

PwC's Cryptoassets Survey 2021/22

Cryptoassets and the future of the financial industry





What's in this report?

This survey was conducted by the Financial Services Advisory team between October and November 2021 through an online questionnaire distributed to industry leaders in Switzerland. At the time of their response, 36 % of the respondents occupied a board member, non-executive director or executive role, and 56 % a management or senior management position within their respective organisations. The analysis in this report is primarily based on the collective opinion of the respondents and is complemented by the team's knowledge, research and views about the industry.

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97 %

expect the financial industry to be disrupted by cryptoassets

63 %

do not offer their clients exposure to cryptoassets

Dear friends of the financial services industry, crypto enthusiasts and the crypto-curious,

For this first edition, we're pleased to have had the participation of 45 financial services industry leaders. We'd like to extend my warmest thanks to all respondents for sharing their valuable views, contributing to a muchneeded debate on the current state of cryptoassets, emerging trends and future outlook for these, and the future of the financial services industry. Set against the explosion in the capitalisation of cryptoassets, this 2022 edition addresses industry leaders' awareness and perception of the resulting impact and their own readiness with regard to this new asset class. It seems inevitable

that cryptoassets will have a significant effect on financial services, and we want to gain a better understanding of where the industry is heading currently and how to be prepared. Even though the technology has been in use for over 12 years, with various booms and troughs in the intervening periods, we believe there are many more disruptive developments to come, and we are still in the infancy phase of the adoption and establishment of the technology and its use cases. In this publication, we also aim to address common questions that we receive from our valued clients.

Our findings reveal that more than half of the survey participants rate their own knowledge about cryptoassets as below average, 97 % expect the financial industry to be disrupted by them, and 63% do not offer their clients exposure to cryptoassets. We see that the majority of financial services clients, both corporate and private, show strong interest in cryptoassets and the associated investment opportunities, and this is confirmed by research from the Financial Times that 42% of UK wealth management clients planned to invest in cryptoassets outside their traditional arrangements. All these indicators point towards a big shift in client sentiment and demand along with an increasing understanding that companies need to enter the crypto market to support their clients, against a headwind in terms of knowledge, understanding and a cohesive strategy to take advantage of the opportunities.

We're in the midst of a challenging time with many unknowns – an exciting time, in which multiple forces are converging to develop and, in part, to rebuild a better financial services industry.

How ready are you?

Yours sincerely,



Patrick Akiki, Head of Financial, Services Management Consulting



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Cryptoassets: definitions and insights

This first chapter is a primer, designed to set out an understanding of what crypto is. We have decided to integrate this section because nearly half (48.6%) of the respondents of this survey stated that they 'need to understand the relevance and define how to react', and a fifth that they 'like to stay informed'.

However, if you want to dive straight into the detail, please skip ahead to section *State of the Financial Industry* on page 15.

Throughout this report, we use the term 'cryptoassets' as an overarching term to cover broader topics including blockchain, distributed ledger technology (DLT) and tokenisation for simplification.

What is crypto? What is blockchain? What is Distributed Ledger Technology?

The following pages cover some of the fundamental concepts of this technology. These include the 'Ledger' (p.6-7), 'Security/Hashing' (p.8), and 'Consensus Mechanism' (p.9). We then discuss the high level architecture of a blockchain (p.10-11) and introduce a view of cryptoassets in the context of traditional means of payments, and its related use cases (p.12).

Ledger:



A ledger is document detailing and summarising transactions. Originally, ledgers were paper-based and handwritten. It was not possible to make any change or remove pages without leaving a trace. In the context of digitalisation, ledgers moved to electronic solutions, commonly held in Enterprise Resource Management ('ERP') software. Traces of changes became less evident and new controls had to be defined to address the risk of inaccurate records. Typically, these controls would be managed by an intermediary, e.g. a bank that manages the changes to the records as a central authority between the counterparties to a particular transaction. This enables the bank to validate whether a transaction between two of its customers is authorised and legitimate. The intermediary institution creates trust that may not exist between the two counterparties, who may not know each other.

Distributed Ledger Technology (DLT) is a term used to summarise technologies that essentially comprise a distributed ledger. DLT is a decentralised peer network, which uses nodes that communicate with each other to reach consensus, with each node holding an immutable copy of the ledger. By creating this network of nodes aiming to maintain the accuracy of the ledger, no single intermediary is required.

