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Digital Digest

Building Trust and Security into Digital Architecture

January 2023



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State Street Digital Digest, Fall 2022

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Preface

In the aftermath of FTX’s mid-November collapse, more than one observer has compared the company’s corporate governance (or lack thereof) to “the Wild West.” Since launching our State Street DigitalSM business in June 2021, we’ve consistently viewed the world of digital finance as an exciting new frontier, but hardly the Wild West.

By definition, G-SIBs (global systemically important banks) such as State Street don’t operate that way. Our role as an institutional custodian means we put a premium on controls and risk excellence, are in constant engagement with industry regulators, and honor the importance of segregation of duties. If it’s possible for the industry to draw any silver lining around the FTX debacle, it is the expectation that we’ll see an acceleration of much-needed regulation in the digital finance space.

In the midst of this latest crypto market bombshell, State Street fielded our second annual Digital Finance survey of some 300 institutional investors from October 21 to November 21. Given that FTX officially filed for bankruptcy on November 11, this means that while our benchmark study is concerned with far more than just crypto, survey participants were responding in real time against the backdrop of this defining event.

How much did the FTX disaster impact our results? A topline theme that emerged from the survey is one of short-term caution paired with long-term optimism, with more than two-thirds (69 percent) of participants expecting to significantly or slightly increase their allocation to the digital finance space in the next two to five years, and a majority (60 percent) expecting it will take five years or longer before digital trading becomes mainstream.

If the central theme that emerged from our 2021 survey was the gap between enthusiasm for vs. understanding of the digital finance space, this year’s study zeroed in on organizational strategies around future allocations and reliance upon internal vs. external expertise and capabilities. Implicit in those survey results is the matter of trust. Which partners might institutional investors rely upon to help them navigate a largely nascent space in which the regulatory landscape remains blurry?

Another important theme to emerge was the growing interest in digital technology as a means to hold and trade mainstream asset classes, beyond crypto currencies. Our results show 36 percent of respondents say decentralized tokens based on traditional assets are the digital holdings they most want for their portfolios (more than any other digital asset type, including crypto). In particular, around half think the ability to fractionalize illiquid assets like private equity and real assets is the major prize of digitization. A similar number of respondents cite the improved speed and efficiency of digital trading over existing models as the main benefit of digital technology to their organizations.

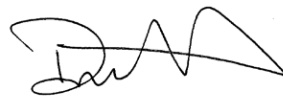
In addition to outlining our annual survey results, the January 2023 edition of the Digest also features articles on crypto market performance and flows post-FTX, regulatory implications for digital exchanges in the aftermath of FTX's downfall, and a Copper.co Research-led profile of State Street's work in the digital custody space.

An important part of the investment we're making in digital finance concerns education. (For example, even today many use the terms "blockchain" and "crypto" interchangeably.) We launched this quarterly thought leadership compendium to help respond to the industry's need for better information. And it is for that reason we are proud to share that at year-end 2022, our Digital Digest earned the "Most Notable Campaign of the Year" designation at the Crypto A.M. awards—making State Street the only bank to receive such an honor.

We believe this distinction underscores the premium State Street is placing on education and insight, transparency and trust, excellence and opportunity. And it is through that lens that we hope the latest issue of the Digest examines and draws important lessons from recent events.

No doubt it has been a tough season for crypto, and the FTX implosion will be an event economists and historians argue about for years to come. While the topic of the rise and fall of Sam Bankman-Fried is unavoidable in any present-day conversation about digital finance, we know that lawlessness, bad actors, and outliers have existed in every industry. If history proves a guide, however, the "Wild West" ultimately gave way to settlements, infrastructure, manufacturing, banks, and rule of law. As the crypto winter thaws, we can expect to welcome a new season of renewed trust, opportunity, and regulatory reinforcement, as sheriffs ride into town.

Sincerely,



Donna Milrod
Chief Product Officer and
Head of State Street Digital

**Digital Finance Readiness
in Investment Institutions**

A Benchmarking Study

By James Redgrave

Head of Thought Leadership and Editorial,
State Street DigitalSM

State Street Digital Assets and Investment Study 2022-23

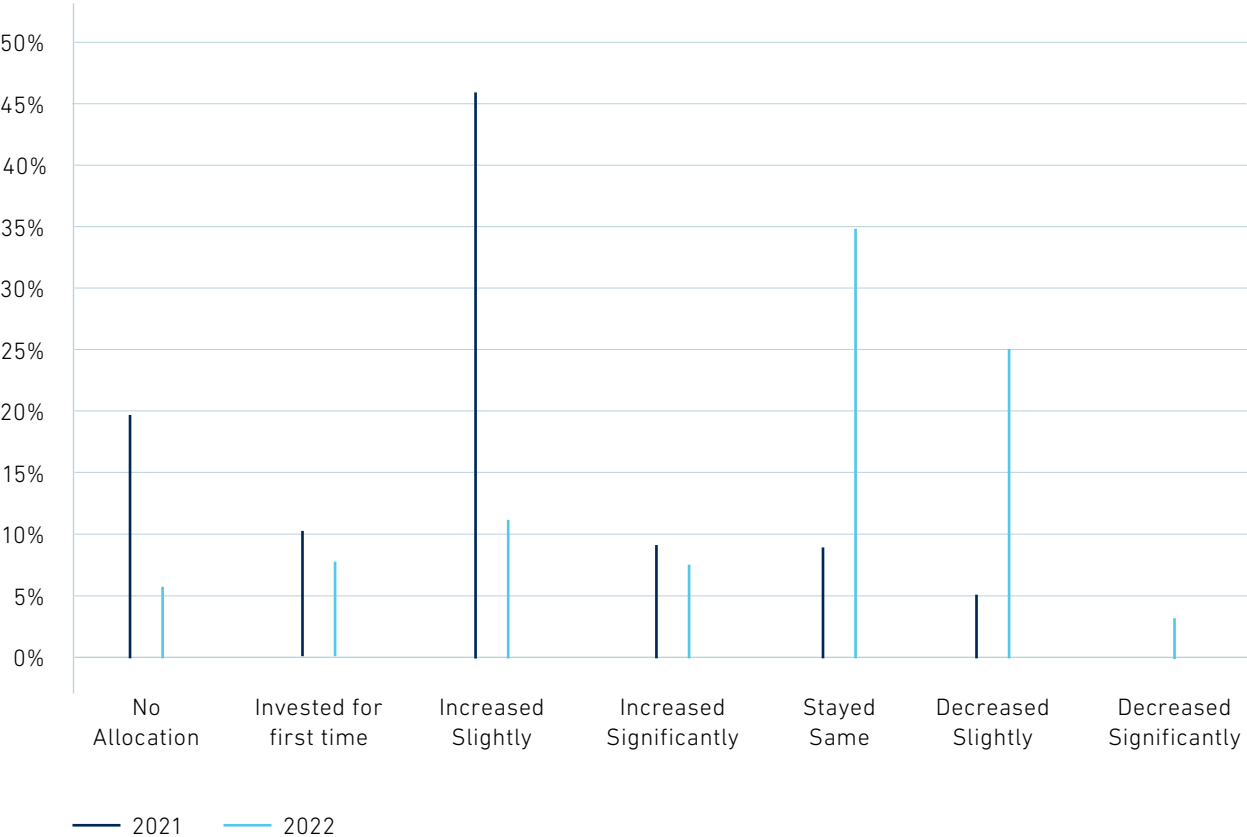
In November 2022, we commissioned Oxford Economics to conduct a survey of 300 investment institutions, divided almost evenly among asset managers, asset owners and insurers, on their approaches to digital assets and investment technology. It follows the 2021 Digital Assets Survey, but significantly expands on that research by looking into organizations' preparedness for incorporating code-based smart contracts, blockchains and other distributed ledger technologies into their investment processes for tokenized versions of traditional securities. The study examines respondents' expectations of the likelihood of these developments, the timescales required for their mainstream adoption by investment institutions, the ecosystem of firms in which they operate, the potential benefits for their clients and different areas of their operations, and the challenges posed by transitioning to such a model.

Market Pulse: Institutional digital asset allocations are slowing

Institutional investors were more likely to decrease their allocations to digital assets this year (28 percent, compared to 21 percent who increased), while leaving allocations

unchanged (35 percent) accounted for the largest single response.¹ In the 2021 survey, more than half of respondents (55 percent) had increased their digital asset portfolios, compared to just 14 percent who had either decreased or not changed theirs.

Figure 1: How did your allocation to digital assets, cryptocurrencies, or related funds/products change in the previous 12 months?

