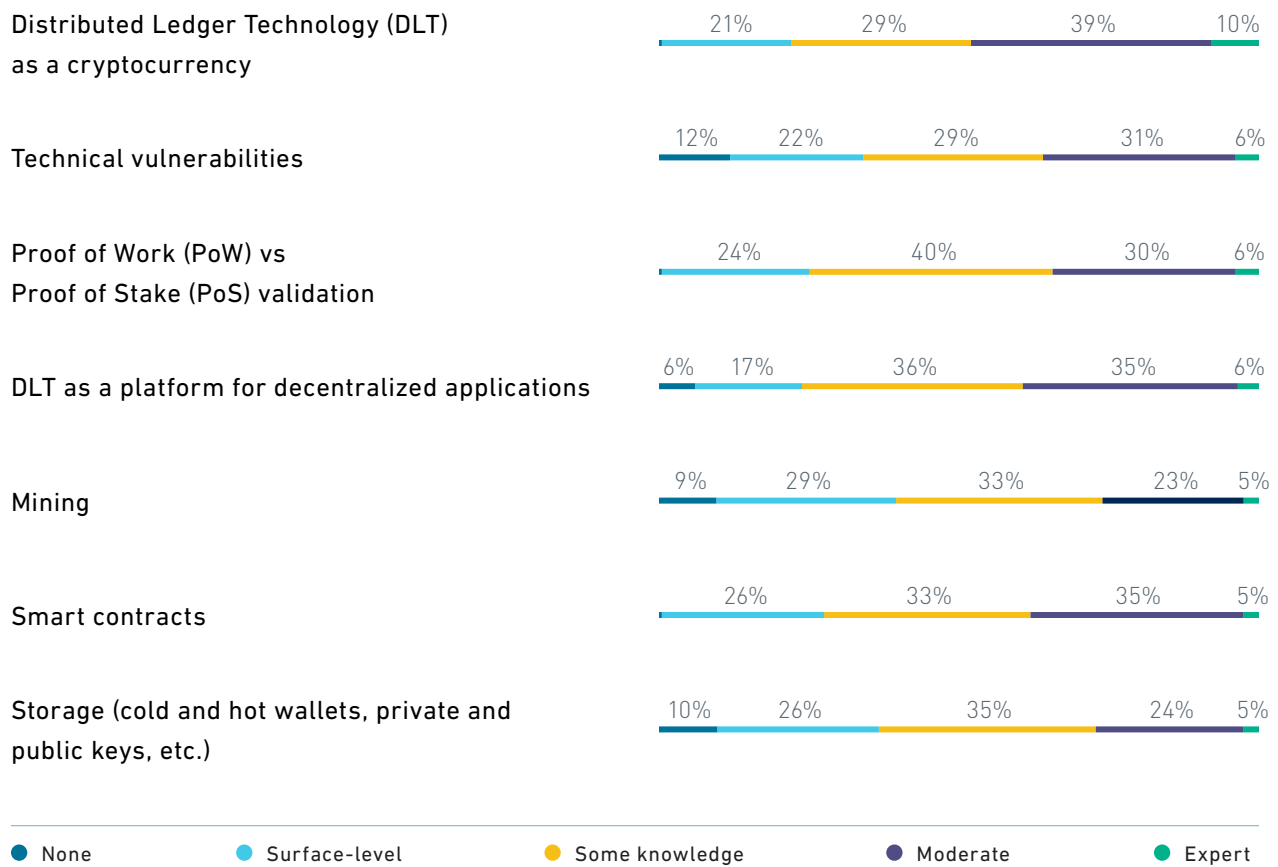
Investor enthusiasm around digital finance dramatically outpaces basic understanding. More than half of those surveyed (56 percent) expect cryptocurrencies to be a common feature of modern portfolios in the next three years — and an overwhelming 81 percent will increase their allocation over the next two to five years —

but few respondents admit to having detailed knowledge of the technology and concepts that underpin digital assets (Figure 2).

While long-term investors recognize that digital finance promises to usher in the financial services industry's most transformative change since the commercialization of the internet, widespread education is sorely needed to counteract rumor, myth and conjecture in the space.

Figure 2: Very few have expert-level knowledge of digital assets

Please rate your level of knowledge of the following concepts and terms related to digital assets



*As of October 2021, Digital Asset Investing Survey

2 An Imperative for Digital Custody: Sharing Data in Real Time

The question of what digital custody will look like, and the type of company that might be best suited to provide financial services for digital assets, is a significant industry concern, as upstart FinTech firms look to compete with longstanding players. More than half of survey

respondents (51 percent) agreed, however, that the most important quality of a digital asset custodian is the ability to share data in real time, with data exchange closely followed by the ease of onboarding new asset classes/investment products (48 percent) and robust cybersecurity (45 percent) as key attributes. A majority believe blockchain is critical for real-time settlement (Figure 3).

Figure 3: Most think blockchains are key to real-time settlement

How do you think market structure will evolve to enable real-time settlement?



*As of October 2021, Digital Asset Investing Survey

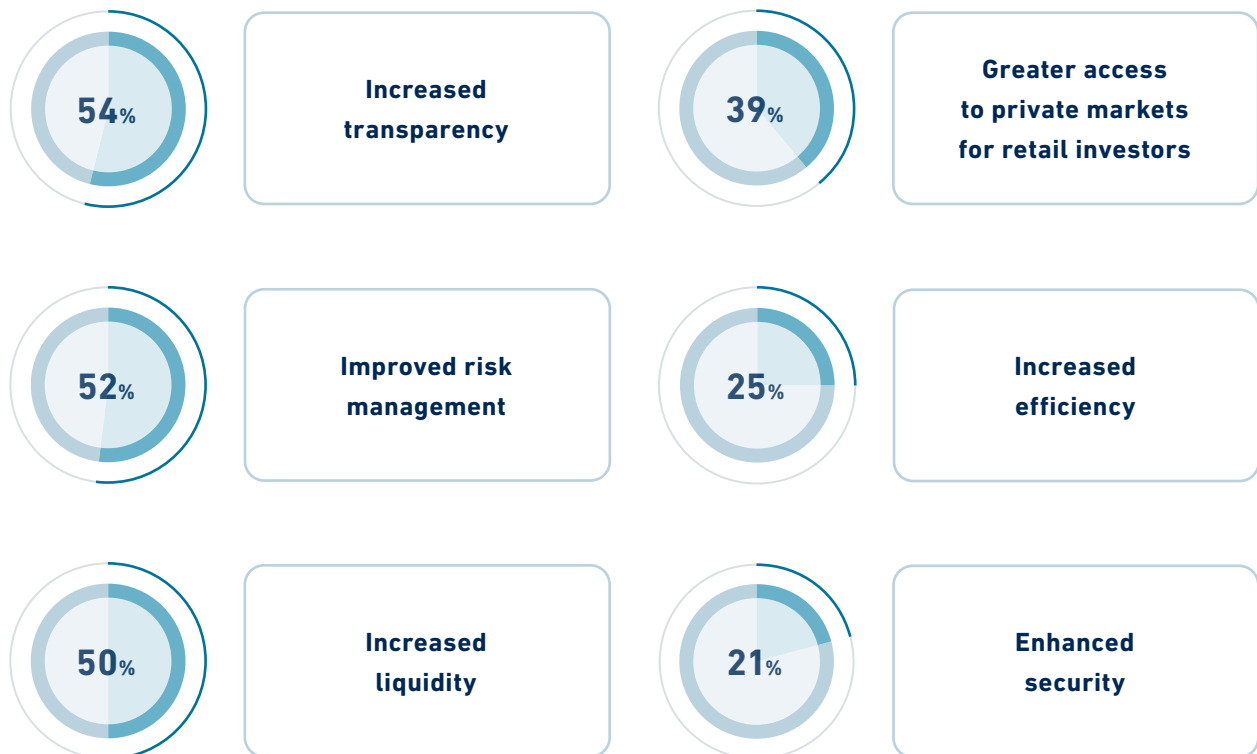
3 Tokenization as a Transparency and Liquidity Tool