Blockchain, most prominently known due to its use by Bitcoin and Ethereum, is a subcategory of DLT, collecting information in blocks containing sets of information. Once the storage capacity of a block is filled it is closed and linked to the previous block. New information is subsequently fed to a new, subsequent block, until that block is filled in turn and added to the previous block. Those blocks are combined in an immutable chain of data, hence the name 'blockchain'. In order for a blockchain to operate effectively, it requires a method for the nodes to agree on which transactions are valid and can be added to the ledger (a consensus mechanism) and a method for securing the information stored on the ledger (a security mechanism or cryptographic hashing technique).

A consensus mechanism is applied in blockchain, with differing options such as proof of stake, proof of work, proof of elapsed time, and others; the security mechanism is cryptographic hashing and can handle a hundred to ten thousand transactions per second.



Security/Hashing:



To understand why a blockchain is often said to be immutable (i.e. unable to be changed), we must first learn about hash functions, also referred to as cryptographic hash functions and secure hashing algorithms. A hash function is a one-way mathematical function that takes inputs of variable length and returns an output of a fixed length. All transactions in a block as well as the hash of the previous block are inputted into a hashing algorithm, and both the original block hash and the new transactions are combined when a new hash value for the new block is generated. On average, a single block in the blockchain can contain about 3,000 transactions. The main use of hash functions is to verify the authenticity of a piece of data.

There are many different hash functions, but they should all exhibit the following characteristics:

- One way it is practically impossible to find out the input value from the hash output.
- 2. Consistent the same input data and hashing function will always result in the same output.
- **3. Collision free** no two different input values should provide (or 'map to') the same hash output.

The reason blockchains are said to be immutable is because blockchain software will calculate a hash output for each block of data. The data that is fed into the cryptographic hashing function includes the hash output of the prior block. The inclusion of the prior block's hash output in the calculation for a new block makes it nearly impossible to rewrite a blockchain. Imagine there was an individual who wanted to change information in block 5 of a blockchain with 20 blocks. Changing the information in block 5 would cause a new hash output for block 5 to be computed. Remember that the block 6 hash output is partially based on the block 5 hash output. If block 5 were to have a new hash output, this would mean that block 6 and every block thereafter would instantly become invalid because of the change in block 5. In a large, public blockchain such as Bitcoin, the exercise of changing block 5 by itself would require a significant amount of computing resources by design and the longer the chain gets, the harder it is to change.

Nodes in the network work on the principle that the longest valid blockchain wins (i.e. the larger number of blocks in the chain makes it the 'winner' as the valid set of blocks).



Consensus mechanism:

With any ledger, there has to be a way to reach consensus that the information in the ledger is complete and accurate. In a centralised system, this would be the central authority (e.g. a bank), but there is no central authority in public blockchains that operate a decentralised ledger. A public, decentralised blockchain would therefore need a set of rules that are fair, reliable, secure and efficient, to ensure that all the transactions occurring on the network, as executed by the various participants on the blockchain, are genuine and accurate. Blockchains use a consensus validation mechanism to accomplish these objectives. Different blockchain networks have different consensus mechanism algorithms, which work on different principles. Two of the most well-known consensus principles are Proof of Work and Proof of Stake. There are many other consensus mechanisms and there will be new ones created in the future, but understanding a blockchain's specific consensus mechanism is critical to understanding how a particular blockchain operates.

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Knowing a blockchain's specific consensus mechanism is critical to understanding how a particular blockchain operates.

How does a blockchain work?

The chart below (Figure 1), although greatly simplified, helps to break down complex technologies into bite-size concepts to allow a better understanding of a blockchain's elements and interdependencies.





The foundation is the **protocol layer**. It contains the business logic, i.e. how it will impact transactions, and defines its capabilities such as smart contracts. It is computer software coding that drives the operation of every element of the blockchain, including the consensus mechanisms, the type of cryptography, node operations, smart contract functionalities and data structures. Bitcoin and Ethereum, for example, have their own public blockchain with their own protocols as a foundation.

The blockchain protocols, by analogy, are comparable to operating systems such as iOS for Apple or the Android operating system on your smartphone. They enable the functionalities of your phone, such as calendar, email and other applications. On the blockchain, the protocol enables the network and applications.