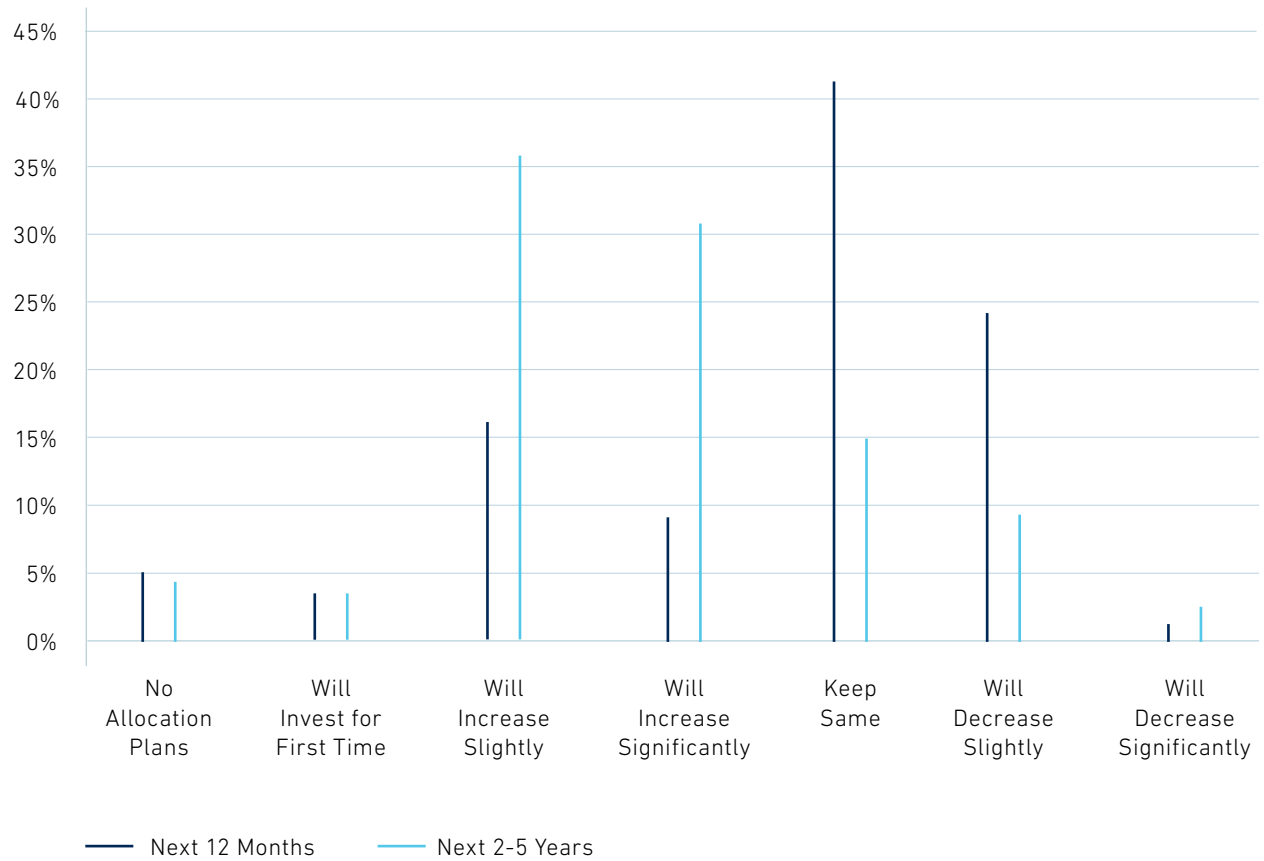


¹ NB. The FTX bankruptcy filing took place while this survey was in the field, so its impact could be reflected in some responses; however the extent to which it affected this data can't be known.

The number of investors increasing their digital assets exposure in 2022 was also significantly lower than those who had planned to do so in 2021 (70 percent said they would be growing their allocations the following year). In this survey, respondents were considerably more bearish on their future investment plans. A quarter of respondents said they would increase their digital asset allocations in 2023, while the same number

said they would decrease theirs and 42 percent said that they were not planning to change their allocations. However, longer-term investment plans were more positive for digital assets, with 69 percent planning to increase holdings over the next two to five years and only 26 percent anticipating either a decrease or no change over this period.

Figure 2: How do you expect your allocation to digital assets, cryptocurrencies, or related funds/products to change over the next 12 months/2-5 years?



Allocations varied by investor type. For example, asset owners and insurers were much more likely to have sold digital assets this year (35 percent for both segments) than asset managers (14 percent). Similarly, 32 percent of insurers and 28 percent of asset owners plan to decrease their portfolios this year, compared to just 16 percent of asset managers.

Asset managers, for their part, were more strongly inclined to hold their digital asset allocations at a steady level, with 44 percent not changing over the course of 2022 and 49 percent not planning to in 2023.

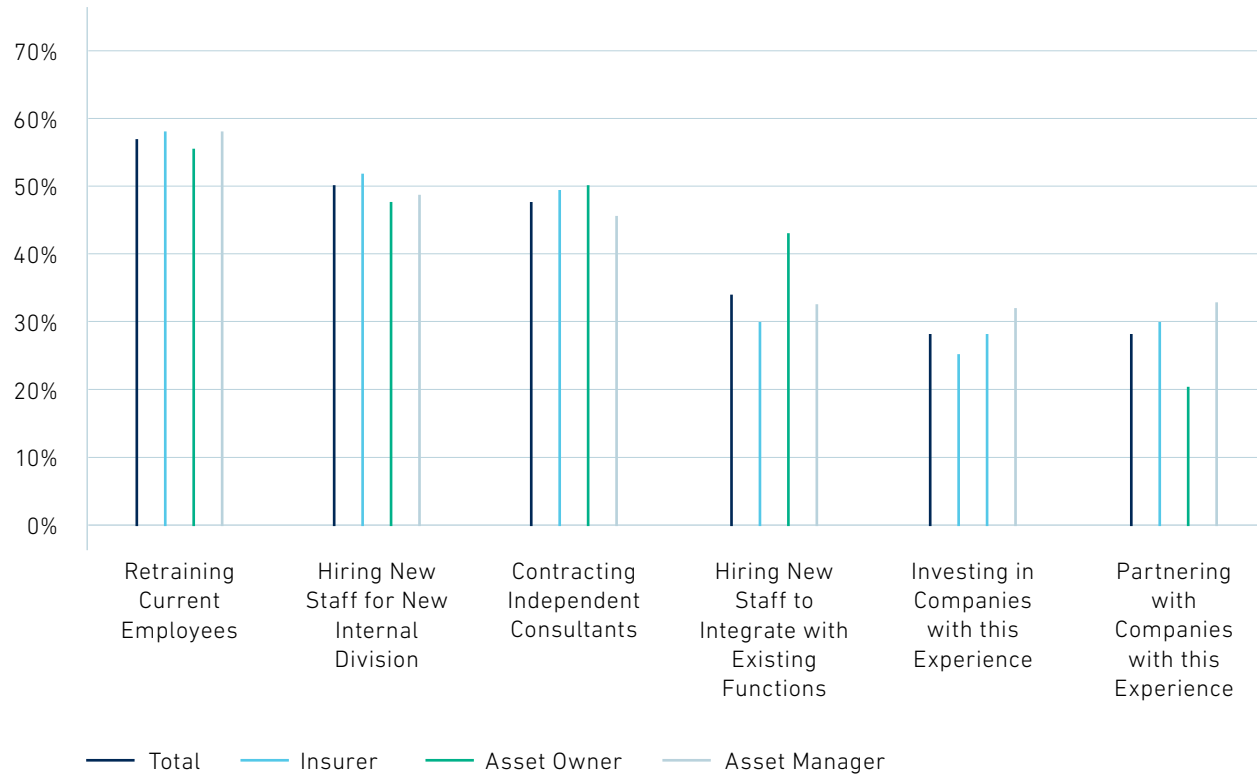
Beyond Crypto: Investment institutions are starting to explore the wider applications of digital investment technology

Decentralized asset tokens, including tokenized versions of traditional asset classes, were the digital asset types that the plurality of respondents (39 percent) felt would add the most value to their portfolios by investing directly. Cryptocurrencies were second (24 percent) followed by non-fungible tokens (16 percent), while nine percent preferred investment into firms providing the technology behind digital assets.

Institutions varied widely in their understanding of and readiness for the digital tokenization and trading of traditional financial assets. A potentially surprising 11 percent of respondents claimed to be pioneers in “using code-based smart contracts to trade tokenized versions of traditional assets on distributed ledger/blockchain,” and nearly a quarter more (22 percent) said they were ready to do so; however, had not yet. Meanwhile, 40 percent said they were not able to do this and were putting strategies and relationships in place to do so, and 27 percent had not yet reached the planning stage.

Firms were also divided on their approaches to a digital asset strategy with most of them following some combination of training existing staff, hiring expertise and partnering with (or investing in) expert third parties.

Figure 3: How is your organization building its expertise in digital assets?