A majority of survey respondents believe that the tokenization of traditional assets — that is, the issuance of blockchain tokens that represent tradable assets (e.g., company shares, commodities, art, real estate and currency, among others) — will increase transparency and liquidity (54 percent and 50 percent, respectively) (Figure 4).

Only a sliver of those surveyed (10 percent), however, think that tokenization of traditional assets will be the biggest disruptor in the digital assets space over the next few years. And it is worth noting that while tokenization of traditional assets appears likely, executives feel new digital exchanges will list traditional assets in tokenized forms (52 percent) rather than traditional markets listing digital assets (30 percent).

Figure 4: Tokenization may bring transparency and liquidity

What do you see as the primary benefits from the tokenization of traditional financial assets (select all that apply)?



*As of October 2021, Digital Asset Investing Survey

4 An Opportunity for Regulatory Harmonization

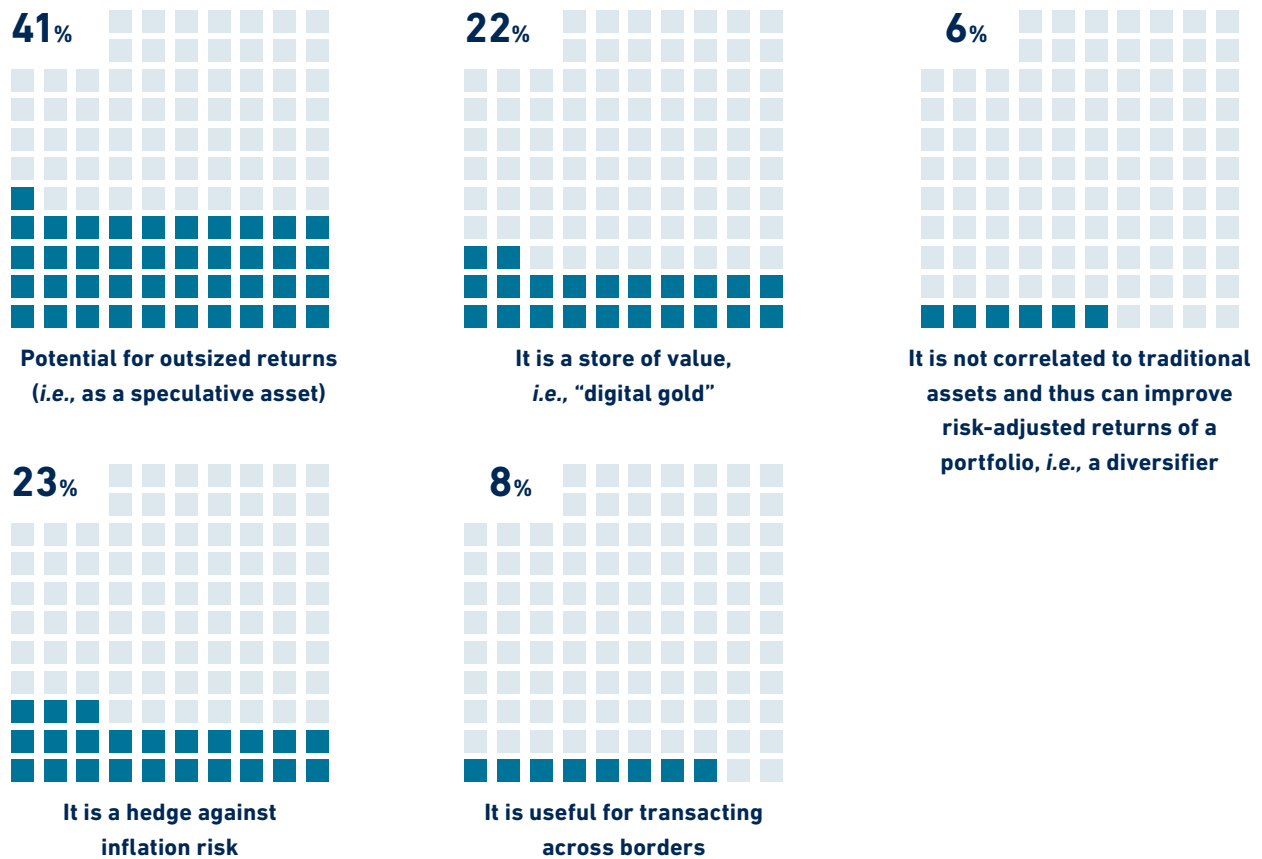
While investor appetite for cryptocurrencies has skyrocketed over the last few years, especially for Bitcoin, US regulation has lagged behind. Figure 5 shows the variety of reasons for investing in Bitcoin, the most common reason being as a speculative asset. Figure 5 make no mistake, however, enhanced legislation and

regulation are coming. Indeed, in December of last year, SEC Chairman Gary Gensler called for enhanced regulation, calling crypto an asset class “rife with fraud, scams, and abuse.”

Those surveyed recognized the regulatory environment as among their chief concerns when it comes to potentially investing in cryptocurrency, with the issue trailing just behind transparency and cybersecurity.

Figure 5: ...for its potential for outsized returns

What do you consider the primary case for having exposure to Bitcoin?