The network layer defines how transactions are verified and validates that it is aligned with the business logic in the protocol. It also defines who can verify the transactions, and if there can be limits placed on verifications. The network layer is where blockchains come to life. The different parties connect to each other in a peer-to-peer system and share the same set of data. Some networks operate private (or closed) networks, and others public (or open) ones. Bitcoin and Ethereum use open networks and famously implemented 'permissionless' systems. These public networks allow anyone and everyone to plug in and look around. If users are using the proper protocol, they can even participate in the system by creating or validating transactions. Open networks can be very valuable if they have a significant number of participants.

Networks can also be 'private networks' or 'permissioned networks', in which network participation can be restricted and the role of each permitted participant can be defined. To continue with our example of iOS and Android, the network may be compared to the Apple App store or Google Play store. These are networks in which Apple and Google control access, and an end user can join provided they create an account with Apple or Google to obtain 'permission' to participate in the network. Users can engage in the network in different ways; some may be application developers who can add value to the network, others may be application users who purchase things from the network, while Apple and Google can ultimately generate income for facilitating the network. Protocols and networks do not always have a one-toone relationship. Ethereum has multiple networks, as does Bitcoin. There are also many companies that use the Ethereum protocol and build their own networks.

The **application layer** defines who can access the blockchain and who can make changes to it. It is also referred to as the business logic layer. Returning to the analogy of Apple or Google, the application layer is where participants can use applications such as the calendar or mail, or play games. It will allow participants to execute activities that are in line with the purpose of the blockchain. Some systems have pre-built the entire three layers as a single system (e.g. Bitcoin), others focus their efforts on perfecting one layer only, making it easier for other companies to use their own layer (e.g. Ethereum, R3CEV's Corda, Hyperledger). These applications can - at least in theory – perform any business function on top of a blockchain. If implemented properly, in the future most users will only focus on this application layer and will not even notice or care that

they are on a blockchain. Returning to our analogy, this behaviour is similar to that of users who use and are knowledgeable about their favourite applications and connect to them via social media on their mobile phones, but ignore whether these are running the iOS or the Android version.

What are the use cases for cryptoassets as we define the term, and how does it compare to more traditional forms of money?

Figure 2 reflects a more finance-focused view, depicting such use cases and how they relate to more traditional forms of money or ways of storing and exchanging value.

Starting at the top left, we structured this overview starting from the basic function of storing and exchanging value. Secondly, in the middle, we grouped and explained the examples, adding an investment characteristic. Finally, on the right, we summarised examples which – in addition to the above – have a unique ownership or utility functionality.

Entering crypto: modes of entry

Figure 2: Overview of traditional means of payment and cryptoassets (PwC, 2022)







The main traditional examples of storing and exchanging value, such as cash, debit cards, cheques and wire transfers, are of fixed value, as are the concepts of Central Bank Digital Currencies (CBDC), electronic money (such as AliPay) and stablecoins (such as Paxos). All of these have a value preservation mechanism, relying on currencies that are ultimately governed and guaranteed by central banks and managed by banks or private corporations. Stablecoins are different in that they rely on decentralised technology.

On the right of Figure 2, we grouped examples of inherently variable value, which are managed by private corporations or open/closed networks. These examples rely on decentralised technology, i.e. DLT. The most wellknown examples within this group are commonly known as 'cryptos': public coins such as Bitcoin, whose value preservation mechanism is based on market value. Asset-backed examples, commonly known as Security Tokens or Tokenised Traditional Assets, are similar to stablecoins, but variable in their value as this is a function of the underlying assets; hence those crypto forms can be invested in.

The newest types of cryptoassets are non-fungible tokens (NFTs), in which the value preservation mechanism is an ownership right. In the case of utility tokens, which have been around for some time, it is the access or right to use that preserves the coin value. NFTs are digital tokens on a blockchain, each of which represents something unique, such as a digital piece of art, a special in-game item, rare trading card collectibles or any other distinct digital/physical asset. Tokenised, real-world assets can be real estate, physical paintings, government documents, certifications, and diplomas. The field of NFT is relatively new, and – to a very large extent - is still evolving and taking shape.



The sentiment in the market is slightly contradictory, our survey participants expect blockchain and cryptoassets to disrupt finance substantially – however there is hesitancy in taking efforts to build knowledge and to enter the market.

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State of the financial industry



Survey Focus

Our key objectives were centred around the areas in which we received the most questions from our valued clients in our day to day conversations:

- · How will cryptoassets impact the financial industry?
- How far along is adoption within the industry?
- How do we compare with the competition as regards getting ready?