This split is further replicated in the respondents' expectations of the timescale in which this kind of technology would develop.

While only five percent of respondents said "digital trading [becoming] a commonplace form of transferring mainstream assets in the fund industry" would never happen, the same number thought it was imminent (within the next one to two years).

A little over a third (37 percent) felt it would take more than a decade; 23 percent said five to nine years; 13 percent said three to four years and 17 percent did not make a guess.

Again, different institution types showed different attitudes here. Although roughly equal numbers of asset managers, owners and insurers claimed to be pioneers in traditional asset tokenization, managers

were more likely to describe themselves as “well prepared” (30 percent) compared to 21 percent of insurers and 16 percent of asset owners. They were also less likely to dismiss the technology entirely (one percent, compared to seven percent and six percent respectively for insurers and owners) and had generally higher expectations of this technology becoming mainstream quickly

(26 percent expect this in under five years, compared to 15 percent of owners and 12 percent of insurers).

Illiquid assets such as private equity (51 percent), physical assets like infrastructure and real estate (48 percent) and private debt (44 percent) were the assets most respondents thought would be the first to be commonly traded digitally.

Figure 4: Which asset classes do you think will be the first to be tokenized and routinely traded digitally?



The Bottom Line: The benefits institutions want from asset tokenization and digital trading

The focus among respondents, in terms of the benefits of tokenization, was largely on better process speeds and cost efficiency.

The operational areas where these improvements were mostly expected were risk management (47 percent), transactions management (45 percent) and collateral management (40 percent).

Additionally, institutions largely expected these efficiencies to have a significant impact on the distribution of assets and the way they were

presented to investors. Approximately two-thirds (64 percent) believed the advantages of digital tokenization in terms of faster processes and lower costs would make bespoke portfolios more common, at the expense of fund structures. Meanwhile, 22 percent felt the split of funds to bespoke portfolios would remain the same (15 percent said they did not know).

Distribution mechanisms such as institutional digital wallets were the areas most respondents wanted providers to address (41 percent), along with the issuance of tokenized assets (37 percent) and digital fund administration (34 percent).

Figure 5: Which of the following benefits do you think your organization will experience from tokenization and digital trading?

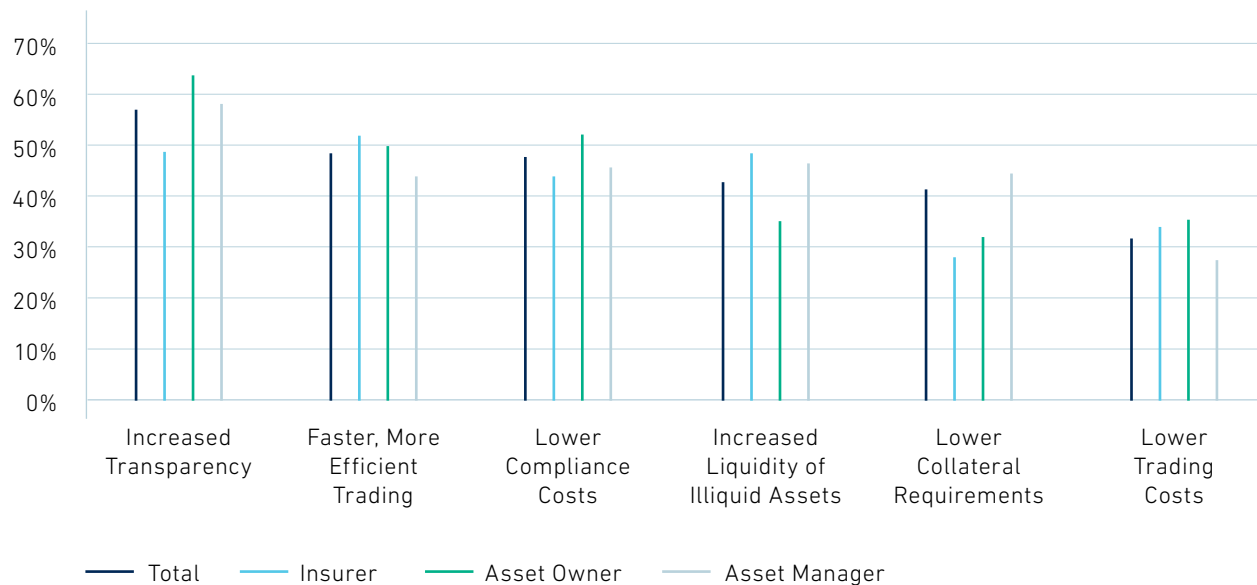
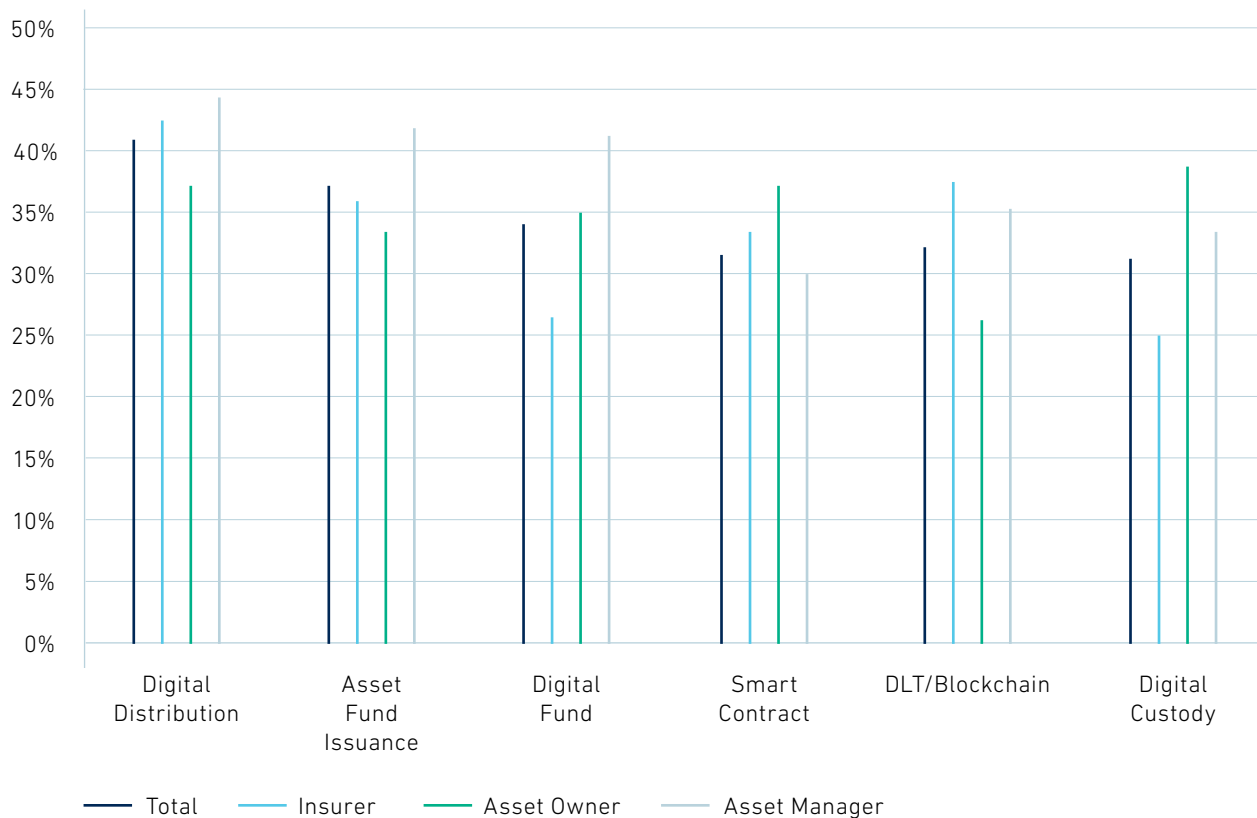


Figure 6: Which of the following digital asset services do you believe would be most useful to your organization?



Finally, respondents had mixed feelings about the potential ESG impacts of this technology. As many as 49 percent said it would be positive, while 42 percent thought it would not have an impact (only eight percent said it would be negative). Exactly half of those who thought it was ESG-positive felt quicker and effective trading operations would also be more energy efficient while 42 percent thought digital tokenized fractionalization of green infrastructure assets would be a major ESG benefit. Around 41 percent thought the capacity of fractionalization to bring

retail investors into private markets would enhance investor and regulator scrutiny of private companies with opaque governance models.

Those who felt it would be ESG-negative cited higher energy use in digital trading models (54 percent), the likelihood of increased (and inefficient) regulation of private markets following retail investors (46 percent) and more efficient capital markets generating increased demand for energy-intensive goods and services (38 percent).