*As of October 2021, Digital Asset Investing Survey

5 Cybersecurity and Risk Remain Primary Concerns

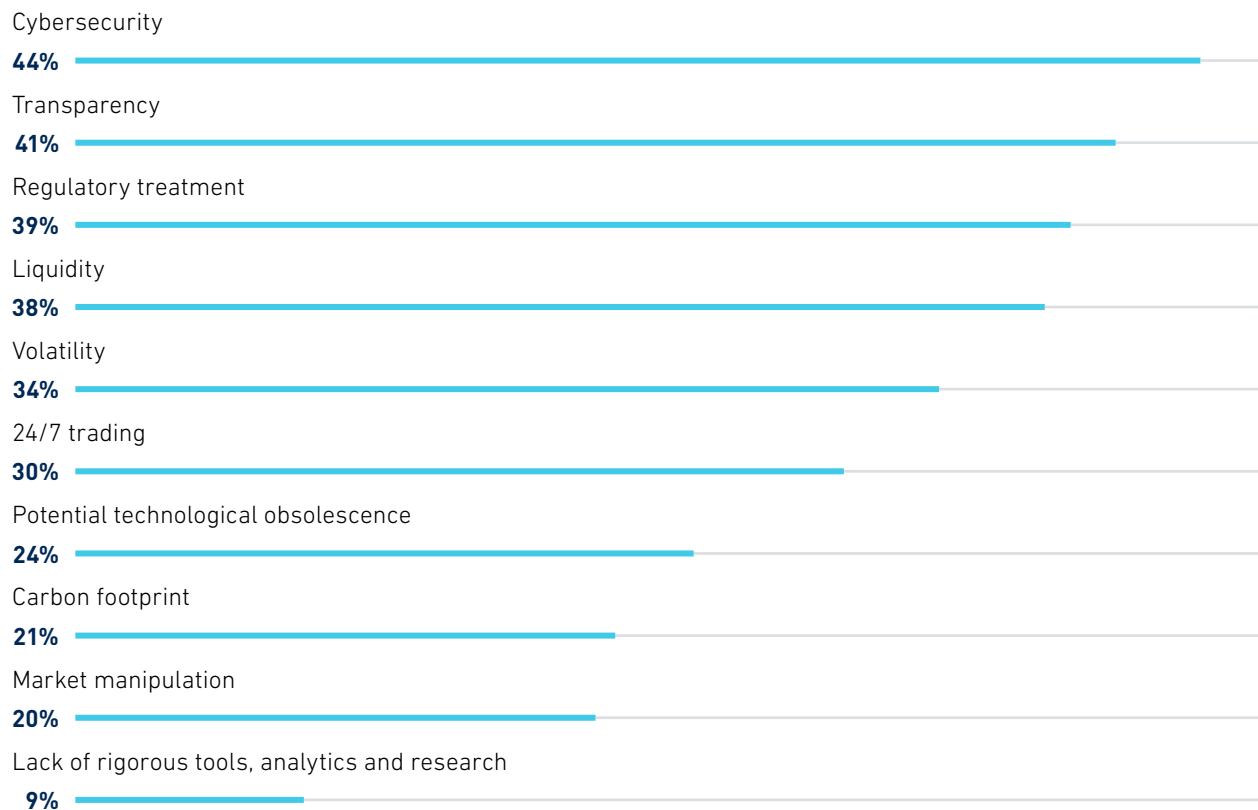
The risk implications of the new digital economy — both positive and negative — is a theme that resonates with institutional investors. Asked about their chief concern when it comes to investing in cryptocurrencies, survey participants chose cybersecurity as their top response (44 percent), with relatively few worried about the environmental implications of digital assets (21 percent) or lack of rigorous tools or research (9 percent) (Figure 6).

Correspondingly, nearly half (45 percent) cited “robust cybersecurity” as the quality that is most important in choosing a digital asset custodian.

Under the broader “risk” umbrella, more than a third (37 percent) of survey respondents feel the primary case for having exposure to crypto is as a hedge against inflation risk. And a majority (56 percent) reported “mitigating systemic risk” as the primary benefit of reducing settlement cycles to “T+0”; the completion of a stock transaction in the same day it was made — including settlement, payment, and transfer of ownership — a goal that digital finance is poised to achieve.

Figure 6: Cybersecurity and transparency concerns overshadow others

What are your chief concerns about investing in cryptocurrencies (top three ranked)?



*As of October 2021, Digital Asset Investing Survey

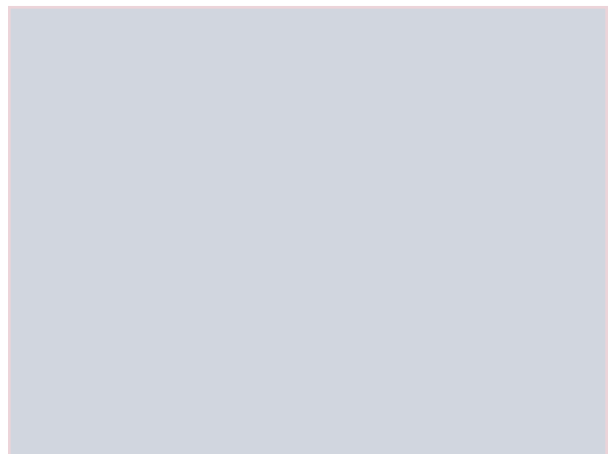


Key Takeaways

Depending on how one looks at it, the digital economy can seem a brave new frontier or a Wild West, redolent of the early days of the internet. This is perhaps especially true when it comes to concerns over risk mitigation and navigating a nascent and ever-evolving regulatory environment. We believe an opportunity exists, therefore, for well established organizations like State Street to engage with partners on a much more strategic level — as trusted advisors that can work with clients to help them find their footing.

High standards for compliance, governance and risk are the bedrock of State Street's service offering and give us a distinct competitive advantage in the digital space. Along those lines, we have recently announced the formation of a new digital Control & Governance function dedicated to ensuring that risk, compliance and controls are inherently managed during the product development cycle.

Being innovative and maintaining the highest standards of risk and regulatory excellence must never be mutually exclusive. Digital finance technology and regulations are changing quickly and so will we. With ongoing research, analysis and timely insights more important than ever to clients, State Street Digital is looking to lead the way.



What We Know (and Don't Know) About Cryptocurrencies as Assets

— BY MICHAEL METCALFE

Global Head of Macro Strategy, State Street Global Markets

The origins of the “modern” global securities market date back to Venice in 1172 when the city state imposed an enforced 5 percent loan on its wealthier citizens. Some 850 years later, a 5 percent government bond yield may still look attractive, but there are now approximately \$245 trillion worth of “traditional” equity and debt securities to chose from. As fast as everything is moving today, it is with this longer-term lens that we should judge the emergence of crypto assets which began with the Bitcoin ledger on January 3, 2009. A mere 13 years later, we have learned a lot about the properties of these assets, where they have delivered on promises and where they have not, but there is still much to resolve. This article sets out some of the main knowns and unknowns.