To address these rather strategic questions, our survey was aimed at senior leaders in the financial industry with a focus on wealth management and private/retail-banking and a diversified, cross-functional split. This gives us the 'strategic view' of the company in terms of the responses.







Let's dive into the survey results.

We have three sections covering the results from each part of the survey to find answers to this question:

What's the status quo in the financial services industry in terms of cryptoassets?

How do financial services industry leaders perceive

- their experience and knowledge of cryptoassets?
- the impact of cryptoassets on the financial industry?
- their own readiness for cryptoassets?

Knowledge

A basic question we wanted to address in our survey was how knowledgeable and experienced leaders of the financial industry are on the subject of cryptoassets, and how they assess their relevance to the industry.



How experienced are financial industry leaders in cryptoassets?

In total, a third of respondents rated their knowledge and experience as being above average. This meets our expectations, as the proportion of interested and thus informed people would tend to be higher, in terms of participation, than the average population. Due to the surprisingly high proportion claiming to have little or less than average knowledge and experience, we have included the primer at the start of this summary.





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* The numbers may not add up to 100% due to rounding effects.



How relevant are cryptoassets for the financial industry?

Nearly 50% of respondents indicated that they need to understand the relevance of cryptoassets and define how to react to them. This corroborates the discussions we're currently having with business leaders in the market. Senior leaders are aware that they need to develop a strategy on how to integrate cryptoassets into their current business models.







Impact

What is the impact of cryptoassets on the financial industry? In which direction is the market moving?

As Figure 8 illustrates, more than 96% of the respondents in total believe in a strong disruption, of which 6% expect it to happen 'within one to two years', more than half (56%) 'within three to five years' and more than a third (34%) within more than five years. Only a small fraction, 3%, believe that cryptoassets will 'never' disrupt the financial industry.

In terms of the expected disruption, the perception of the majority is clearly that it will happen to the FS industry. However, considering the timescales involved, this result surprised us given the recent, high-profile and extensive media coverage of IPOs such as Coinbase and the significant market traction of Bitcoin, Ethereum, and – more recently – of Binance Coin, Tether, Solana and Cardano. We would have expected a stronger concentration of responses that expect disruption in the shorter term.

Never

Figure 8: Disruption of financial industry by cryptoassets*

Within one to two years

Within three to five years

In more than five years

6 %

56 %

34 %

3%

We do not know exactly when the major disruption will kick in. However, if it hits earlier than most traditional players expect, the window of opportunity may be seized by the fastest and most agile first movers, which may not necessarily come from the traditional industry. Even though most leaders expect disruption in 3-5 years, we suggest putting a strategic plan in place in order to:

- understand market dynamics
- work out which products and services the organisation intends to offer to address client demand
- ensure sufficient budgeting and staffing to prepare for the disruption
- take advantage of opportunities in the event that the industry moves more quickly than expected

Which product and service areas will be most disrupted in the future?

Looking more closely at the product and service areas where our respondents believe most disruption in the financial industry will happen, 41 % ranked 'Investment Management, Advisory and Products / Mandates' and 31 % 'Payments' as the areas that will be impacted most. Taking together the fields ranked first, second and third for strong

Figure 9: Products and services - areas of disruption*

disruption, 60% expected it to be in 'Investment Management, Advisory and Products/Mandates', 53% in 'Payments' and in 'Securities' and 50% in 'Loans and Credit', while only the two remaining categories scored fewer than half the rankings in this range ('Trade/Project Finance' 47%, 'Fundraising' 38%).

3% Investment management. 13% 6% 41 % 16 % 22 % advisory and products/mandates 3% 25 % 19% 22 % 6% 19% 6% I oans and credit Trade/ 13 % 9% 25 % 19% 19% 16 % **Project Finance** 3 % 22 % 25 % 16 % Fundraising 13% 22 % Securities 6% 34 % 13% 19% 16 % 13 % 3% 31 % 16 % 6% 9% 9% 25 % Payments Most disruption Medium disruption Least disruption The strong scores for 'Investment Management, Advisory and Products/ Mandates' and 'Payments' were to be expected. As these are the areas that are the most mature and publicly known in terms of use cases, respondents might perceive them also to be the areas where the most disruption will occur in the future. However, it will be interesting to see if and how this perception will change over the coming months and years, as other use cases gain traction and maturity.