Conclusion: An industry tentatively prepared for a digital tokenization revolution

This survey also shows a broad consensus among respondents that the technology underpinning cryptocurrencies will be applied to traditional assets. Very few respondents dispute this premise. However, the variety of responses to questions on digital investment preparedness, both across and between institutional investor types, is an indication of this technology's nascency.

Recent events, in particular the bankruptcy of digital exchange FTX in November, have shown that the infrastructure surrounding this area and the ability of decentralized finance to merge with the traditional finance systems and processes designed to offer investors security and protection remain a work in progress. However, this data shows these are questions the industry is at least asking and in many cases, actively addressing. Institutional investors recognize the benefits that digital tokenization can bring to their clients and members, and are largely keen on an ecosystem that allows them to garner those benefits with confidence.

To see more results from the State Street Digital Finance Study, please contact your State Street Relationship Manager, **Luke Brereton**, Head of Client Engagement, State Street Digital, or the author of this article, **James Redgrave**.



**Industry Reaction to the
State Street Digital Finance Study**

The View on the Ground

By Luke Brereton

Head of Client Engagement,
State Street DigitalSM

In this article, Legal and General Investment Management (LGIM) Chief Technology Officer Derrick Hastie, KPMG Director of Wealth and Asset Management Consulting (and digital transformation specialist) Paul Came, KPMG Director of Financial Services Coverage (and crypto/digital assets specialist) Ian Taylor, and State Street Digital Head of Client Engagement Luke Brereton share their reactions to some of the major trends identified in State Street's 2022-23 Digital Assets and Investment Study.

The study is a survey of 300 investment institutions, including asset managers, asset owners and insurers, assessing their current holdings of digital and crypto assets, as well as their preparedness for and approaches to incorporating digital technologies such as blockchain, distributed ledger technology (DLT) and smart contracts into their operating models. For a summary of the survey results, see the previous article.

Theme 1

Pivot in tone from crypto to digital assets

One notable element of the survey results that resonates with prevailing market sentiment is that respondents' interest appeared to be cooling on Bitcoin and other cryptocurrency assets, relative to the ability of blockchain and distributed ledger technology (DLT) to create digital token versions of more traditional asset classes.

Hastie said this tallied with LGIM's view of the market. "We don't hold any cryptocurrencies," he added. "But the focus on tokenization does align to LGIM's approach in this space.

"We see value in the digital tokenization of more traditional assets, and the opportunity for tokenized assets to be part of our portfolios in the future."

KPMG's Came agreed, claiming institutional asset managers were instinctively "wary" of cryptocurrencies and, despite some moves into the space in recent years, remained so in light of events like the FTX bankruptcy as well as the absence of effective or common regulatory standards.

"Asset managers have, however, been consistently positive on tokenized traditional assets," he said. "Many see DLT as technology which can solve some of the biggest industry problems – be that fees and costs, closing distance from the end investor, or complexity in the current operating models."

But, according to Came, the industry and its regulators would need to work together to start setting standards for any new digital infrastructure and ensuring new operating models and technology platforms are efficient and interoperable, citing advances in digital custody as an example of this beginning to happen.

He also said the main areas of demand from KPMG's clients were for tokenization of blue chip shares and bonds, and a form of fully backed and regulated public/private issued stablecoin for facilitating payments through digital architecture.

Similarly, State Street's Brereton said the growing focus on "the broader application of this technology across financial markets" shown by the survey results "resonates with what our clients have been talking to us about during the latter half of 2022."

Theme 2

Firms are gearing up the skill set to be ready for the advent of Digital Assets

One thing that was clear from the survey is the investment in technology infrastructure, workforce expertise and industry partnerships that investment institutions are making, in anticipation of digital finance going mainstream. The results showed a majority of respondents building specialist teams with expertise in this area. A majority also claimed to have conducted blockchain-based trades of tokenized assets, or to be in a position to do so if necessary.

"The numbers seem about right for this stage in the technology adoption cycle," said Hastie. "In terms of preparedness, two years ago, we built a blockchain solution for a key insurance client, and the learnings have been tremendous.

"However, in terms of day-to-day operations, the teams have had limited exposure in handling tokenized assets and we would be looking for key partners to work with us and help build out our operating models, which would ultimately inform our longer term technology strategy."

One change Came said he's seen among larger financial services clients in recent years is the transition from having innovation leads looking at digital technology as part of their wider remit, to having senior staff or teams dedicated to digital assets specifically.

"Furthermore, acquisitions of firms that operate in the digital asset and blockchain ecosystem by large financial services firms has increased in recent times," he added.

Came also noted the number of respondents (11percent) who claimed to be pioneers who had traded digital token versions of mainstream assets was "surprising," pointing out that the most common coding languages that the majority of asset managers' IT people have expertise in are not like Solidity, the language smart contracts for financial transactions are typically written in.

Brereton said he's seeing great progress in this space, too. "Investors in cryptocurrencies to one side, over the last couple of years we have seen clients build in-house expertise in the field, to the point where many now have a dedicated team tasked with developing and executing a Digital Assets strategy," he said.

Theme 3

The winning use-cases for the application of DLT are still emerging, but generally industry expects efficiency gains

Respondents saw a variety of ways for digital assets and their underlying technology to work for the benefit of their organizations, with a third or more citing distribution, asset issuance, asset servicing, and smart contract generation among the most important services they would like provided in a digital finance environment. But improved operational efficiency and reduced operating costs were a common theme in the ways they expected these areas to improve their businesses.

"We see the principle advantages being efficiency gains, new forms of liquidity and new distribution opportunities," said LGIM's Hastie.



We see the principle advantages being efficiency gains, new forms of liquidity and new distribution opportunities.

– LGIM CTO DERRICK HASTIE

He also highlighted data from the survey indicating respondents were split on the imminence of mainstream digital tokenization and trading, with many believing it is still a decade or more away.

"In terms of timeline, it's closer than most people think, but there are still a few key pieces of the puzzle missing before we believe this will be commonplace," said Hastie. "Our sense is that we will first see adoption in more illiquid assets and niche small markets, where tokenization will have a meaningful efficiency gain."

But, as KPMG's Taylor noted, "There are a great deal of uncertainties still with respect to regulation, data and technology standards, end-client appetite, level of investment and collaboration required to achieve this. However, in the medium to longer term, we believe all assets will be tokenized and on a blockchain of some design."

He pointed to "several bond issuances on blockchain by banks" as one of the "faster moving areas" in digital finance, adding that, as far as traditional asset managers go, many are looking at real and private assets, like real estate, physical infrastructure assets, infrastructure, private debt, etc., as a starting place.

“However, one thing that needs to be addressed there is what is the advantage for the real estate / physical asset owner of getting investment via the blockchain rather than to a consortium of private investors?” Taylor added.

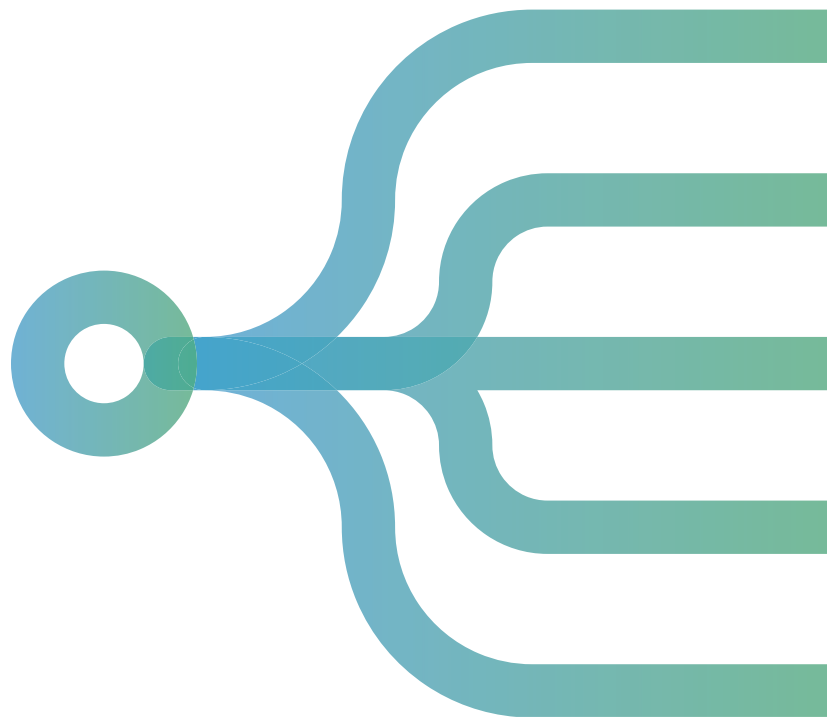
He also addressed data from the survey indicating institutions are uncertain as to whether traditional wrappers will retain their status as primary investment vehicles for investors.

“Longer term, therefore, the bigger benefit for asset managers is likely to be tokenization of ‘funds’ - which may no longer be actual funds - and the underlying assets,” said Taylor.