Sentiment Has Changed

Since most crypto assets do not involve future cash flows, the case for cryptocurrency valuations tends to center around expectations of future value; itself closely related to the rate of cryptocurrency adoption either for transactional, investment or other purposes.

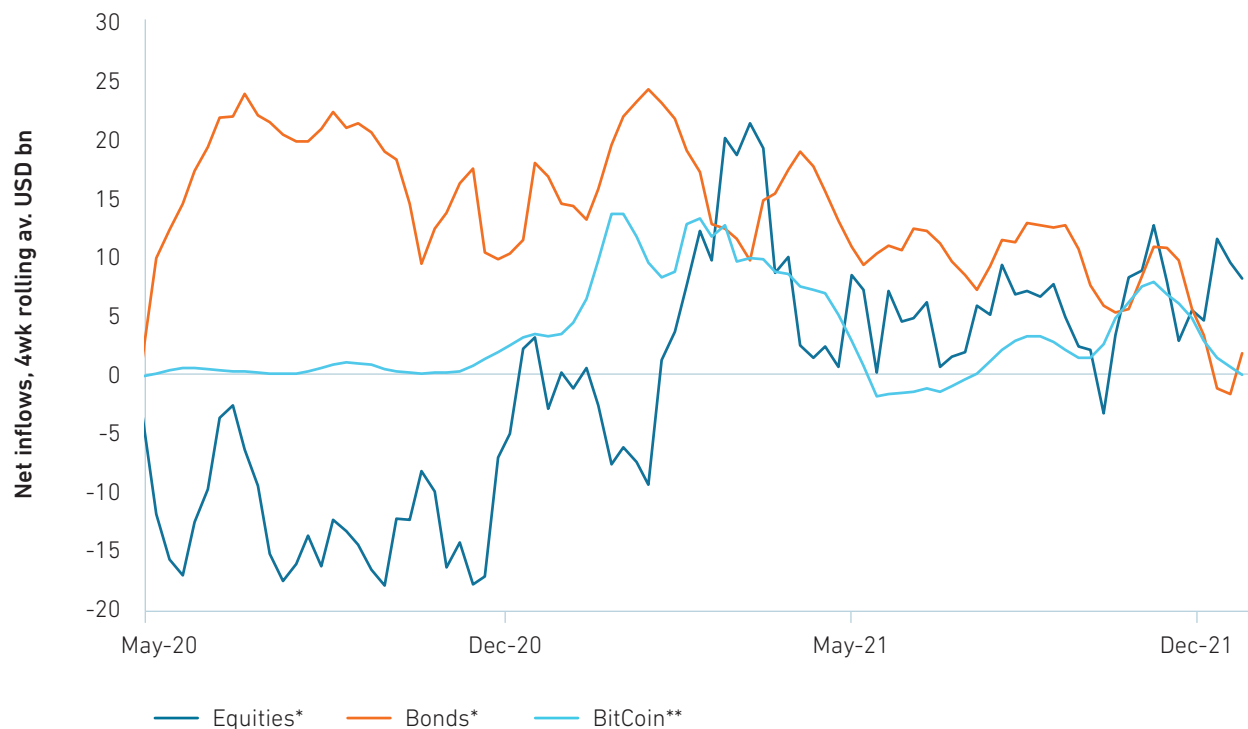
An indication of these expectations can be derived from flows and specifically from changes in realized, as opposed to actual, market capitalization. Realized market capitalization values coins at their purchase

price rather than their mark-to-market so changes in this metric capture the net inflow into a Bitcoin; inflows that have surged in the past year.

As Figure 1 shows, average weekly net inflows into Bitcoin have for the past year rivalled or at least been on a similar scale to inflows into US equity mutual funds and ETFs or their fixed income equivalent. While the net inflow into Bitcoin doubled between 2019 and 2020, it rose fivefold in 2021 (by end of November). In short, there has been a noticeable change in sentiment that is pushing crypto assets into the mainstream.

Figure 1: Flows into assets and Bitcoin

*As of December 2021



Source: *ICI, ** Glassnode

Lifting the Cap

In response to this sentiment shift, many cryptocurrencies have grown exponentially in the past three years. After the first large scale cryptocurrency crash in early 2018, market capitalization has grown from a low of \$122 billion at the end of 2019 to a high of close to \$3 trillion in November 2021.

Just under half of this market capitalization is in Bitcoin (BTC), making it one the largest single assets in the world depending on how it is classified. By 'currency' in circulation it currently lies 14th tucked in between the Swiss franc and Russian ruble. And looking more narrowly at currency futures, the average open interest in Bitcoin in the past six months across all exchanges is higher than all but the EUR and USD futures. By equities it is in the top 20 US equities by market capitalization and would similarly be in the top 10 issuers if it were a government bond. We can say with confidence, then, that Bitcoin and even a number of the crypto coins below it have reached what one might think of as critical or even credible mass in terms of size.