However, we anticipate that there is a multitude of investments in cryptoassets that have not yet reached the mainstream but may soon become a substantial part of the financial industry – and at growth rates not seen in other asset classes. According to the IMF,¹ the market capitalisation of cryptos was estimated at USD 2.5 trillion at the end of 2021. The spectrum ranges from stablecoins collateralised by a plethora of collateral types, to the tokenisation of illiquid assets (e.g. Green Infrastructure Financing) and to liquidity pools and staking.

Furthermore, despite the most recent price crashes in many stablecoins that are not fully collateralised, the new asset class has gained significant traction in the market, paving the way for an increasing number and higher adoption rate of stablecoins for payments, even among long-standing, traditional players.² Examples include PayPal's introduction of crypto purchases in Nov 2020, Tesla's major investment and the acceptance of crypto as payment by Mastercard and Visa in 2021.

According to the US Fed³, stablecoins issued by the largest stablecoin issuers increased by almost 500 percentage points from the beginning of Q4 2020 to October 2021, amounting to an estimated market capitalisation of over \$127 billion in Q4 2021 – mainly driven by a few, large U.S. dollar-pegged stablecoins.

What is evident is that this application area of blockchain technology shows massive potential for disruption but will need to become more mature, and perhaps have more regulation applied to it, before it can achieve mainstream adoption. For example, the crash of the Terra/Luna stablecoin is akin to a panic-driven bank run, which - in regulated markets - is alleviated by deposit insurance requirements. These types of regulations may be beneficial for the mainstream adoption of blockchain technologies in financial markets, but the real challenge for regulators will be to ensure consumer safety without stifling innovation.

What are the most important tokenisation forms of the future?

Looking at various tokenisation forms and their importance for clients and companies in the future, half of the respondents ranked Private Equity, Art, and Real Estate as highest or high (50 %). For the other ranked tokenisation forms, the respective values were 25 % for IP rights and 15 % for high-value personal items such as yachts. Due to the novelty of tokenisation and the very early stage of the use cases, it is a difficult question for respondents to assess because of the lack of history and data points. However, this result does match our expectations as the illiquid product types serve as a case for tokenisation to create more liquidity. It is a relatively even split, with no clear

'winner'. The only outlier is high-value personal items, which makes sense given that, whilst people may be willing to take debt financing and use personal items to securitise, they may not wish to put such sensitive information in the open market for consumption and prefer to use the confidentiality of their existing bank.



* The numbers may not add up to 100% due to rounding effects.

What are the most important current and future cryptoasset-related services?

In terms of the importance of current and future services related to cryptoassets for our respondents' companies and clients, a clear priority among our survey population lies in both Wallet services (60 % ranked high or highest) and Custodial services (53 % ranked high or highest). It seems that the more established services, such as wallet and custodial services, are acknowledged to a greater extent in the survey population due to their more advanced maturity.

A third of the population (30 % each) ranked 'Proprietary Investment Solution/ Asset Class Offering' and 'Investment Management/Investment Advisory' as high or highest, while only 13 % accorded the same importance to 'Staking and/ or collateralised lending' and 'Asset Valuation and Tax Reporting'.

Despite a clearly lower ranking for newer and comparably much less adopted and established services, the market dynamics might change and, as the learning curve grows, so will experience and maturity in more basic and established services, and the appetite for more exotic offerings, such as lending and staking services, might also increase within the industry.

Figure 11: Importance of current and future cryptoasset-related services for clients and companies*



For traditional financial services institutions, we have published an article on 'how to become a crypto bank'. [2] It covers the key considerations for initiating an offering as a VASP ('Virtual Asset Service Provider') and as a cryptoasset custodian.



* The numbers may not add up to 100% due to rounding effects.

Readiness

Our third aim was to gain an understanding about how ready the players in the industry are. Therefore, we inquired about the perceived importance of cryptoasset applications, current offerings, and preferred modes of entry.



How experienced are financial industry leaders in cryptoassets?

One question that we are increasingly asked in client conversations is about what the industry and the competition are doing. We therefore wanted to find out what the most important cryptoasset applications are, what the current offerings are and what the market entry strategies would be, and to what extent these would be proprietary developed solutions.

What are the most important current and future cryptoasset applications?



* The numbers may not add up to 100% due to rounding effects.

When considering which of the current and future cryptoasset applications are most important to our respondents' companies and clients, 'crypto currencies in general', such as Bitcoin, were clearly ranked highest at 1.5 on average, while 'stablecoin' ranked as high, at 2.8 on average. The importance of 'non-fungible tokens' (3.3), Central Bank Digital Currencies and 'smart contracts' was ranked with medium to lower importance, with an average score of 3.7.