“In a world where most assets are tokenized will the mutual fund still be the dominant investment vehicle? Many think not and that we are moving towards an era where mass personalization at lower cost bases could be a realistic product offering,” he said.

As State Street’s Brereton concluded: “We are now seeing an emergence of transformational use cases aimed at cost reduction, simplifying or codifying operational complexity, infrastructure underpinning transformation change, and opening up potential new revenue streams, with an emerging focus on tokenization of funds, both illiquid and liquid ends of the spectrum.

“The technology has the potential to impact just about every part of the financial services value chain, whilst not changing the underlying risk characteristics of a given asset, it can aid development of secondary markets and close the gap between issuers and end investor.”



Simply Having a Turbulent Crypto Time?

By Michael Metcalfe

Global Head of Macro Strategy,
State Street Global Markets

The rushed withdrawal of global liquidity had been chilling enough for traditional assets in 2022, but industry scandals have increased the wind chill factor fourfold for crypto. It is suffering a near-existential crisis that is on a par or greater than recent crises in traditional asset markets. However, just as we learned a lot about investor behavior in 1998 and 2008, and in the spirit of ‘what doesn’t kill you, makes you stronger’; significant lessons are emerging for Bitcoin from 2022.

Better regulation, risk mitigation and transparency will all now come at a faster pace. And even though risk statistics now clearly reveal that Bitcoin is a levered technology play, rather than a safe haven, we still find a sliver of optimism in behavior on chain; the proportion of supply held by entities that hold for the longer term has risen to a four-year high. Bitcoin will end the year much weaker than it began it, but it will at least end it in what historically have been safer hands for when sentiment finally stabilizes.

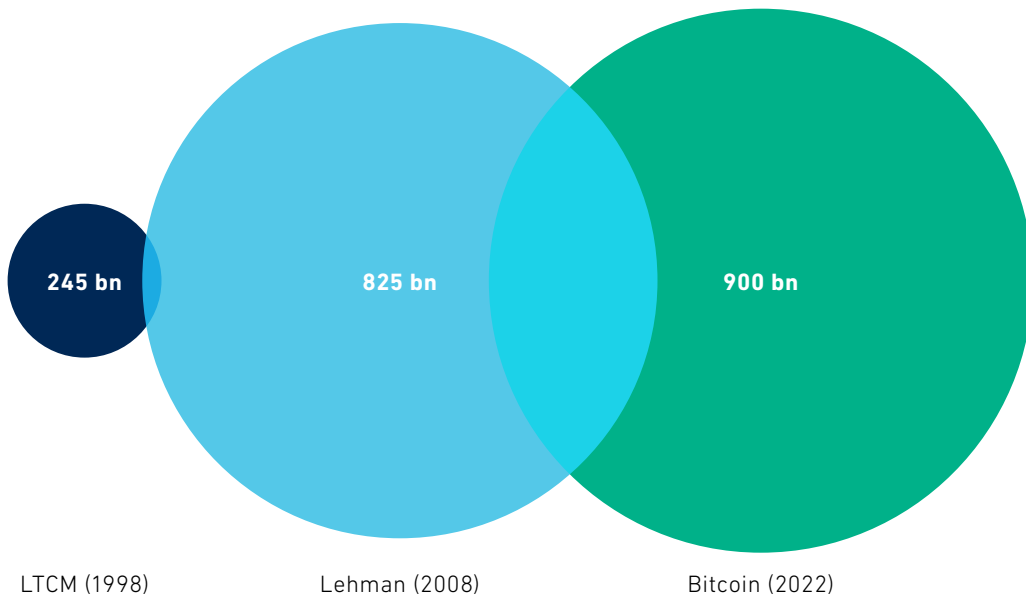
What Doesn't Kill You...

The main lesson from 2022 was not that Bitcoin is a volatile asset; that much has been apparent for years. It was that even with its rapid growth in size, reaching a market capitalization of \$1.2 trillion in November 2021, it has remained volatile and potentially systemic. So while the large percentage monthly falls

in Bitcoin over the summer of 2022 were not unusual, the destruction in market capitalization was. While direct estimates and comparisons should be taken with a healthy grain of salt, the loss in Bitcoin market cap appears to be on a par with the collapse of Lehman Brothers and is multiples of the LTCM collapse back in 1998, even adjusting for inflation (Figure 1).

Figure 1: Traditional and digital crises

Bankruptcies and BTC losses (2022 USD, bn)

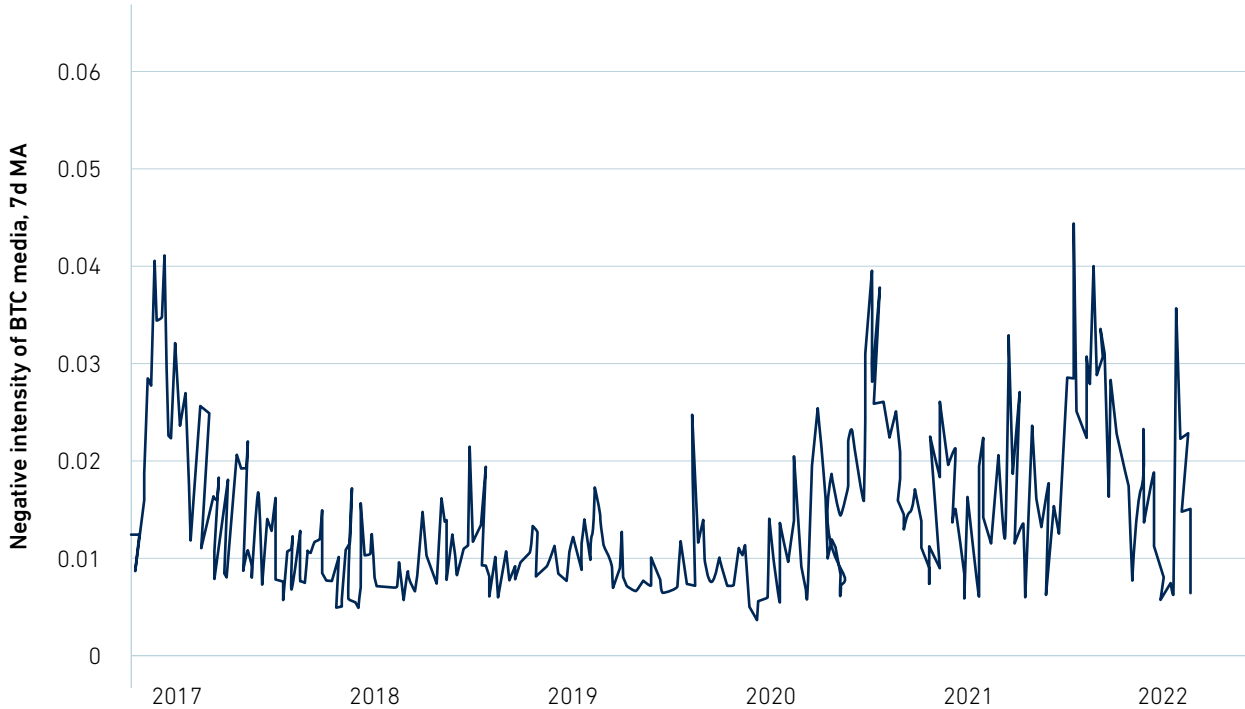


Source: State Street Global Markets, Bloomberg

Given that similar or even more modest seismic shocks destabilized established traditional asset markets for decades, it is not so surprising that it has elevated systemic concern throughout the digital ecosystem – a concern exacerbated in part by light regulation. However, in light of the significant loss of wealth that has now occurred, that seems certain to change. Bitcoin had become and remains too big not to regulate, especially given the prevalence of retail

activity in the sector. In the same way a combination of regulatory and private sector action was required to restore public faith in traditional asset markets following the Global Financial Crisis, the same should now happen for crypto. One small positive we would note here is that so far our media gauges (Figure 2) suggest that the intensity of negative coverage on Bitcoin, while having spiked in mid-November, has already begun to revert back to more average levels.