The Mainstream Challenge

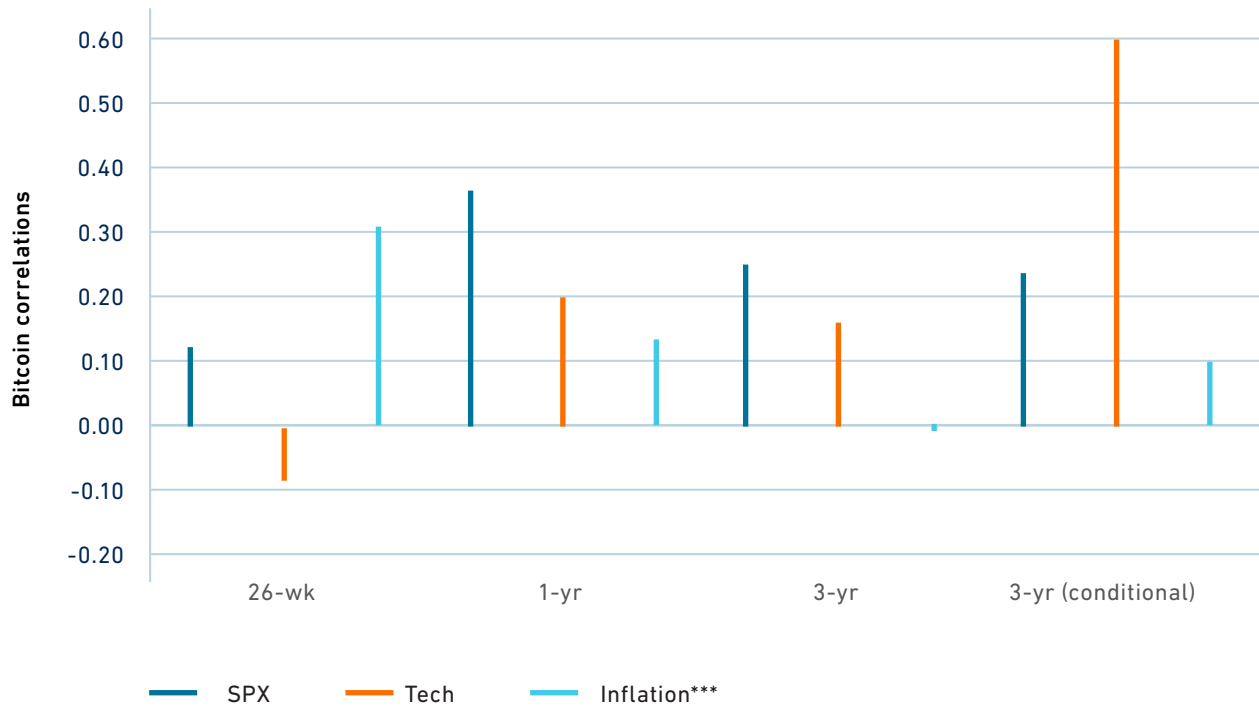
Critical mass does, however, come with challenges. As Figure 1 notes, the surge in inflows into both traditional and crypto assets in the past year coincided with the arrival of US fiscal stimulus which boosted consumer savings. However, this coincidence or potential common driver brings with it a potential contradiction. The more Bitcoin becomes part of mainstream investing, the more it risks losing what is often touted as its key differentiator; diversification from traditional assets and perhaps also inflation. This is certainly true over the past year. Correlations with equities and the tech sector in particular are positive and have increased (Figure 2). And as Mark Kritzman and our colleagues at State Street Associates have observed in a [recent paper](#), these positive correlations increase further at the worse possible time; *i.e.*, when equities fall. This is shown by the conditional correlations listed in Figure 2, and the effect is particularly prevalent for tech stocks; when tech is down so is crypto. That means the case for holding crypto to diversify the risk of a portfolio has yet to be made conclusively.

A similar question surrounds holding crypto as an inflation hedge. Our partnership with PriceStats allows us to look at high-frequency changes in the annual inflation rate and compare this to changes in Bitcoin prices.

The results are mixed. Over the past three years, using weekly data, there is no correlation between changes in inflation and Bitcoin prices, but short-term correlations of the past six months do at least show some degree of co-movement. One challenge with both the links to investing and inflation, however, is volatility.

Figure 2: Bitcoin correlations

*As of December 2021



Source: State Street Global Markets, Bloomberg

Outsized Volatility

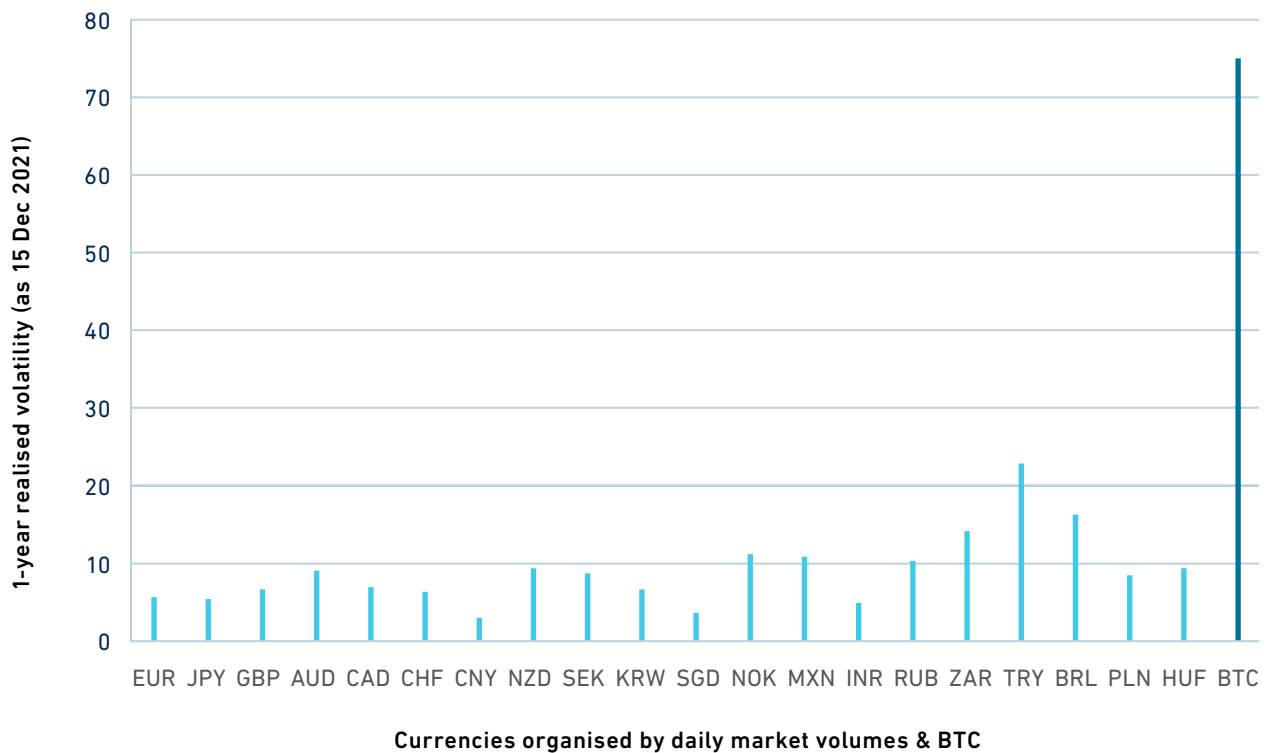
As much as the market for Bitcoin has grown, the fact is that crypto market cap is, at the time of writing, almost 30 percent down from its high in a month, a testimony to the persistence of volatility. This is not unique to Bitcoin, of course.

Traditional currencies or assets are also prone to sharp down draughts. However, the bigger financial assets get, typically, the less they move.

Starting with a comparison of other traditional currencies, the one-year volatility of Bitcoin is still multiples of the most volatile freely tradeable emerging market currency, the Turkish lira. The lira offers the enticement of a 14 percent interest rate to help compensate for annualized volatility close to 25 percent. So while there may be a similar amount of Bitcoin in “circulation” compared to the Swiss franc or Russian ruble, its volatility does not fit on the same scale as other currencies.