One interpretation of this distribution is that it reflects the current market sentiment and capitalisation based on the fact that the development and adption of the technology is still in its infancy, but perhaps does not reflect the current developments and their implications for the future.

While it is clear that crypto currencies are dominant now and stablecoins are currently an integral gateway between fiat and crypto on/off ramps, the fact that CBDC is ranked so low is surprising. We did not expect this, since – in theory – CBDC could substantially disrupt the industry by cutting out the need for intermediaries between the central banks and the consumer (disintermediation). Such a development would pose a substantial challenge to established financial services institutions' business models, as it would require large parts of the current business to be redefined.

It could turn out that stablecoins will be regulated out of existence or cease to be popular once CBDCs are prevalent in the market. Or, perhaps, there is little confidence in the timeframe within which CBDC projects will come to fruition.

The rather low rankings for NFTs and smart contracts may be explained partly by the low level of maturity and adoption of their respective use cases in the mainstream. However, this might change substantially in the not-too-distant future, when applications in these areas gain traction – and we are convinced that this will happen.

Knowledge



Retail CBDC is the model in which citizens can directly hold the CBDC in their private wallets in relation to the central bank. This model entails full disintermediation of 'financial services institutions' intermediary functions, which are currently essential parts of the core business. The less disruptive version, known as Interbank or Wholesale CBDC, is restricted to financial institutions – principally for inter-bank payments and financial settlement processes – and does not disintermediate the banks. However, even in a 'wholesale' CBDC scenario, profound and pervasive effects on the industry must be expected. Everything from liquidity requirements to security financing would be affected. One example that illustrates the significance of the disruption is that the security settlement process for transactions could be reduced from the current two to three days, to instantaneously.

State of the industry: current cryptoasset offerings

Figure 14: Current client offerings for exposure to cryptoassets



However, given the growth in the crypto sector in recent years – as evidenced by huge monthly growth rates of between 2.3 % and 30.2 % for Ethereum and Bitcoin in 2021, as well as the growing demand from clients pushing up the number of 'users' to 221 million by June 2021 – demand continues to surge and tap into the mainstream, while supply lags behind.

Another perspective when considering crypto-related movements is to view the various use case dimensions, such as NFTs and metaverses, Web 3.0 and the multitude of other potential future use cases based on blockchain and distributed ledger technologies as early adopters. Blockchain natives are testing and exploring all of the above, manifesting in different use cases on this rising platform technology. Eventually, most likely only a few players will survive and dominate the market. In this respect, the growth in NFTs as an example of another application, of 21,000 % (!) in trading volume in 2021 vs 2020,4 indicates that the disruption is still in its early stages in the mainstream and is likely to acquire far greater importance in the financial system once some of the use cases mature according to industry

standards, and come closer to full adotion in the mainstream. The fact that people have improved the monetization of, resulting in profits of USD 5.4 billion for the same period, underscores the potential and importance for the business world as the above figures indicate.

The growth in DeFi (decentralised finance) is staggering, with the Total Value Locked (the measure used in DeFi, akin to AuM), increasing from USD 20 billion at the start of 2021 to USD 260 billion in April 2022.5 Furthermore, increasing competition at the protocol level also bodes well for the development of the DeFi market, with the market share of ETF dropping from 97 % at the beginning of 2021 to 55 % in April 2022. While this growth and improvement is impressive, it still pales in comparison to the traditional financial market in terms of size and competitive intensity, which are orders of magnitude greater there than in the DeFi market. Potentially, the biggest hurdle for DeFi is gaining the trust of the traditional financial markets and intermediaries. This could be achieved through regulatory certainty, combined with blockchain solutions that balance the compliance certainty of permissioned access with the utopic ideals of decentralisation.

To gain an understanding of the state of readiness within the financial industry, one aspect to be analysed was the respondents' current client offering for exposure to cryptoassets. An overwhelming 63 % do not offer such exposure. Of the 37 % that do offer exposure to cryptoassets, 17 % provide clients with direct exposure via a wallet or digital custody accounts, 7 % via a partnership with a third party and 3 % via a tracker or fund with underlying exposure to cryptoassets.

In view of the high proportion of respondents not currently offering their clients exposure to cryptoassets combined with the appetite in the market, as well as the respondents' understanding of the potential for disruption due to cryptoassets, it will be interesting to see whether those players will develop an offering in due course in order to gain their share of the market, or whether the non-traditional market entrants will by that time already be market leaders with an unassailable lead.