Figure 2: Bitcoin bashing in the media



Source: State Street Global Markets, MKT MediaStats

Risk Characteristics – The Long View

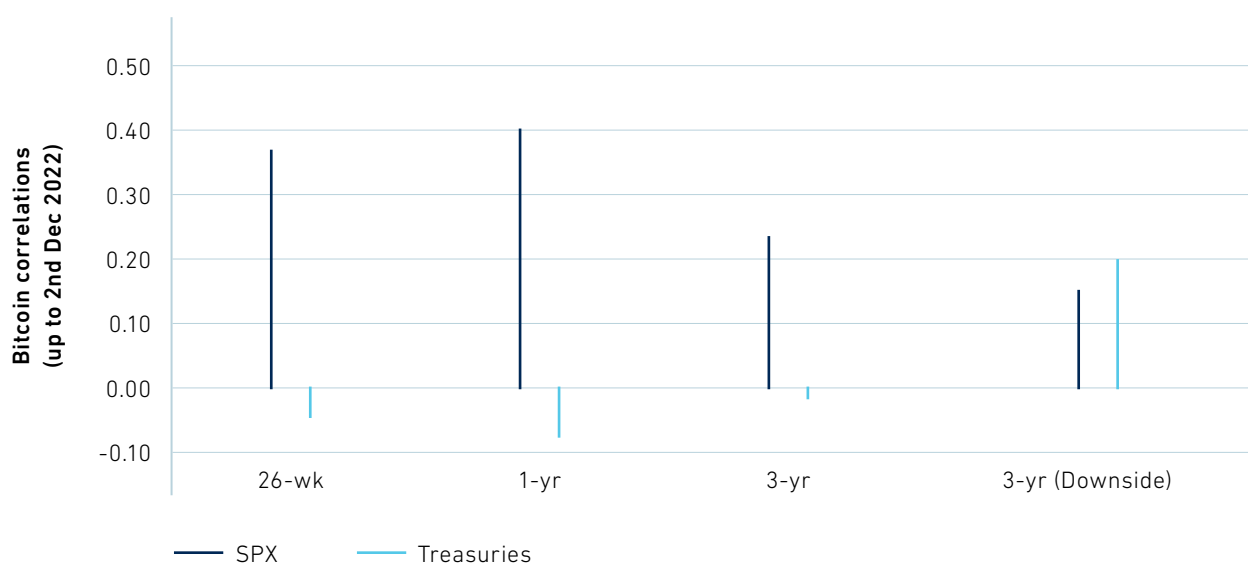
The size of 2022's shock means it will not just shape regulatory behavior, it will have an impact on the risk characteristics and the behavior of investors. As violent as the recent moves in Bitcoin have been, the returns are not as unusual as you might think. It's performance during November was within the distribution of returns we would expect most (68 percent) of the time for an asset with that level of volatility. Curiously it was the rally in Treasuries in November that was much more usual relative to what is 'normal' for US government bonds. Embedded in that Treasury rally is hope that peak US rates have now been discounted, which might provide some hope for risky assets in 2023, a camp into which Bitcoin now firmly falls.

As we have discussed in prior Digital Digest editions, the risk characteristics of Bitcoin have been clear for some time. In November, the contrast of the exceptional performance of some traditional assets with poor Bitcoin returns is a form diversification, but not the kind that

investors might have been hoping for. And looking back further at weekly returns of Bitcoin over the past 6, 12, 36-months, Figure 3 shows a robust positive correlation with equities, even if it is has fallen in November. Looking at conditional correlations is potentially even more troubling. If we only look at weeks in which US equities or Treasuries have fallen, Bitcoin movements show a positive correlation with equities and Treasuries. In other words, Bitcoin is positively correlated with traditional assets when they are going down.

So for now, even if the volatility of Bitcoin is not so unusual, the way it combines with traditional assets is not especially favorable. As Mark Kritzman, Megan Czasonis, Baykan Pamir and David Turkington detail in their paper, [The Role of Cryptocurrencies in Investor Portfolios](#), this doesn't mean they have no role at all. Robust return assumptions or preferences for potential lottery style payoffs can still justify optimal allocations. Both, however, require positive and constructive sentiment toward Bitcoin, so we go there next.

Figure 3: Bitcoin correlations with traditional assets



Source: State Street Global Markets, Bloomberg

Holding Characteristics – The Even Longer View

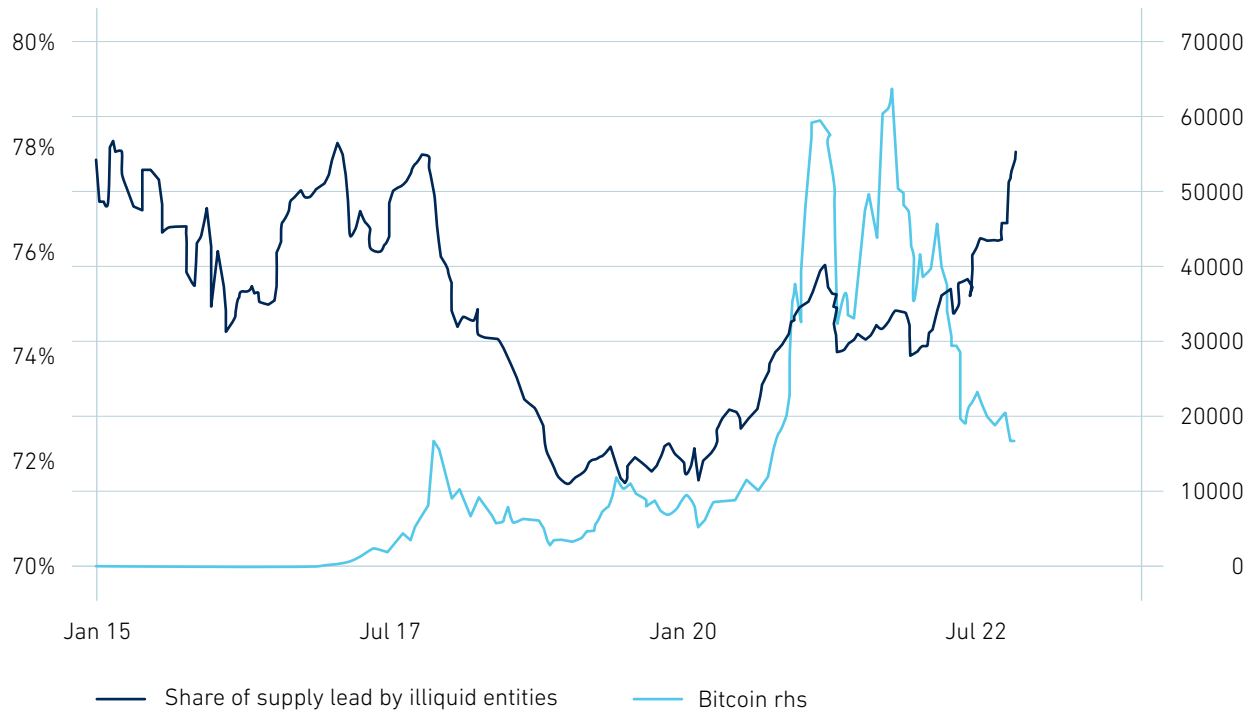
Unsurprisingly, aggregate measures of net capital inflows into Bitcoin, such as the change in realized market capitalization, continue to show significant outflows. The best we can say for Q4 is at least the pace of outflows has not deteriorated beyond the levels seen over the summer. There is no evidence of investor panic – yet.

Meanwhile, digging into the characteristics of who is holding Bitcoin is also somewhat hopeful. Using metrics from Glassnode we observe demand from long-term buy and hold investors. These defined are groups of ‘illiquid wallets’ (entities) who typically accumulate coins over time and have an average holding period of five months or longer. So changes in the holdings of these illiquid wallets have the characteristics of the behavior of

the long-term investors, whose behavior we study in traditional asset markets. Just to stress this point, we do not know whether they are actually long-term institutional investors, only that they share behavioral characteristics. As we do for our measures of behavior in traditional markets, we standardize our measures into percentiles of past flows and holdings as a simple means to give relative importance to the set of flows we see in a given period.

These long-term, typically accumulating entities, have sold Bitcoin three times this year; in January, May and again in Sept/Oct. Over the past month, however, their net buying is running at close to a two-year high at the expense of short-term holders. So amidst high asset market turbulence, it is the longer-term players that have stepped in to buy Bitcoin off shorter-term entities.

Figure 4: Illiquid holders as a share of all Bitcoin supply



Source: Glassnode, State Street Global Markets

As a result of this buying, the holdings of this illiquid or long-term group of entities now account for more than 78 percent of all existing Bitcoin supply. As we detail in Figure 4 this is the highest reading in more than five years. Assuming that these entities stick to their past behavior of holding for extended periods

and typically accumulating rather than selling coins, this should be constructive for Bitcoin. It is akin to a traditional asset that is largely held by long-term institutional investors, which is good news as long as those investors remain committed to that asset!

And That's Enough For 2022

Bitcoin has suffered a systemic sized crash in 2022. Looking far enough ahead we would anticipate some structural positives will emerge for the digital assets that remain. And while it is yet to demonstrate that it is an effective diversifier against traditional assets, the fact that more Bitcoin supply is held today by entities that typically hold for longer periods of time is encouraging.

Bitcoin appears to be in safer hands at the height of its crisis. And finally, the fact that recent media coverage has been less intense means the selling of short-term investors could become less of a panic than it otherwise might have been. In that, along with hopes that peak US rates are also now discounted, there is some hope for the new year.