Figure 3: Fiat and cryptocurrency volatility

*As of December 15, 2021



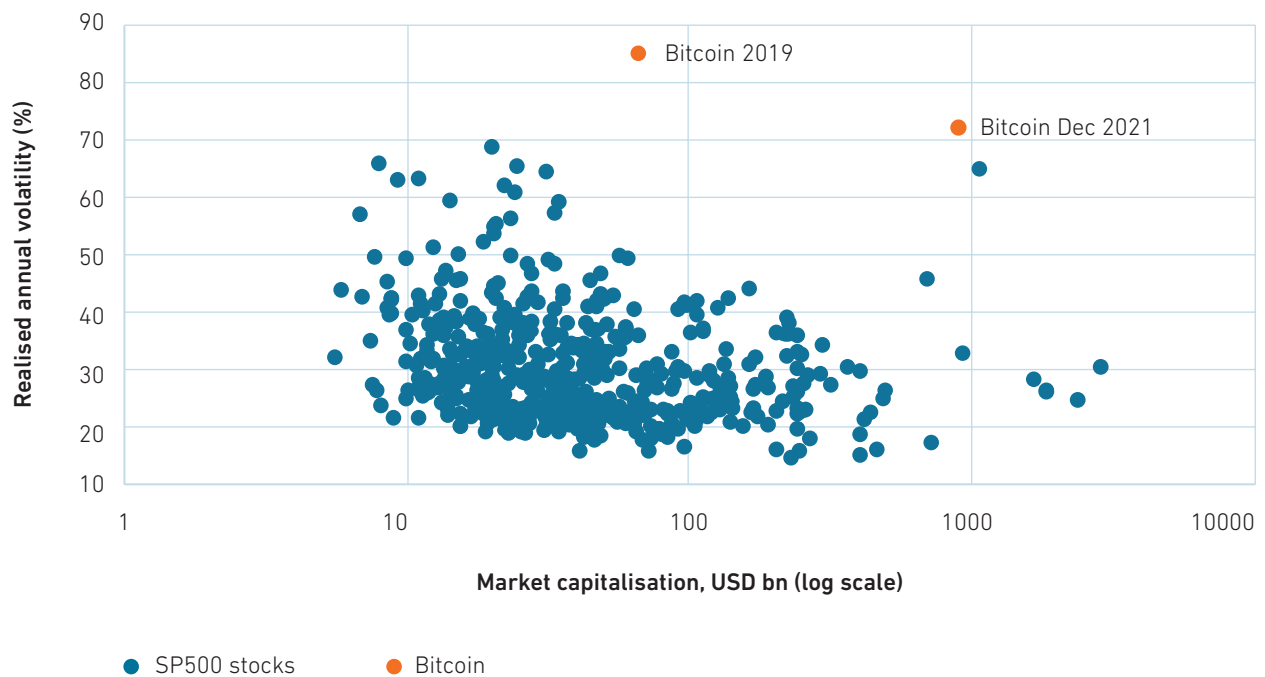
Source: Bloomberg

Nor does it compare too favorably with most equities. As Figure 4 demonstrates for the current members of the S&P 500, bigger stocks tend to be less volatile on average.

Yet Bitcoin's ninefold increase in market capitalization, still comes with a 70 percent-plus annualized volatility. This is not unheard off at the stock level, but is unusual — only Tesla has a similar size and volatility.

Figure 4: Volatility of S&P 500 stocks versus market cap and Bitcoin

*As of December 2021



Source: Bloomberg

The Crypto Conundrum

In some cases, cryptocurrencies have lived up to or sometimes exceeded their promise. They have attracted billions in inflows, and market capitalization has surged to heady levels. But higher market capitalization has yet to lower the volatility of crypto assets, and evidence of diversification is weak.

This gets to the two biggest unknowns for Bitcoin. If size and greater adoption do not reduce volatility, what will? And if nothing reduces the volatility, will that in turn matter?

A clue to answering the first question may lie in market structure; who holds and in particular who trades Bitcoin. This is a question that State Street Associates Partner Antionette Shoar and her co-author take on in a [recent paper](#) using a large number of public and proprietary sources. The results are striking. Compared to the exponential growth in market capitalization, the growth in volume of economically meaningful transactions is far from it. Volumes have rebounded smartly this year, but are still below their prior peaks in 2016 and 2018.

Meanwhile, the change in underlying market structure shows similar inertia. Today exchanges, and entities assumed to be exchanges, OTC brokers and trading desks account for 60 percent or more of all volumes just as they did in 2015. So given similar trading volumes and similar entities dominating them, it is perhaps folly to

expect a different result in terms of either liquidity or volatility. Finally, it is worth considering that if Bitcoin were in the future to be adopted on a more significant scale by long-term asset managers/owners, this would potentially exacerbate this liquidity challenge by taking even more coins out of circulation. This creates a troubling circularity; the volatility and liquidity criteria that many of these investors will likely have for adopting Bitcoin in the first place could be worsened if they actually chose to hold it.

As with any 13-year old, however, any and all of these current issues are subject change. In traditional asset markets a combination of regulation, central banks, exchanges and large financial institutions all play a role in making markets liquid, which in most cases means that volatility is to some degree managed, most of the time.

The decentralized structures of crypto have not been able to produce similar levels of stability. But given the growth in market capitalization that has occurred anyway, perhaps they have not been compelled to do so yet. Adaptation as with those Venetian loans 850 years ago will likely prove key to greater adoption and evolution. But if size alone will not deliver enough liquidity to bring volatility down, the development of crypto as an asset class may steer more toward stable coins as settlement tokens, central bank digital currencies, or simply a different, more levered, way to invest in the technology sector.

Is It Time for a Token Economy?

— BY JAY BIANCAMANO

Head of North America, State Street Digital

Tokenization holds the promise of greater liquidity, more transparency and faster transactions. If its potential can be exploited fully, the world of assets will be more accessible than ever.

What Is Tokenization?

In principle, tokenization is the process by which assets such as equity, debt and real estate are represented on distributed ledger systems. By representing the value of tangible or intangible assets through digital tokens, they can be owned, stored and transferred on the blockchain.

Early applications have looked to tokenize cash and the digital payments process to provide an alternative to the current market model of account-based systems. What is the difference between the two models? Today's account-based payment systems rely on the verification that someone has been authorized to make a transaction. Tokenization works differently. Here, the participants in the network prove knowledge of an encrypted value to initiate a transaction.

This idea of a token-based model would, however, come with implications. Whilst participants could broaden their direct access to financial networks, and the concept of programmable money (whereby certain processes could be automated through smart contracts) may eventuate, the privacy of data in a distributed environment may also come into question.

Beyond Cash

The growing appetite to tokenize other assets has led to tokens being categorized in different ways. The likes of Bitcoin and Ethereum are sometimes referred to as "payment tokens," as they can be used as alternative forms of payment — but on the blockchain.