Entering crypto: what are the preferred entry modes?

For the options presented, the distribution of the responses was quite even. However, if we consider effort and complexity as aspects relevant to the choice of market entry, it would appear to be more insightful. Only about a fifth of respondents would set up a proprietary crypto solution in the form of a tracker or fund with underlying cryptoassets. About half would collaborate with a third party on the offering or would extend the current, traditional offering to include a wallet or custody for digital assets.

Figure 15: Cryptoasset models for market entry*

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	23 %	26 %	26 %
No plans to offer customers exposure to crypto-assets	Via a tracker or fund with underlying exposure to crypto-assets	Direct exposure via wallet or digital custody account	Via a partnership with a thrid party (e.g. Fidelity or Coinbase)

* The numbers may not add up to 100% due to rounding effects.

The uniform distribution of responses suggests that there is a large degree of uncertainty surrounding the mode of entry. This is unsurprising: while the respondents believe that cryptoassets will be important for their industries, nearly 50% of them indicated that they need to understand the relevance of them and define how to react to them. The mode of entry is therefore still to be resolved for many established financial services players. Each of these market-entry options represents a solid approach, and therefore the equal distribution in responses is not surprising. Depending on the offering that a company plans to bring to market, each strategy has its own benefits and trade-offs in terms of the expected investment needed in order to establish services in relation to the size of the corresponding client portfolios, as well as the level of knowledge of skills that are required and available.



We believe that the blockchain technology will only grow in importance to evolve, shape and disrupt the global economy including the financial industry, and that we are still in the early days of what is coming.

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- 1 IMF blog, December 2021
- 2 Industry Profile Global Cryptocurrency. Marketline, December 2021
- 3 President's working group on financial markets, the federal deposit insurance corporation, and the office of the comptroller of the currency, Nov 2021
- 4 Yearly NFT Market Report. Nonfungible.com, October 2021
- 5 Total Value Locked.defillama.com, retrieved Apr 17th, 2022

Our service offerings

Building a VISION Understand relevance and define ambition

Market analysis and strategy development

- Helping our clients develop their value proposition and high-level business strategy
- Assisting our clients in the creation of strategic alternatives balancing theit business case with the legal and regulatory case including: appropriate jurisdiction selection and regulatory licensing requirements

Whitepaper

- Helping our clients define and articulate their ecosystem, the Tokenomics, growth rational, and the key technologies and partnerships that are required (from the right protocol layer to the best custodian service to FIAT on/off ramps)
- For example, for a stablecoin, the ecosystem would include participants such as VASPs and designated dealers, and the growth rational will need to consider the value proposition to each of these ecosystems participants

Defining a MISSION Business case and feasibility

Feasibility study

- Assesment of the capabilities and functions that will be required to deliver on the chosen strategy. Helping our clients create best in class Target Operating Models and conducting a gap analysis
- Assessment of the market preference for different products and the competitive landscape within each product offering

Regulatory engagement

- Assisting our clients in finalising their regulatory license strategy
- Accompanying our clients in their interactions with regulators, ensuring they are able to put their best foot forward and obtain their required regulatory approval

Business development and partnerships

- Linking our clients with our broad network of ecosystem participants, from underlying protocol layers to custodians, exchanges and banking infrastructure providers
- Conducting due diligence on behalf of our clients as well as helping our clients respond to due diligence requests from their partners

Preparing EXECUTION Launch and scaling

Operation readiness

- Assisting our clients operationalisation of the Target Operation Model, from policies, processes, technology through to risk and controls
- Establishing a testing protocol from nominal to wholesale testing to ensure the reputation our clients are upheld on go-to-market



Go to market

 Helping our clients go to market by providing support across their entire functional hierarchy, providing the support, skills and business development they need to successfully launch and grow their ventures

Our Crypto Team – References and contacts

About PwC

At PwC, our purpose is to build trust in society and solve important problems. We are a network of firms in 156 countries with more than 295,000 people who are committed to delivering quality in assurance, advisory and tax services.

The PwC Global Crypto team is composed of over 200 professionals active in over 25 countries who offer a 'one-stop shop' solutions for our crypto clients across our multiple lines of service. Our clients range from crypto exchanges, crypto funds, custodians and token issuers to traditional financial institutions moving into the crypto space, as well as national regulators and central banks with regard to their crypto policies.



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