The Impact of the FTX Bankruptcy on Global Regulatory Efforts

By Justin McCormack

Senior Vice President and Head of Legal,
State Street DigitalSM



In the heart of the crypto winter, the bankruptcy of FTX hit like a surprise blizzard. While the extent of the damage caused by the bankruptcy is still being evaluated, some are asking whether this is a death knell for the crypto asset market, while others suggest it is the harbinger of meaningful regulation necessary to facilitate the responsible existence and ultimate growth of the broader digital asset market.

In this article, we explore the events surrounding the FTX bankruptcy and the market inefficiencies and failures revealed by the implosion that need to be addressed. We then explain how the magnitude of the event as well as the not-so-surprising similarities to other storms that the market has weathered during this crypto winter, starting with the collapse of the TerraUSD stablecoin (UST) and its related Luna crypto asset in May 2022, are galvanizing global regulators to take action to bring the regulatory oversight that is needed to achieve investor protection and market integrity.

What Led To The Downfall Of FTX?

FTX was valued at over \$32 billion in a \$400 million financing round concluded in January 2022.¹ In mid-2022, FTX leveraged (no pun intended) its market-leading position to come to the rescue of a number of crypto firms, such as BlockFi, in the wake of the crypto market upheaval triggered by the collapse of the TerraUSD stablecoin (UST) and its related Luna crypto asset. Then, over the course of just nine days in November, which culminated with the company's Chapter 11 bankruptcy filing on November 11, 2022, FTX's value was destroyed.

The public catalyst for FTX's demise was an article published on November 2, 2022 by the website CoinDesk, which described the breadth and scope of the relationship between FTX and Alameda Research, a proprietary trading firm that was also owned by Sam Bankman-Fried, the principal owner of FTX.² According to the article, much of the assets of Alameda Research were in the form of FTT, tokens issued by FTX that were not backed by any reserve assets. This was reportedly a catalyst for Binance chief executive officer, Changpeng "CZ" Zhao, to tweet on November 6, 2022 that he planned to sell any remaining FTT from the \$2.1 billion of assets Binance received in connection with their exit as an investor in FTX.³

Following this tweet, there was a precipitous drop in the price of FTT. As a result of the uncertainty over FTX's financial position, customers started withdrawing their assets from FTX, triggering a "run on the bank" that ultimately led the company to file for bankruptcy on November 11, 2022.⁴

As the bankruptcy proceedings progress, details of the practices that precipitated the swift fall of this industry leader, as well as the consequences for its customers and other market players, have begun to emerge.⁵ According to a report in the **New York Times**, Alameda Research took out loans to make venture capital investments, and in the wake of the crypto market crash earlier in the year, those loans began to be recalled by the lenders.⁶ Interestingly, there are reports that federal prosecutors are investigating whether FTX was involved in manipulating the market for UST and Luna, a watershed event that precipitated the crypto market crash in May 2022.⁷ In any event, due to a lack of liquidity, Alameda's chief executive officer reportedly stated that FTX customer funds were used to cover those repayments.⁸ This would explain, in part, why sufficient funds to repay customers appear to be lacking. In his first day motion filing, John Jay Ray III, an insolvency expert who previously oversaw the liquidation of Enron and recently was appointed to restructure FTX, stated:

"Never in my career have I seen such a complete failure of corporate controls and such a complete absence of trustworthy financial information as occurred here. From compromised systems integrity and faulty regulatory oversight abroad, to the concentration of control in the hands of a very small group of inexperienced, unsophisticated and potentially compromised individuals, this situation is unprecedented."⁹



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– JOHN JAY RAY III

Similar to other fallen crypto market players during this crypto winter, this quote highlights how improper business practices are at the core of the crisis. Vertical integration of exchange trading, custody and proprietary trading operations

within a single provider creates the potential, and arguably the incentives, for misuse of customer funds, particularly where appropriate segregation of assets does not occur.

What Lessons Can We Learn From The Downfall Of FTX?

The FTX implosion shares many common themes with the other corporate failures during this crypto winter. One unmistakable lesson, however, is that while the crypto market was developed with aspirations of elimination of perceived exclusionary financial intermediaries, what has been created is a marketplace that relies on powerful, vertically integrated intermediaries in the form of exchanges, custodians and asset managers.

Unlike traditional financial institutions, however, the crypto intermediaries are in large part not subject to a regulatory framework designed to ensure investor protection, segregation of proprietary and customer assets or a control framework designed to ensure prudent business practices, the net effect of which is to increase consumer risk. Custody banks, such as State Street, have a long history of providing safekeeping services for their clients on the basis of a clearly established body of law and regulation that defines and supports clients' ownership rights over assets held in custody.

In the banking industry, the safekeeping of client assets incorporates three core principles which are designed to effectively manage the potential risk of misappropriation or loss of assets. These principles can be summarized as follows:

- **Separation of Financial Activities:** Safekeeping operations must be functionally separated from trading and other similar market activities.
- **Segregation of Client Assets:** Client assets must be segregated at all times from the bank's proprietary assets to help ensure that they are bankruptcy-remote.
- **Proper Control:** The custodian must maintain proper control over client assets in order to identify the entitlement holder and to mitigate any 'single point of failure' in the record of ownership.

Application of these principles to all crypto intermediaries would help ensure customer protection and limit the likelihood of "bank runs" and the contagion in the crypto marketplace that we have seen this crypto winter. While they may not have prevented the downfall of FTX, they almost surely would have positively impacted the manner in which FTX grew, the development of an appropriate risk oversight and control function, and the protection of customer funds.

Regulatory Imperative Strengthens Globally

Across the globe, the response from lawmakers and regulators has been one of identifying an increased urgency in the need for appropriate regulation.

North America. In the United States, calls for action amongst legislators has increased. Senator Cynthia Lummis (R-WY) used the FTX debacle as an opportunity to explain how a bill that she recently sponsored, the **Responsible Financial Innovation Act**, would have banned a number of the practices that were allegedly conducted at FTX.¹⁰ The bill proposes, among other things, to provide legal clarity around the classification of a digital asset as a commodity or a security, include a new disclosure regime for certain digital assets to increase financial stability, expand the remit of the Commodity Futures Trading Commission (CFTC) to include regulation of spot digital asset commodity trading and exchanges, and codify the legal framework for custodial services offered by banks, including clarification that custodied assets are not assets or liabilities of the custodian and should not be recorded on the balance sheet of the custodian.¹¹ Another bill that was introduced in August 2022 by US Senators Debbie Stabenow (D-MI) and John Boozman (R-AR), the **Digital Commodities Consumer Protection Act**,¹² would expand the authority of the CFTC to include spot

“digital commodities” transactions, which are defined as including “property commonly known as cryptocurrency or virtual currency, such as Bitcoin and Ether,” but excludes securities, physical commodities or anything else the CFTC determines not to be a digital commodity. This bill was supported by Sam Bankman-Fried, however, which may cloud its future. Senate Banking Committee Chairman, Sherrod Brown (D-OH), has also urged the Treasury to work with Congress to create legislation for the crypto industry in the wake of FTX.¹³

The prudential regulators in the United States have taken a more cautious approach, but have also indicated that the topic of crypto assets and related bank activities continues to be high on their list of priorities. Federal Reserve Vice Chair of Supervision, Michael Barr, stated in testimony to the Senate Banking Committee that the ability to strike a balance between supporting innovation and managing risks is quite challenging, but also noted that “it would be ‘useful’ to provide more guidance on how financial institutions can safely hold crypto assets.”¹⁴ In December, the Office of the Comptroller of the Currency (OCC) published its **Semiannual Risk Perspective, Fall 2022**,¹⁵

in which it identified crypto assets as a special topic in emerging risks and noted that it “continues to maintain a careful and cautious approach to crypto assets in the federal banking system”. The OCC stated that it was continuing to focus on evaluating whether banks were operating in a safe, sound and fair manner.

Europe. In Europe, the governor for financial stability at the Bank of England, Sir Jon Cunliffe, called for better regulations to protect the financial system in the wake of FTX, noting that the links between the crypto world and traditional finance were developing rapidly.¹⁶ In the European Union, the president of the European Central Bank, Christine Lagarde, also called for increased regulation in the wake of FTX during a November 28 hearing of the Committee on Economic and Monetary Affairs of the European Parliament.¹⁷ While the EU has made significant legislative progress in the form of the Markets in Crypto Assets regulation (MiCA), which is expected to have a final vote for approval in February 2023,¹⁸ Lagarde also noted the potential need for a supplementary regulation, MiCA II, that would further regulate crypto asset staking and lending.