One application of cash tokenization from the private sector involves stable coins. These are a type of digital coin designed to peg the price of a crypto asset and negate price volatility. Such models can also be used for international payments involving foreign exchange, and could encourage wider adoption by institutional investors.

Security tokens, on the other hand, are simply securities that happen to be issued using blockchain. What makes them unique is that they could be issued and settled in electronic form without the need for central market infrastructures.

Tokens Find a Wider Ecosystem

These innovations are not limited to the private sector. The public sector also recognizes the potential of tokenization and is starting to come up with ways to support a future token ecosystem.

Central banks, particularly across Asia Pacific, are looking at issuing fiat currencies as tokens with the view to improve the availability and use of central bank money in either retail or wholesale payments, or even both.

A key question that currently is being debated is if there will be central bank digital currencies, so-called CBDC cash tokens, of the national currency that is issued and controlled by the national bank in question. And, will these be so-called general purpose CBDC, focused on particular segments (i.e., can only be used for retail payments), or would they also be available for wholesale payments and capital market transactions? As it relates to tokenization, central banks will need to ask whether they are merely trying to replace or complement cash (and, therefore, retail payments) and create CBDC around that purpose, or are they looking at securities markets and wholesale payments? Expect the policy debate around CBDC to take some time on this issue, at least in most developed markets.

There are implications for the asset management community, too. A shift to tokens offers it the chance to invest in new asset classes or change the dynamics of existing asset classes once they migrate into blockchain environments.

Meanwhile, having digital assets on the blockchain could allow asset managers to track changes in investment patterns more carefully and generate better data insights. More radical proposals involve digitizing a fund's overall structure, making it easier for investors to come onboard by creating a portfolio that is tailored to their risks and interests.

Ready to Go Atomic?

One of the major attractions of tokenization is the promise it holds to transform any asset into a digital one that could be traded instantaneously. The holy grail of instant settlement, also known as "T+0," "same day," or "atomic settlement" also has the potential to reduce settlement risk, as well as capital consumption and the need to reconcile potential settlement breaks. (For example, foreign exchange (FX) settlement today generally occurs on a T+2 basis.) More compressed settlement cycles will entail corresponding settlement activities that will need to occur in compressed timeframes as well, meaning current risk standards will need to be updated as we move to a cash token model.

What Does Digital Custody Look Like?

— BY SWEN WERNER

Head of Digital Custody and Payments, State Street Digital

IRFAN AHMAD

APAC Product Lead, State Street Digital

It has been said of the custodial business that if the fund manager is the chief architect of the investment process, the custodian serves as the engineer that ensures all the systems are working properly. How does one take care of the maintenance and plumbing, however, when the edifice is in the process of being constructed? This is the challenge the custodial industry takes today as it relates to the fast-changing world of digital finance.

Every decade or so, the custodial industry must pivot to accommodate and support changes and innovations in the financial services landscape. So it goes with our present moment. As digital finance is becoming too big to ignore, it is forcing upon the industry a redefinition of what it might mean to be a digital custodian. But what shape will digital custody take? If custody services no longer concern the simple safekeeping of traditional assets but will come to include the storage of cryptographic keys that control those assets, will digital custody equate to simply storing private keys? Or, does digital custody require a more holistic view; a bridging of the old and the new, and a wholesale reimagining of the space?

From CSD to P2P

To map the road ahead, we first have to take a step backward to understand where the global custody industry has been. Today's custodial environment has been shaped by regulatory developments created decades ago. First, we saw the move from paper securities to electronic registries, and with it came the creation of so-called central securities depositories, or CSDs. Typically, what happened during that time was every market trying to create its own CSD, and with that came the concept of indirect holding of assets (*i.e.*, investor access to those assets through the use of intermediaries). Through the introduction of digital assets, we are witnessing greater levels of decentralization, a shift that brings with it the concept of peer-to-peer exchange of value.

The impact of this sea change to the global custody industry requires a reimagining of what custody means. There are several core aspects to this. First is segregation of assets from proprietary assets and how this could be achieved by the use of private keys. Asset owners will have to ensure that the custodian can maintain effective control over these assets through ensuring that nobody has access to those private cryptographic keys that control the digital assets. A second question is, with the use of distributed ledger technology (DLT) environments that utilize so-called wallets, what will replace the use of securities accounts in jurisdictions that require the booking of transactions into such accounts in order to transfer ownership?

Depending on the design choice of the blockchain, DLT or wallet, there may be more than one key per token, or a single key simply may not exist (*i.e.*, different parties hold a portion of the key and need to enter into a signing ceremony to transfer an asset, via a multi-signature arrangement).

Defining Custody for Digital Assets and Asset Managers

How asset owners generate private cryptographic keys, how they use them, and how they store them for later access are core operational aspects to reimagining custody for the digital age. Compounding the complications is the issue that not every digital asset necessarily is eligible to be held in custody under certain local jurisdictions. If digital assets continue to be created differently, sitting on different blockchain protocols and issued by different market actors, at-scale custodians will likely choose to maintain this diversity of assets (digital assets that can be kept in custody along with those that cannot).

Another area where the industry is awaiting further guidance is the question of how a custodian would provide its control functions in a digital environment. For example, one of the services that a depository provides when it comes to regulated assets is to verify the correct calculation of the net asset value of a given fund. In a crypto environment — where there are multiple exchanges but limited standardization around trading — how might one determine what is a good reference price? We have recently seen regulatory discomfort around this scenario.

In the US, for example, regulators have been reluctant to approve the launch of physical Bitcoin-related exchange traded funds (ETFs). Unless the industry solves for both the custody piece and how to provide effective control and depository services for digital assets, it might continue to prove challenging to move the industry forward.

The asset universe into which a given fund could invest is also becoming more diverse and, arguably, more complex. Traditional book entry securities that are issued in CSD infrastructures are unlikely to disappear anytime soon. Overlaying that traditional custodial infrastructure, however, there are likely to be security tokens that are potentially issued outside of CSD and traditional corresponding legal frameworks. In addition, there exist other crypto assets, such as Stablecoin, that are not considered securities but could still be potentially attractive investment targets. We are now seeing specific legal frameworks developing for these new digital assets.

Differences in technology between institutional and crypto platforms, as well as the applicable and still-evolving digital regulatory framework, require a holistic view of the changing custody business. Legacy, at-scale custodians — trust banks that have the highest levels of regulation applied to them by default — have a distinct competitive advantage in the space as clients look to participate in the new digital economy. The emerging shape of digital custody, however, will be about far more than the question of who holds the private key.

Today's custodial environment has been shaped by regulatory developments created decades ago. First, we saw the move from paper securities to electronic registries, and with it came the creation of so-called central securities depositories, or CSDs.

Paving Regulatory Pathways for Digital Assets

— BY JUSTIN MCCORMACK

Senior Managing Counsel, State Street Digital

Governing the point where finance and technology meet is no easy feat. The breakneck pace of innovation suggests that the current regulatory framework surrounding this dynamic asset class needs to catch up.

More than 10 years have now elapsed since the release of the Bitcoin whitepaper. During this period, a universe of digital assets has spawned, not just for cryptocurrencies, but also for the notion of tokenized assets. And, since digital assets come in many different forms — cryptocurrency, central bank digital currencies (CBDC), stable coins, and tokenized securities, among many new products that fall into the category — all are treated vastly differently from a regulatory perspective.

For market participants, the creation of a harmonious set of frameworks and appropriate safeguards are fundamental considerations.

On the Same Page?

New digital assets that were introduced to the market posed a challenge to regulators — different types of digital assets possess unique and distinct risk profiles. Having them under one regulatory umbrella, however, is unlikely to offer investors much insight into the opportunities and risks at play. On the other hand, individual attempts from different regions to govern assets that are traded globally risk creating a patchwork of regulations that fragments the market. What has been done to overcome these hurdles?

Japan, for example, introduced new crypto asset regulation in 2020 that made a number of changes, for instance, with regard to how client funds are maintained and proscribing the use of certain key storage models, such as cold wallet storage. Across the EU, the evolution of the anti-money laundering directive (AMLD5) brought crypto service providers into licensing requirements, with Germany enacting that change at the beginning of 2020 and the UK enforcing a similar regime at the beginning of 2021.

Despite progressive steps to create regulatory clarity in certain segments of the digital assets market, there remain many open questions across different jurisdictions that require further debate. One aspect is the issuance process of security tokens and clarity around the legal definition of custody and control of said digital assets. National laws and property rights in the creation of securities and the transfer of title differ across countries, which can make it challenging to

assess the impact of tokenized securities for the asset servicing industry. Much will depend on how market structures develop.

One approach might be to deploy a distributed ledger technology-empowered central securities depository, which maintains central control over the issuance and settlement process via a permissions network. In such a model, the needed regulatory change to enable a securities token market is probably low.

A potentially interesting solution would see tokenized securities issued and owned without the need for a central market authority. Here, issuers and their agents (*e.g.*, a stock registrar) can issue security tokens and maintain an immutable record on the blockchain itself. From a regulatory perspective, this may require a dynamic adaptation of current regulatory concepts.

BAU or More Innovative Approaches?

In considering our evolving digital assets regulatory landscape, it can be useful to look at different market structure outcomes that could be the result of various token issuance models. The simplest form is what might be called a “business as usual approach,” in which a market maintains its current centralized market infrastructure, a centralized securities deposit (CSD), and could decide to use distributed ledger technology (DLT). This model connects various users — banks, custodians, broker-dealers, etc. — through a closed network or so-called

permissioned network. The result: digital assets that run on blockchains while maintaining the current model of a central actor enforcing central rules. From a regulatory perspective, this would look very similar from an overall roles and responsibilities model to what we are familiar with today.

Perhaps a more innovative and interesting, albeit complex, solution would be the issuance of security tokens through so-called permissionless networks. In this model, stakeholders would no longer need a CSD to serve as a central market infrastructure. (Nor would there be need of a transfer agent or stock registrar.) In this model, the law would in effect state that the bookings on the decentralized ledger constitutes ownership and effectively replaces our current idea of a share register. Related to the tokenization of assets (*e.g.*, real-world assets such as property, real estate, art, etc.), regulation would be required to develop quite dynamically to create certainty that the tokenizing entity has proper title to these real-world assets and is not creating new risks.

We have seen in a number of jurisdictions, regulators placing a high priority on implementing the necessary changes that would enable this kind of model, with some making impressive steps forward.

What Can the Finance Industry Expect?

For investors and asset managers keen to get involved in digital assets, there is a concern that a heavy-handed approach to regulation could undermine many of the benefits.

The promise of the distributed ledger technologies like blockchain that underpin digital assets is to create a decentralized market environment, which is characterized by peer-to-peer exchange and instant settlements that hold the promise to make markets more efficient. This may require a move away from a fully centralized governance structure, but it remains unclear whether regulators are willing to do that and if they are, what the caveats might be. Asset managers will also need to pay close attention to whether digital assets issued without the involvement of a central securities depository meet their investment guidelines. For instance, the listing of such tokens on a public stock exchange may not be possible in all jurisdictions.

There is still plenty of change to come, but investors eyeing up digital assets can take confidence in the fact that the market is already moving with speed to regulate the space.

Glossary of Terms

Altcoins: Any digital currency that can be used as a substitute for bitcoin.

Bitcoin: A decentralized digital cryptocurrency, with the token issued on the bitcoin protocol, that can be sent from user to user on a peer to peer network without an administrator or central bank involvement.

Blockchain: A distributed ledger technology that groups data into blocks that when verified by members of the network are linked together to form the blockchain.

Central Bank Digital Currency (CBDC): A digital token representing sovereign fiat currency.

Cryptocurrency: A digital token used as a medium of exchange or store of value, with transactions recorded using distributed ledger technology.

Data stewardship: A set of practices to promote trust in an organization's data management.

Decentralized finance: Distributed ledger technology-based financial services without traditional intermediaries and central authorities.

Decentralized Autonomous Organization (DAO): An organization represented by rules encoded as a computer program that is transparent, controlled by the organization members and not influenced by a central government.

Digital assets: Any asset in a digital form on a blockchain.

Digital wallet: A place to store digital assets with a degree of security.

Distributed ledger technology: A system of record that is shared and stored across a network of participants such as blockchain.

Ethereum: A blockchain platform that has smart contract capabilities.

Fiat currency: A government issued currency that is not backed by a physical commodity but by trust in the issuer.

Instant settlement (AKA, "T+0," "same day," and "atomic settlement"): The transfer of funds from one account to another in seconds.

Initial Coin Offering (ICO): An initial public offering of a cryptocurrency.

Nonfungible tokens: A unique and non-interchangeable unit of data stored on a digital ledger.

Smart contract: A dynamic, open-ended mechanism that provides for coded sets of rules for a specific use case on a distributed ledger technology network.

Stablecoin: A cryptocurrency pegged to the value of a fiat currency such as the dollar, backed by traditional assets or algorithmically attached to digital assets that are automatically bought and sold in order to maintain a stable value.

Tokenization: The process of creating a digital token on a distributed ledger technology network.

Web 3: An extension of the World Wide Web through standards set by the World Wide Web Consortium (W3C) with the goal to make Internet data machine-readable.

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