Asia Pacific. In Australia, the Treasury reportedly confirmed that it is planning on introducing regulations to improve investor protection with respect to crypto assets in 2023.¹⁹ In South Korea, regulators from the country's Financial Supervisory Service (FSS) stressed the need to implement a regulatory framework during a South Korean National Assembly meeting.²⁰ This comes as the South Korean government is reportedly working on comprehensive digital assets legislation, referred to as the Digital Asset Basic Act, which is expected to be in force in 2023.²¹ Work on this act was initially reported to have commenced in the wake of the TerraUSD/ Luna crash at the beginning of the crypto winter, and it is said to encompass both a broad range of digital assets as well as the role of banks in the sector.

Continued Relevance, Reduced Hype and Strengthened Regulation

While the failure of FTX is the latest in a string of crises during this crypto winter, it is not correct to view it as a death knell for the crypto industry. There are certainly some legislators who see it as validating concerns they previously raised about crypto, but a significant number of legislators and regulators continue to view the digital asset class, which is broader than cryptocurrencies, as more than a fad and something that lawmakers need to more urgently address to ensure investor protection as well as market integrity.

On a global basis, from North America to Europe to Asia, senior lawmakers are calling for accelerated legislation and rule-making. It remains to be seen exactly how comprehensive the regulatory framework will be, but to the extent it can effectively address the business conduct issues demonstrated during the crypto winter, the focus can shift to using cryptographic technology to revolutionize the investment lifecycle for all digital assets.

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The Future of Digital Custody

Trust, Risk and Integration

By Swen Werner

Head of Digital Custody and Payments,
State Street DigitalSM

An interview with Copper's podcast

Coppercasts



In a recent podcast from Coppercasts, State Street's digital custody technology partner, Copper interviewed our head of digital custody Swen Werner. This is an abbreviated transcript of their conversation. This conversation is taken from Copper's latest 'Coppercast' Podcast, which will go live on January 16.

To listen to the full discussion click [here](#).



Coppercasts



Swen Werner

Head of Digital Custody and
Payments, State Street Digital

Copper: To start off with, can you tell me a little bit about how State Street's own origin with crypto assets or digital assets came about? Where did the demand come from for State Street to start looking at this seriously?

Swen: From a technology perspective, we've been engaged for several years and been looking at applying distributed ledger technologies and other things like A.I. [Artificial Intelligence], et cetera., to banking and our services. But in a way, this is almost a separate question to crypto as an asset class, given its regulatory status which even quite differs across regions. And so there was always a question: Would an institutional investor in the form of a pension fund or an asset manager actually start to invest in those assets? If so, what should we be doing about this? Because as a custodian, what you provide is a platform business where your investors hold all kinds of assets across the globe and you try to

be there for them irrespective of the underlying investment strategy.

And then, in a way, that question answered itself by us actually looking at what our clients were starting to do, which was they started to seek exposure into this asset class via the purchase of exchange traded notes and these kind of instruments, starting obviously from a relatively small base. But, nevertheless, you could see an uptick, even from institutions that you wouldn't have expected. So for me, this is like the market voting with their feet and saying there is a need to get into this space and instead of letting it go without having a proper strategy, we said, "Let's look at this, understand the needs and build the proper infrastructure and service model around this." So this was both a strategic intent to develop the market in an appropriate institutional fashion, and also a direct reaction to the behavior of clients.

Copper: And did it make it somewhat easier if the early adopters on the investor and asset manager side were going via derivatives or ETNs that were using the existing investment framework? Did that make it easier for State Street to start evaluating the potential of it as an asset class and for the bank to make an internal argument that they should be developing this further?

Swen: Oh, yeah, absolutely. It helps if you can see it's happening anyway. And if you take Exchange-Traded products, they are traded on normal public stock exchanges. So in a way, these investments can be made and they run through the traditional settlement and payment channels. And the fact that the exposure underneath is crypto doesn't really concern the custodian or the broker or anyone involved on the operations service side. So it makes it very easy. But then the question is: Is this an efficient model that really maximizes the opportunities from a crypto asset?

If these instruments are being created as an investment class, then creating new asset servicing vehicles that provide new revenue and distribution opportunities for the institutional asset management industry is something, as an organization, that is front and center, we need to be engaged. We can't stand idle and watch it.

What we want to achieve is to provide a model that provides a level of safety and robustness that our clients expect from us. But you have to balance this with the fact that a crypto asset fundamentally operates in a different market structure, which is decentralized, where you have peer-to-peer networks, and where decisions are made in a

decentralized fashion. So to some extent, a big part of what an organization like ours can bring is also providing this transparency around these new dynamics.

When we enter a market, we obviously assess to what extent can assets be segregated, are the rights of an investor recognized and protected? This is being analyzed and being confirmed on a frequent basis. We're trying to take this framework and apply it to the crypto markets, and we are making sure that if we identify those issues, they are backed up by evidence, and consider legal or operational standards relevant to institutional investors and then, as an organization that is concerned with asset safety, it becomes part of a living and breathing risk organization that helps your operational model.

Copper: I wonder if there's some work to do to elevate the status of the technology itself, as a private key management system and identity management system, as opposed to, you know, just the headlines that you see about Bitcoin or crypto in general?

Swen: It is a revolutionary process, but developments like banks entering this market and providing services and solutions will obviously help to accelerate this development. Regulation has a role to play. Under what circumstances can we provide services and in what ways does current regulation have to adjust in order to enable a decentralized network? For example, the KYC [Know Your Customer] requirements are important for regulators, and that we ensure we can control AML [Anti Money Laundering] risk. But if you have a peer-to-peer network, does this mean, going forward,

I have to KYC the world? Obviously, that's not possible and so something has to give in contrast to what's being done today, that we understand. You have decentralized blockchain solutions and then you have a centralized KYC and AML infrastructure sitting outside of blockchain. They have to come together, which means regulatory requirements have to be coded into the blockchain in order to make this whole thing efficient.

And the second thing I would say is to really look at what's driving the benefits of a digital asset market. There needs to be trusted data, which means that the information a digital asset token represents can be cryptographically verified. I've been working on the securities custody and collateral management infrastructure my entire career, which is 20 years now. We've been trying as an industry to create efficiency and standardization and new market infrastructure - central cleaning houses, new standards, et cetera.

But there are certain aspects to the securities custody industry that have also been difficult to harmonize, standardize, automate, in particular the asset servicing part, such as corporate actions, voluntary events, these kind of things, because they are inherently difficult to standardize since they are subject to local regulation. There's a lot of uncertainty as well, different languages, these kind of things. So how can we trust market data?

Now, if you take this to the digital asset market and blockchain, the question that I'm raising here is actually very similar. Can you actually trust a

token and the information it records or do you need something else? And if you need something else, then in the old world that would have meant the piece of paper in the form of a contract to say to what extent am I liable for my services that rely on such data. The problem that is being solved here contractually is solved in the digital and blockchain market very differently. Something that we've been trying to solve as an industry for a long time can be solved with the help of blockchain only by making sure that the data model for creating tokenized assets is a digital one, that's all about cryptographic proof of data to allow for composability of tokens. Once we get that, I'm convinced the future of digital assets has a big role to play in order to drive efficiency.

Copper: Are you able to give me a sense of the scale of the change that's undergoing right now, whether that's State Street bringing this technology or a more macro perspective? How big a change are we undergoing at the moment?

Swen: It can be one of two things. It can be limited to crypto and some fringe assets, or it can really be mainstream and then it is more than simply technology for the financial world. And really, I mean, you will buy your cinema tickets through a blockchain application. But, of course the question is, how do you make sure that the digital assets we are creating are truly digital, so that they become interoperable, and integrate with other digital aspects of our lives? If we all collectively move forward in that direction, I have no doubt that the possibilities are almost endless.

Glossary

- **Augmented reality (AR):** A technology that superimposes a computer-generated image over a user's view of the real world.
- **Bitcoin:** A decentralized digital cryptocurrency, with the token issues 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 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.
- **Decentralized Finance:** Distributed ledger technology-based financial services without traditional intermediaries and central authorities.
- **Digital Assets:** Any asset in a digital form on a blockchain.
- **Digital Custody:** The holding and administration of crypto assets and/or cryptographic keys used to safekeep or transfer crypto assets.
- **Fiat Currency:** A government-issued currency that is not backed by a physical commodity but by the 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.
- **Metaverse:** A virtual reality space in which users can interact with a computer-generated environment and other users.
- **Mixed reality (MR):** A medium consisting of immersive computer-generated environments in which elements of a physical and virtual environments are combined.
- **Nonfungible Tokens (NFT):** A unique and non-interchangeable unit of data stored on a digital ledger.
- **Programmable Money:** A cryptocurrency that can be programmed for a specific outcome using smart contracts.
- **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.
- **Virtual Reality (VR):** The computer-generated simulation of a three-dimensional image or environment that can be interacted with in a seemingly real or physical way by a person using special electronic equipment, such as a helmet with a screen inside or gloves fitted with sensors.
- **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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